

Pruning Cottonwood

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Planting cottonwood trees can be a profitable investment, but to get the most for their money land-owners should consider the possibilities of pruning. At present, there are wide differentials in the stumpage value of cottonwood stands, primarily because of variation in log quality. By restricting knots to the inner core, artificial pruning of small open-grown trees can markedly improve the grade of future butt logs—and also improve the prices these logs will bring.

This article describes some pruning trials in the Mississippi Delta and offers a few suggestions as to when and how the job should be done.

Healing Of Pruning Wounds

In the spring of 1956, a pruning study was established in a 14-year-old cottonwood plantation on land of the U. S. Gypsum Company near Greenville, Mississippi. The trees had been planted at a spacing of eight by eight feet and survival had been high. Natural pruning had already reduced the number of

lateral branches, but the boles were still too limby to produce top-grade logs.

Thirteen trees, averaging 8.9 inches d.b.h. and about 50 feet tall, were chosen at random and pruned to a height of 17.4 feet. A total of 104 branches (live or dead) were pruned. More than half of the trees were in an outside row adjacent to an open field; the crowns of these trees received much direct sunlight. A hand pruning saw was used, and all cuts were flush with the main bole of the tree. Limb diameters, measured two inches from the bole at the time of pruning, ranged from one-quarter inch to three inches. The majority were in the 1½- to 2½-inch diameter range. Thirty-six of the limbs were dead when pruned.

The cuts healed quickly. Forty-four per cent were closed by the end of one year, 89 per cent had healed after two years, and only two cuts were still open after three years. The smaller wounds healed first, regardless of the vigor of the trees. Wounds caused by the prun-

ing of the dead branches healed as quickly as live-branch wounds.

Growth was not affected by pruning. The trees averaged 1.8 inches in diameter growth for the three-year period after pruning. Unpruned trees averaged 1.7 inches for the same period.

Despite the fact that several trees were 50 per cent exposed to direct sunlight, only two new epicormic branches appeared, both during the first growing season. The absence of epicormic branching, if confirmed in future studies, will be a tremendous encouragement for pruning to increase log quality.

Rot and insect infestations were slight in the pruning wounds. Only two per cent of the wounds showed exterior indications of insect attack during the study. Only six per cent showed slight outward signs of decay. The wounds infested by insects did not heal, but those showing evidence of rot did. Two years after treatment a few trees without outward indications of insect or disease attack were felled and the boles were split open near the pruning wounds. Some of the dead branch

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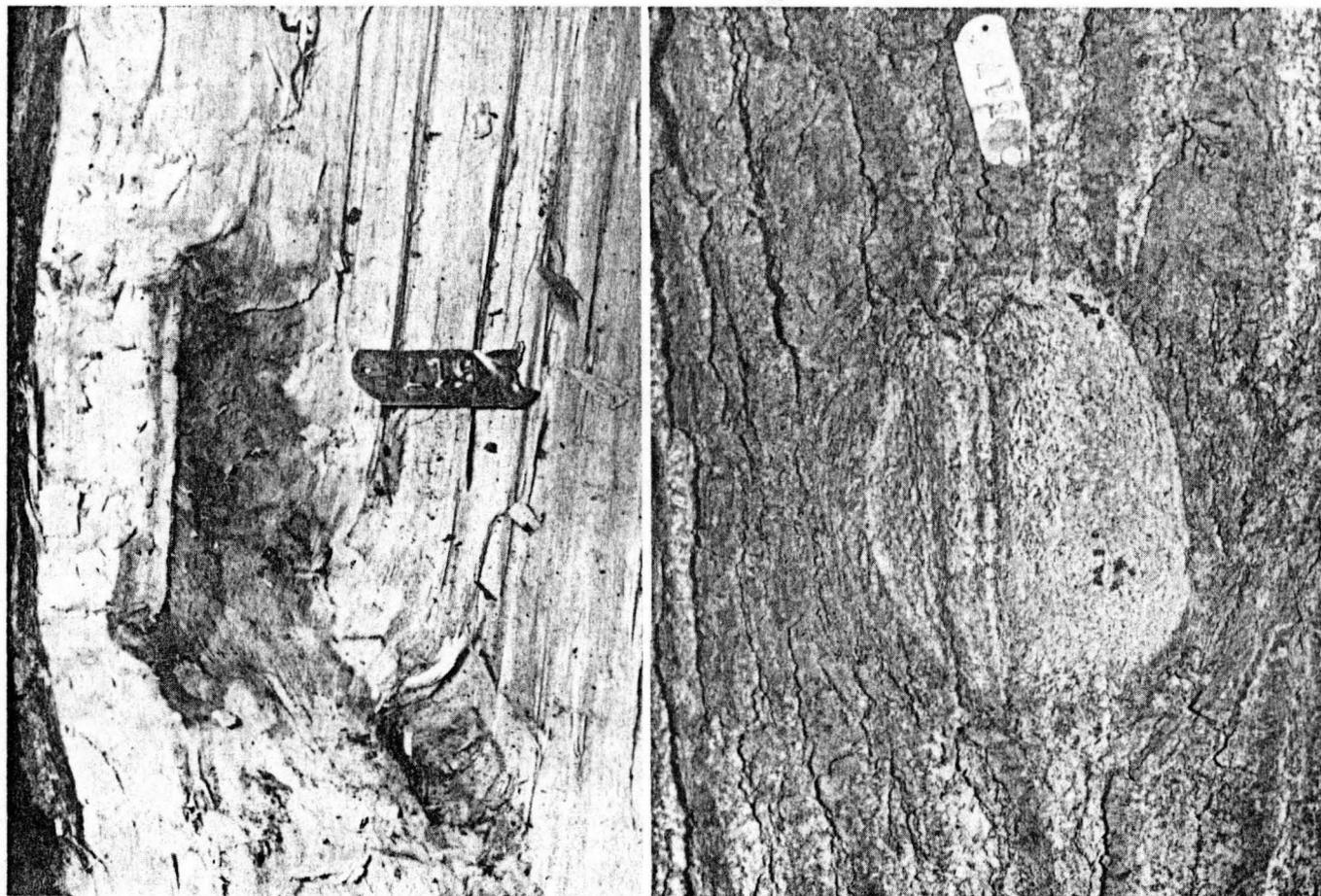


FIGURE 1.—After two growing seasons, this three- by four-inch cottonwood pruning wound (left) had healed over completely. A cross section of the same wound reveals the clear growth after pruning.



FIGURE 2.—Open-grown cottonwoods should be pruned at an early age. Left, view of a five-year-old plantation near Hernando, Mississippi, illustrates the persistence of lower limbs in unpruned rows. Natural pruning will not occur until the trees are much larger. The rows in the right photograph were pruned at three years of age to a height of 10 feet. Early pruning will increase the amount of clear wood for the future production of high grade lumber or veneer.

stubs had decayed sapwood before they were pruned, but very little developed after pruning. Two of the wounds showed signs of insect attack that were not visible from the outside of the trees.

Time And Degree Of Pruning

At what age should cottonwood trees be pruned? On a good site, cottonwood sometimes grows one to two inches in diameter and five to 10 feet in height annually for the first few years, while on a poorer site growth is much slower. The faster the trees grow, the sooner they should be pruned. Some trees planted on an excellent site on the bank of the Coldwater River near Hernando, Mississippi, were large enough to be pruned successfully after only four growing seasons.

To what extent can cottonwood trees

be pruned? Small trees should not be pruned too high. In the Coldwater River plantation, some trees pruned after two growing seasons were cleared for about six feet; others were pruned to approximately 10 feet after three years; and still others were cleared to the top of the first log (16 feet) four years after they had been planted. After five growing seasons, there was an indication that the trees treated after two and three years had been pruned too far into the crown. They averaged only three to four inches d.b.h. and 25 to 30 feet tall. In contrast, trees pruned to the top of one log after four growing seasons averaged about five to six inches d.b.h. and 35 to 40 feet tall. The old rule of thumb prescribing that live crown not be reduced below 50 per cent of total height is probably about right.

Conclusions

Early pruning may be necessary to assure high-quality lumber and veneer from cottonwood trees. Preliminary studies in the Mississippi Delta suggest that:

Pruning should not reduce the live crown to less than one-half the total height of the tree.

Most wounds originating from branches 2½ inches in diameter or less (measured two inches from the main bole) will probably heal within two growing seasons—before rot and insects are likely to cause serious trouble.

Wounds made by the pruning of dead branches heal just as quickly as live-branch wounds.

In a stand, pruning apparently does not stimulate epicormic branching.

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