Cleft Grafting of *Magnolia grandiflora*

Jim Berry
Flowerwood Nursery, Inc , P O Box 665, Loxley, Alabama 36551

Magnolia grandiflora produced from seeds are highly irregular in form, leaf texture, density, cold hardiness, and bloom characteristics. Seeds from uniform trees produce offspring of diverse phenotypes. Opportunities exist for asexual propagation of many very fine selections. Some cultivars that we produce are 'Little Gem', 'Glen St Mary', 'Samuel Sommer', and 'Russet'. 'Edith Bogue', 'Claudia Wannamaker', 'D D Blancher' and 'Bracken's Brown Beauty' are other cultivars with market potential. I think 'Little Gem' and 'D.D. Blancher' are the best cultivars.

Over the years we have made numerous attempts to root several cultivars 'Samuel Sommer' roots fairly well; the other cultivars year after year have been almost total failures. Two years ago a friend, Mitchell McGee of Poplarville, Mississippi, called to tell me of his success with cleft grafting magnolias. I made a special trip to visit, and the following procedure is one that he worked out. In January 1991 I followed his procedure and was pleased with the results.

Container-grown seedling *M. grandiflora* of 1/2- to 5/8-in caliber are used for understock. Containers can be full 7-in., or 1, 2, 3 or 5 gal. Full 1 or 2 gal are ideal. We generally transplant rootstock from a liner pot in early spring and grow one full growing season to reach desired caliper.

In December or January dormant understocks are moved from outdoor growing areas into a heated greenhouse. After two or three weeks above 55°F, plants initiate growth. Benches with seating are set up inside the greenhouse. The benches should be high enough for the grafter's knees to be below the table Grafting is best done on the corners of the bench table

Grafting scion wood should be collected from dormant plants of the desired cultivar The scion wood should be as fresh as possible, and should be kept moist by wet burlap bags covering a plastic container while storing.

Any type of heavy grafting knife is suitable. We use a Freunde 217 The knife should be sterilized frequently by dipping into alcohol and air drying. Budding rubbers are 3/8 in. wide and 8 in long. The grafter should sit at the bench corner and wrap his thumb with duct tape to prevent injury. The grafter should cut the rootstock 1 1/4 to 1 1/2 in. above the soil line and remove any remaining lower leaves. Next he should shave the surface of the rootstock to make it smooth and level. Then make a 1- to 1 1/4-in perpendicular cut at the widest point down into the rootstock.

The scion is a single leaf node Terminals can be used. The best scion wood is within 6 leaf nodes of the terminal of any branch The single-node scion stem is 3/4- to 1-in long. The leaf should be trimmed by 50% to 75% depending on the size. Holding the scion in the left hand (if you are right-handed) with the thumb and fore-finger holding the leaf petiole, trim the scion stem into a wedge. Make the wide part of the wedge on the same side as the bud and leaf petiole. Using your grafting knife, open the rootstock slightly and wedge the trimmed scion into one side of the rootstock, matching cambium layers as best as you can. The wide part of the wedge should be visible. The narrow part of the wedge is obscured by the rootstock.

Manipulating the scion with your finger tips during preparation and while inserting into rootstock is a skill that cannot be described easily in print. Practice will allow you to master this phase of the grafting process

Once the scion is inserted and aligned, the graft should be wrapped from the bottom to the top The very top of the rootstock surface should not be covered by the budding rubber. Cover the graft with a 32-oz styrofoam cup. Mound clean fine pine bark or other similar material two inches on top of the soil and around the base of the cup Firm and pack the material to seal the graft.

The grafted containers should remain in the greenhouse. Soil moisture levels should be maintained at moderate levels The mounded bark medium should be kept moist at all times. After four to five weeks, cups should be lifted, suckers from the rootstock removed, and grafts resealed You will notice a sticky sap covering the grafted area. This is normal Rootstocks should be suckered again in four more weeks

Ten to 12 weeks after grafting, the scion should show signs of growth. At this time, lift the cup but do not remove completely. Be sure the greenhouse is not subject to wind and blowing. The cups are light and blow off easily, which could let the graft dry out Two weeks after moderate aeration remove the cup totally. Cups should be removed when the first leaf of the scion begins to expand fully. Topdress lightly two weeks after the cup is removed and the scion is growing. The rubber should be removed when the graft is four to six inches tall. Grafted plants can be transplanted into 7-, 10- or 15-gal containers once the graft is 10 in. tall. Be careful not to break the graft union during transplanting.

Plants grafted in January are now 4 ft tall and beautiful. Due to some mismanagement on my part, our percentages were lower than I had hoped for—50% overall. We did get 72% on one sizable group of 'Little Gem' Through closer attention to water management and more care of the hardening phase, I feel we can obtain 80- to 85% success

Grafting shows promise as a way to mass produce *M. grandiflora* cultivars for us. We have been more encouraged by grafting than by rooting cuttings.