

Budding trials with sweetgum, sycamore, and yellow-popular

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June budding was successful with sweetgum, however yellow-poplar and sycamore budding was more successful in August. There were No significant differences among locations of buds on the stems.

For those involved in tree improvement programs, the spring grafting and pollinating season is one of the busiest periods of the year. The work reported here involves budding of three different diffuse porous hardwood species during late spring and summer. The objectives were to determine if this well known vegetative propagation procedure could be successfully used with these species and whether the work load thus could be more evenly distributed throughout the year.

Materials and Methods

One-year-old seedlings of three hardwood species—sweetgum (*Liquidambar styraciflua* L.), yellow-poplar (*Liriodendron tulipifera* L.) and sycamore (*Platanus occidentalis* L.)—were transplanted in late winter in nursery beds at a spacing of about 1' x 1' for use as rootstock. In late June, each of the transplant beds except the one containing yellow-poplar was divided into four blocks. Because of a shortage of seedlings, the yellow-poplar bed was divided into only three blocks. Twenty-four rootstocks per block were selected at random for budding. Two buds per

rootstock were placed at one of four locations along the stem as follows: (1) as near the ground line as possible, (2) midpoint of hardened woody portion of stem, (3) top of hardened woody portion of stem, and (4) in succulent tissue of the current season's growth. As a result, six rootstocks in each block were budded at each of the four heights.

Budsticks for each species were collected from four or five trees in natural stands about a week before budding was attempted. Leaves were immediately removed from the budsticks. The sticks were then sealed in polyethylene bags and placed in cold storage until needed.

For the T bud used throughout this study, (figure 1) rootstocks were prepared by making a T-shaped incision at the appropriate height. The top of the T cut was about 3/8 inch long and the vertical portion approximately 1-inch long. The cut was just deep enough to barely reach the wood of the stem. A healthy bud was then selected and excised from the budstick by making a shallow cut starting about 1/2-inch below the bud and proceeding upward to a point about 1/2-inch above the bud. A narrow, shield-shaped sliver about an inch long, with the bud at its center and with a small amount of

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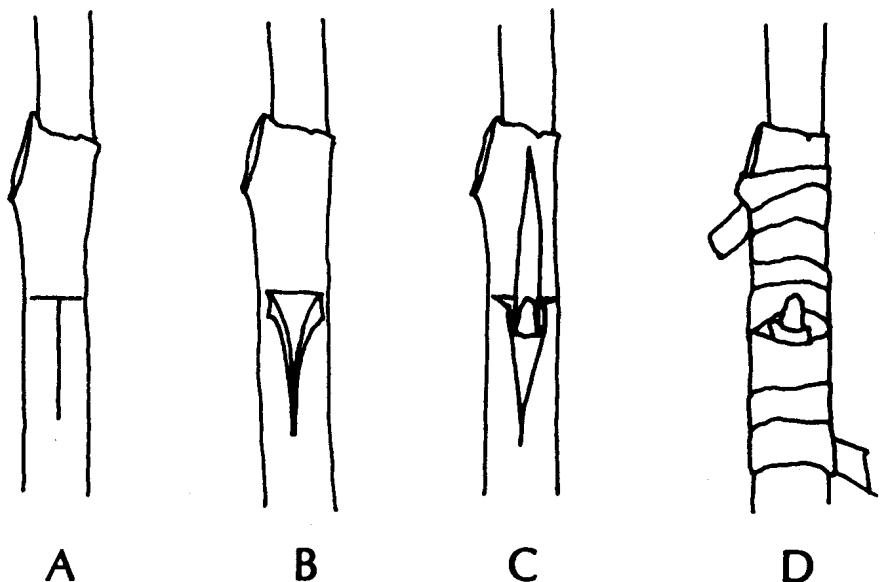


Figure 1.—Steps in making a T-Bud graft. (A). T-shaped incision in rootstock. (B). T-shaped incision with bark lifted to accept bud. (C). Rootstock with bud in position (Protruding end of bud sliver should be trimmed before wrapping). (D). Completed bud wrapped with rubber budding strip.

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wood behind the bud, resulted. The bark of the rootstock was loosened by inserting a turkey feather quill into the incision, and the sliver with its bud was inserted in a position with the bud about half way down the vertical cut on the rootstock and pointing upward. Any bark of the shield that protruded above the top of the T cut was trimmed even with the horizontal bar of the T. The entire incision area was then wrapped snugly with rubber budding strips beginning at a point below the bottom of the T and extending above its top. Care was taken to prevent the bud itself from being covered or crushed during the wrapping operation.

A budding trial with all three species was performed near the end of June and was repeated with yellow-poplar and sycamore in late August. Both trials were evaluated 2 months after the budding was attempted. Counts of rootstocks having at least

one successful bud were made, and the data were evaluated by means of analyses of variance and Duncan's new multiple-range tests.

Results

In the June trials, the greatest degree of success was obtained with sweetgum. One or both buds survived on 64 percent of all sweetgum rootstocks and 28 percent of the yellow-poplar rootstocks. Less than 1 percent of the sycamore rootstocks were successfully budded.

Sweetgum was omitted from the August trials because the method had proved satisfactory with this species in the June trials. Budding success for both species included in the second trial increased over that of the June trials. Successfully budded yellow-poplar increased from 28 percent in June to 35 percent in August. Sycamore demonstrated an even more striking increase, from less than 1 percent to 41 percent. No significant differences among locations

on the stem were found in either June or August budding.

Discussion

Budding appears to be a promising means of vegetatively propagating sweetgum, sycamore, and yellow-poplar. Results of this study, however, indicate that the degree of success with sycamore and yellow-poplar may be highly dependent upon the time of year when budding is done. The difference was particularly outstanding with sycamore.

Although the overall success rate of budding reported here is less than is commonly obtained by grafting in pine programs, the relative ease of the operation and its timing tend to offset this shortcoming to some extent. Since location of bud placement along the stem does not appear to be a critical factor, overall success rate for each of the three species could probably be further increased simply by placing more than two buds on each rootstock.