

# **PROPAGATION BY SOFTWOOD CUTTINGS OF *GLEDITSIA, AMELANCHIER, BETULA, AND OTHER TREES***

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The apparent vigor, vitality, and increased growth rate of trees on their own roots when compared to trees produced by other methods, justifies looking further and harder at propagation procedures.

Our methods of trying to propagate trees by softwood cuttings utilizes double-layer, inflated polyhouses, 30 x 95 ft with a 2 ft hard sidewall insulated for cold protection. The overhead mist system we use has Eddie mist nozzles, water pressure of approximately 50 psi controlled by a variable timer. The procedure starts with 10 sec of water every four min, depending on the weather. We use well water, approximately 58° F, with a pH of 7.2.

The rooting containers used are 2 3/8 or 3 5/8 in. "Anderson" bottomless tree pots placed directly on plastic net floor covering, over well-drained sand. The rooting medium is a peat and perlite (1:1, v/v) mixture. The peat is steam-sterilized, then mixed with the perlite.

The floor and the pots are treated with Physan before the pots are lined out to receive the soil. The pots are filled in place in a manner to protect against soil compaction.

The rooting hormones are protected by refrigeration or dry stored as prescribed. The rates used in this crop were 2500 ppm Woods, 500 ppm Woods, and #3 hormone powder. The liquids are mixed as needed every few days.

The normal time for propagation in Indiana starts in June when stock is at the right rate of growth (tender new growth).

We use Physan 20 and disinfect all the working areas and tools daily. This includes cutters, tabletops, trays, and containers.

The plant material is cut and collected, preferably in the morning of the day to be used, then placed in plastic bags. The rough cuttings are put directly on the cutting table or refrigerated in the plastic bag until needed. Cutting material may be stored overnight with refrigeration, but we attempt to collect, cut and stick in the same working day.

The cutters try to get as many good two-node cuttings, in addition to the tip cutting, as possible. These are immediately placed into separate trays for tip cuttings or stem cuttings, then hand misted. The cuttings are collected and bunched with the cut ends even (hopefully with the top end up) and bundled with a rubber band.

At this point, all materials are handled with rubber gloves. The bundles are submerged into a solution of Physan 20 and water and allowed to drain for 3 to 5 min. The Physan-treated bundles are given a 5-sec dip into the hormone being used.

As soon as possible after dipping into the hormone, the cuttings are stuck into the prepared, pre-watered pots. The mist system is on and functioning at the 10 sec every 4-min cycle while the sticking procedure goes on. Care is given to prevent compaction or contamination during the entire preparation and sticking procedure. No cuttings are stored over a weekend, everything is stuck Friday before anyone goes home.

Misting of the cuttings is during daylight hours only. The timing sequence is adjusted according to the sunlight, humidity, temperature, and signs of rooting. The mist system timing is varied and “cutback” to prevent overwatering and to help the new growth.

Our propagation houses are shaded to 50% with latex paint. We use no heat during the rooting procedure. We do heat late in the season to allow the rooted plants to form good buds on the new growth.

Two taxa of amelanchier were cut on Monday, June 25, 1990. We stuck a native selection of *Amelanchier arborea* and a commercial selection of *A. × grandiflora* called ‘Cole’s Select’. These were stuck directly in 2 3/8 in. tree pots. We stuck 3,990 *A. arborea* with 1925 rooting for 48.25%, and 3,885 ‘Cole’s Select’ with 2535 rooting 65.25%. We used the 500 ppm IBA for both selections.

We stuck *Betula nigra* on Thursday, July 19, 1990, using two pot sizes and three hormone treatments. We used 3 5/8-in. pots with 3 cuttings each for clumps, and 2 3/8-in. pots for single plants. The pot size only affected the resulting growth after rooting—bigger pots, bigger plants—but did not affect the rate of rooting. We stuck 325 *B. nigra* using 500 ppm hormone with 97% rooting, 390 using 2500 ppm with 93% rooting, and 325 using #3 powder with 85% rooting.

We stuck *Gleditsia* in 2 3/8-in. tree pots on Tuesday, July 17, 1990, using three hormone choices: 325 using 500 ppm with 4% rooting, 715 using 2500 ppm with 20% rooting, and 195 using #3 powder with 25% rooting.

The rooting of trees by softwood cuttings does not guarantee that the rooted cutting will survive the first winter and break bud the following spring. The new growth after rooting is very important and must be encouraged to produce a good viable tree the following year. Trees from cuttings made in June of one year can be 6 to 7 ft tall by September of the following year (15 months).