Summer Fallowing Helps Establish Cottonwood on Old Fields

By James B. Baker and B.G. Blackmon

Cottonwood is an ideal crop for many old fields in the Mississippi Delta, but getting the trees established on these sites has proved difficult. Surface soils are often compacted and depleted of nutrients, and grasses and other herbaceous vegetation compete strongly with the young trees for moisture and nutrients. Fallowing in the summer before cottonwood cuttings are planted may be the answer for improving tree survival and growth.

Eastern cottonwood is an attractive timber species for the Delta because of its rapid growth, easily salable wood, and suitability for short rotations. Mechanized techniques have been developed for planting cottonwood cuttings, making it possible to utilize genetically improved clones developed at the Southern Hardwoods Laboratory.

But early growth and survival have been poor on old fields, and intensive soil management on these sites appears essential. The most promising technique of those tried at the Laboratory is summer fallowing—disking as often as necessary to control weeds during the summer prior to planting.

In a controlled experiment done in cooperation with Crown Zellerbach Corporation in Sharkey County, Mississippi, summer fallowing significantly improved first-year survival and growth of planted cottonwood (fig. 1). On fallowed plots, 85 percent of the

Figure 1. Cottonwood on plots that had been fallowed in summer (right) had 20 percent better survival and averaged three feet taller after one year than trees on unfallowed plots (left).
cuttings survived, and heights averaged 10 feet after 1 year. On unfallowed plots, survival was only 67 percent, and trees averaged 7 feet in height. After 2 years, trees on summer-fallowed plots averaged 23 feet in height and 3.5 inches in diameter compared to 18 feet in height and 2.5 inches in diameter for trees on unfallowed plots (fig. 2).

Fallowing probably helps in two ways. First, it improves the structure of compacted soils on old fields. Second, it reduces competition from herbaceous vegetation, particularly Johnson grass. This treatment before planting not only increases early growth and survival of the plantation, but also may reduce the number and frequency of cultivations required after planting.

Summer fallowing is widely used in agriculture, especially in semiarid regions, for weed control and soil moisture conservation. These are important to establish hardwood plantations.

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Figure 2. Two-year-old cottonwood on plots that had been fallowed (left) were five feet taller and one inch larger in diameter than trees on unfallowed plots (right).

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