

## NURSERY SOIL MANAGEMENT

Mason C. Cloud, Jr., Texas Forest Service  
College Station, Texas

The generalized topic assigned this panel was "Nursery Soil Management," but I have been asked to address myself to the specific subject of nursery soil management for the production of cottonwood cuttings.

This will be about the eighth year that we have produced cottonwood cuttings for Champion Paper. During that time, there have been some changes made in the cultural treatment given this species, but none of any great magnitude.

Those of you who attended the Poplar Council Annual Meeting in College Station a little more than 2 months ago had an opportunity to hear some excellent speakers and the very latest word on cottonwood, not only from the standpoint of management-operations and production but from research as well. If you are not a member of the Poplar Council, you are urged to join for the benefits are many, not to mention the very pleasant associations you have with your fellow workers. You can make contributions as well on the work that you may be doing with cottonwood.

Our target of production for cottonwood is a minimum of 500,000 twenty-inch cuttings annually; however, as the rootstocks get in their second and third years and older, production increases to an estimated one million 20-inch cuttings. Even more if rainfall in both amount and distribution is generous throughout the growing season.

Cuttings are planted on a spacing of 1-foot x 3-foot for optimum use of the nursery production area. Seven rows are planted on each side of the irrigation line with a gap of 14 feet in the middle to allow for equipment operation and harvesting. Too, when whips get several feet tall, irrigation is somewhat difficult on the outside rows and would be impossible if more rows were added. By such an arrangement of spacing, one acre of ground will produce about 50 to 60 thousand 20-inch cuttings, if all goes well,

Slide 1.--This was made in April and shows the rootstocks in full leaf with the first flush of growth well under way.

Slide 2.--Shows status of development of the rootstock 1 month later and reveals what cottonwood will do with a little encouragement.

Slide 3.--One month later, in June, and again growth has progressed quite satisfactorily.

Slide 4.--This is August and the whips average about 12 feet tall.

Slide 5.--About the last flush of growth has occurred and the nursery is beginning to make plans for harvesting although the first frost has not been experienced, as the still green-looking leaves will testify. This is late-October.

Slide 6.--We're at the harvesting stage now--mid-December. A gasoline-powered 18-inch circular saw, mounted on a lawn mower frame is used to cut the whips.

To back-track a little, for those of you who were not at either the most recent annual meeting of the Poplar Council or the Hot Springs, Arkansas Nurserymen's Meeting, cultural treatments used by us for the production of cottonwood cuttings include:

(a). Annual application of compost, a mixture of broiler-house litter and rotted sawdust, at a rate of 100 cubic yards per acre.

(b). Annual application of a complete commercial fertilizer of a ratio such as 12-24-12 and at a rate depending upon a soil analysis--usually between 150 to 300 pounds per acre.

(c). Cultivation is done frequently during the growing season and subsoiling is done periodically to a 20-inch depth.

(d). Irrigation water is applied when needed.

(e). Fertility level--same as for pine; i.e.,

- (1). Nitrogen - 60 to 70 pounds an acre.
- (2). Phosphorus ( $P_2O_5$ ) - 100 to 150 pounds an acre.
- (3). Potassium (K<sub>2</sub>O) - 300 to 400 pounds an acre.
- (4). Calcium ( $CaCO_3$ ) - 1,000 to 1,400 pounds an acre.
- (5). Organic matter - about 1.5 percent.

(f). Systemic insecticide - 120 pounds an acre of Di-Syston or Thimet, 10 percent granular, applied annually with a fertilizer distributor and then covered with a sweep followed by a generous watering.

(g). Rootstock - best clonal lines being used for nursery production--selections made on basis of performance tests. Initially, best 100 clones from nursery production area were selected; later reduced to 50 on basis of phenotypic selection and then finally reduced to 25. The best of these 25 clonal lines will replace the rootstock now used for nursery production.