Possibilities in the Rooting of *Quercus glauca*©

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Quercus glauca (syn. *Q. myrsinifolia*) is an evergreen oak from Japan, China, and Laos that is hardy to Philadelphia, Pennsylvania. It has leathery dark green leaves that are long and narrow, somewhat resembling a peach or willow leaf. The foliage is clean and the branching is well spaced creating an attractive ornamental tree.

There are several accessions at the Morris Arboretum of the University of Pennsylvania in Philadelphia, Pennsylvania, and I took on a study to understand the rooting potential of this species. Dirr (1998) says in passing that *Q. glauca* can be rooted with K–IBA with a 1% dip with cuttings taken in June, but he does not go into specifics.

ROOTING STUDY #1

An initial study was conducted with a series of trial dates from mid June to mid August. Hardened current seasons growth was selected from several different accessions. The cuttings were between 8 and 10 nodes long, wounded on two sides, and treated with Dip N' Gro at 1/2 dilution rate, IBA 5000 ppm and NAA 2500 ppm. Cuttings were stuck in a substrate of Scotts 510 mix (a commercial available artificial soil of the Scott Company) in 2 1/4 inch pots (32s). The cuttings were placed on bottom heat set at 70 ºF and mist of 10 sec every 10 min. Cuttings were checked for rooting 90 days after sticking.

After the 90-day rooting period cuttings were lifted and checked for rooting. Only about 2% of the total cuttings had rooted. Some of this was anticipated as there was considerable leaf drop while in the rooting bench and once leaf drop had started there was little or no rooting. In spite of the difficulties it was noted that the bulk of the rooted cuttings came from one accession and from the collection period from mid August.

ROOTING STUDY #2

A year later the study was resumed with close attention being paid to the timing. Experimental conditions were essentially the same with some modifications. A chance conversation at a nursery in Florida indicated that with the rooting of *Q. virginiana*, another evergreen oak, it was best to use IBA alone and forgo NAA as the presence of NAA resulted in excessive callusing but no rooting.

Cuttings were collected from the three accessions again but the timing was restricted to mid August. As in the previous study the cuttings were wounded and then treated with IBA alone in propylene glycol at 5000 ppm and then stuck into 4% IBA talc powder. Cuttings were then treated as before.

After 90 days the cuttings were evaluated for rooting. Two of the accessions did not root but cuttings from accession # 86-097*C did root to 24%.

DISCUSSION

The consistency of rooting of cuttings taken in mid August indicates that a sufficient degree of hardness in the cutting is necessary for rooting. It does seem clear that clonal differences of *Q. glauca* can be significant for effective rooting of cuttings. More work needs to be done with examining the affects of substrate with perhaps an increase in aeration of the media being helpful by the addition of perlite to the

mix. The optimal root hormone is yet to be achieved although adhering to the use of IBA alone does seem to be affective. Also cuttings are being taken from mature trees and a more juvenile source might significantly increase the rooting percentages.

LITERATURE CITED

Dirr, M.A. 1998. Reference manual of woody landscape plants. 4th ed. Stipes Pub. Co. Champaign, Illinois.

Magnolia tripetala from Seed©

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BACKGROUND

Magnolia tripetala (syn. *M. virginiana* var. *tripetala*) belongs to the Magnoliaceae family with a number of common names including: umbrella magnolia, umbrella tree, and Elkwood. *Magnolia* honors the French botanist Pierre Magnol; *tripetala* refers to the three large petaloid sepals; tree is similar to *M. macrophylla*.

Characteristics: *Tree*: Up to 30 ft tall, with an open crown. *Bark*: Thin and smoothish, light grey. *Twigs*: Thick and shiny, becoming glabrous. *Leaves*: Alternate, obovate 10–24 inches, and clustered near the ends of the branches creating an umbrella effect. Flowers: 6–10 inches across with 6 to 9 petals, creamy white with an unpleasant fragrance, blooms early June in the Hamilton area. *Fruit*: 4 inches long, cone-shaped, rosy red in October. Zones 5–8 (Dirr, 1990).

Distribution: Pennsylvania to Mississippi.

Habitat: Grows in deep, moist valley floors along streams and swamps.

RESEARCH GOALS

At Royal Botanical Gardens in Hamilton, Ontario, there are two very handsome specimens of *M. tripetala*. These plants arrived as seedlings from J. Savage Bloomfield, Michigan, in 1974. Over the years there have been many requests for propagules, especially through the very successful the Gardens' Auxiliary spring plant sale. For the past 15 years we have tried several ways of propagating this magnolia. Softwood cuttings using different types of IBA powder and alcohol at various strengths taken in early June were not successful. Seed collected and given 3–5 months of moist, cold stratification in sand and poly bags or medium and trays in the refrigerator yielded very poor results. Once, seed was sowed directly into a seedbed with good germination, but the plants were mistakenly hoed out, which was frustrating because other direct sowings did not yield such success.

The 2001 seed, after being given the usual cold treatment, did start to germinate but suddenly died. Upon closer inspection, the seed coat, which is black and hard, seemed to impede germination. If this is true, softening the seed coat might improve germination. We decided to soak the seed in H_2SO_4 (concentrated sulphuric acid) for various lengths of time with the hope that it would improve our germination record.

MATERIALS AND METHODS

Seeds were collected on 28 Oct. 2002, after a very hot, dry summer and a poor seed set. The cone-like structures, which were still green and moist, were placed under