Epicormic sprouting of eastern cottonwood clones affected by pruning date

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To produce high quality Populus veneer logs on short rotations, clonal lines of superior growth rate are needed. Pruning of crop trees is also required. Pruning should be done when epicormic sprouting will be minimal and also when insects or disease are not likely to be a problem. McKnight (1970) indicates that the best time to prune cottonwood in the Mississippi Delta appears to be spring or summer. An FAO publication "Poplars in Forestry and Land Use" (1958) recommends Populus species be pruned February through March.

The Study

To determine when epicormic sprouting would be minimal under East Texas growth conditions, a pruning study was initiated in a cottonwood plantation located on the Texas A&M University farm in Burleson County, Tex. Thirty-five Populus deltoides clones, each with four ramets, were established at a 20x20-foot spacing on a Norwood clay loam soil. The clones averaged around 12 feet in total height when the pruning study was started, during the winter following the first growing season.

One of the four ramets of each clone was pruned with a hand saw up to a height of 4 feet above ground level on four different dates in the spring of 1970. Pruning dates were spaced about 1 month apart, beginning Feb. 13 and ending May 11. All clones were dormant at the first pruning and in full leaf by the last. At the end of June, all 140 trees were scored for the number of epicormic sprouts arising in pruned areas.

TABLE 1.—*Mean number of epicormics for the four pruning dates*

Mean no. epicormic sprouts up to 4 ft.	Pruning dates			
	Feb. 13	Mar. 13	Apr. 10	May 11
	6.2	8.9	4.0	1.9

Standard error of mean = 1.0

Effect of Pruning Date

Statistical analysis indicated significant differences among pruning dates. The average number of epicormic sprouts for the four pruning dates of the 35 clones is given in table 1. The second pruning date, March 13, resulted in the greatest number of epicormic sprouts, 8.9. The smallest number, 1.9, occurred on the last pruning date, May 11. Using Duncan's multiple-range test, April and May pruning dates were found to be significantly different from the March pruning date at the .05 level.

Unanswered Questions

This preliminary study indicates the need for further research in this area. Results show that pruning date affects epicormic sprouting. Clonal lines can also be expected to vary in their response to pruning just as they exhibit different growth and form characteristics. The possibility of an interaction of clonal line with pruning date also needs to be investigated. The material used in this study was inadequate to thoroughly characterize the response of a given clonal line, since within any pruning date members of a clonal line were not replicated. However, in this study, the average number of epicormic sprouts per clone did range from 2 to 11. The ideal clone would produce few, if any sprouts, no matter when pruned.

The results for the pruning dates examined here indicate that if epicormic sprouting is to be minimal, May is the best month to prune and March the worst. The general trend of the data indicates that pruning dates later than May should be tried to see if even fewer sprouts occur. Later pruning dates might result in excessive bleeding from the pruning wounds. It is interesting that the middle of February appears to be a better time to prune than the middle of March. This difference might be attributed to the fact that the clones are dormant in February and begin leaf initiation around mid-March.

Literature Cited

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