

# Magnolia Grandiflora from Cuttings

by Richard J. Stadtherr

In the past the Southern magnolia, *Magnolia grandiflora* L., was usually propagated commercially from seeds or by grafting. Grafting percentages in general were relatively low and this propagation method is very expensive. Because in recent years many superior or outstanding selections have been made, vegetative propagation has become more desirable, and the need has increased for a faster and more reliable method.

Enright<sup>1</sup> reported excellent rooting results from cuttings taken in late spring or early

summer. A 10-second dip in an IBA solution of 20,000 parts per million (ppm) along with heavy wounding at the base of the cutting gave best results. Cuttings were taken in June and kept under intermittent mist and rooted 84 to 88 percent after 63 days in the bench. March<sup>2</sup> working with the hybrid magnolia cultivar 'Freeman', obtained excellent rooting by using semi-hardwood cuttings from juvenile plants treated with Hormodin #3 and held under intermittent mist for 8 weeks.

Curtis<sup>3</sup> also reported better results with cuttings from young trees. Hardwood cuttings were taken in November from trees 4 to 6 feet tall, wounded, treated with Hormodin #3 and given bottom heat of 75 to 80° F. Watering was by hand and was done generously, especially just after cuttings were stuck.

Since procedures varied greatly and since there were problems with certain selections, an experiment was begun by the author in 1964<sup>4</sup> with a clone selected by Robbins Nursery, Penderlea, North Carolina. Current season vegetative shoots were taken from 10 to 12 foot clonal trees. Tip cuttings included the first five nodes and leaf-bud cuttings were made from the 6th, 7th, 8th, and 9th nodes. The cuttings were wounded heavily. The treated basal ends of the cuttings were dipped for 10, 20, 40, or 80 seconds in a 5,000 IBA solution. Controls or untreated cuttings were soaked in distilled water for 80 seconds.

Intermittent mist at 2 seconds per minute was applied during the first week after cuttings were stuck, from a half hour before sunrise to an hour after sunset. After that the misting interval was 1.3 second per minute. The medium was equal parts of German peat and coarse perlite. Bottom heat of 75 to 80° F. was used and cuttings were kept in an air-conditioned greenhouse with day temperatures averaging 75° F. and night temperatures in the 60's. The greenhouse was shaded, allowing about 60 percent light to penetrate.

The June cuttings were rather soft, and most rotted. The July cuttings for the 10, 20, 40, and 80 second dips had a mean rooting rate of 90, 100, 100, and 85 percent respectively. The controls had 15 percent rooting. The August cuttings for the



*Magnolia grandiflora* seedlings are a variable lot. This one in a lawn on U.S. Highway 82 in El Dorado, Arkansas, is not the biggest *Magnolia* in town but its dense, columnar habit makes it one of the most attractive through all seasons. It was through flowering for the year on November 12, 1977, when this photo was made. For scale, those are automobiles and people you can see completely beneath the lowest branches.

10, 20, 40, and 80 second dips rooted at 100, 85, 75, and 35 percent respectively and the controls again rooted at 15 percent. Rooting in September fell off drastically to only 20 percent in the IBA treatments.

In the next year, only three treatments were used. Dips of 10 and 20 seconds in 5,000 ppm IBA solution were compared with the controls soaked in water. Mean average rootings in mid-July were 78, 93, and 10 percent respectively for the 10, 20, and controls; for mid-August rootings were 85, 90, and 3 percent respectively.

In the third year, two clones were used. Cuttings were from young 5 foot trees. The same procedure was used as described previously except that a Captan drench (3 tablespoons 50% wettable powder to 4 gallons of water) was applied once every two weeks. Once a month a 20-20-20 soluble fertilizer was applied at 1 ounce to 7 gallons of water. Several different root-promoting substances were used. Results can be seen in Table 1.

In the July trials all hormone treatments gave significantly better rooting percentages, with better root systems, than the controls. The IBA treatments had more initials and more branching roots than the other treatments. Rooting systems in the controls were smallest, with fewer initials and no branching after two months in the cutting bench. Very little difference in the rooting rate occurred when cuttings were taken in mid-July or mid-August over the three-year trials: 83.5 to 91.7 percent respectively.

Trials were continued in Louisiana from a number of superior selections which will be named and introduced soon. Some observations are listed here.

Rooting percentages decreased markedly when mist propagation outdoors was used, with the rates rarely averaging above 60 percent, whereas, in an air-conditioned greenhouse, 95 percent means were common. Trees that were more juvenile and 15 feet or less in height tended to yield the highest percentage of rooted cuttings. Only cuttings which had a hard terminal bud and no soft new leaves or buds rooted. Even removal of the soft tips did not assure better rooting. Rotting was much greater in such cuttings.

Table 1. Rooting percentages for *Magnolia grandiflora* cuttings in 1967.

Treatment	Dip	Clone "A"		Clone "B"	
		July 13 <sup>1</sup>	Aug. 16 <sup>2</sup>	July 13 <sup>1</sup>	Aug. 16 <sup>2</sup>
5000 ppm IBA	10 sec.	82.5	90.0	85.0	95.0
5000 ppm IBA	20 sec.	87.5	72.5	85.0	95.0
Jiffy Gro 33 $\frac{1}{4}$ %	10 sec.	87.5	67.5	87.5	90.0
5000 ppm IBA					
& 100 ppm Boron	20 sec.	90.0	60.0	85.0	87.5
Chloromone 33 $\frac{1}{4}$ %	10 sec.	82.5	57.5	85.0	77.5
Control - water	10 sec.	27.5	45.0	45.0	80.0

<sup>1</sup> Cuttings removed October 4.

<sup>2</sup> Cuttings removed November 2.

Cuttings must never show wilting, especially in the first 7 to 10 days. Rooting hormones are very beneficial in increasing rooting percentages, as is bottom heat. The medium should be moist at all times but never excessively wet. Equal parts of coarse peat and coarse perlite was the best medium.

Fungicidal drenches proved beneficial, as did a 20-20-20 fertilizer solution applied twice, two weeks after the initial sticking and again a month later. This didn't increase rooting percentages, but root systems were greater in numbers of rootlets and size. Juvenility is very beneficial in increasing rooting percentages. From large mature trees rooting percentages seldom if ever exceeded 30 percent; however, when cuttings were used from trees up to 15 feet high, rooting rates of 90 percent and higher were common.

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#### Literature Cited

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