FOREST RESEARCH NOTES

NORTHEASTERN FOREST EXPERIMENT STATION

Upper Darby, Pennsylvania

No. 40
October 1954

Summer Is The Best Time To Thin Hybrid Poplar Plantations

Hybrid poplar plantations are established by planting dormant cuttings in close spacing, usually 4 x 4 feet. They are cultivated during the first growing season to eliminate competition from grasses and weeds. After the first year, the more vigorous trees effectively shade out lower vegetation. But rapid tree growth often makes thinning necessary after 2 or 3 growing seasons.

An ax or machete is the common tool used in thinning hybrid poplar plantations. The trees are usually less than 2 inches in diameter, so they can be easily cut near the ground line. Often the stumps of cut trees sprout, and may again offer competition after several years of growth.

Two hybrid poplar plantations on the Beltsville Experimental Forest, near Bowie, Maryland, were used in a study of thinning. One was thinned during the summer growing season, the other during the following winter dormant season. After 2 years, detailed records of sprouts from all cut stumps were obtained. There were about 18 cut stumps in each of 11 plots on each area. The same hybrid poplar clones were present in both plantations.

The results of the sprout measurements are summarized in table 1. Data for individual clones are not given since no statistically significant differences between clones were found.

The number of sprouts per stump varied from 1 to 30. Although the average number of sprouts from the stumps of winter-cut trees was greater than from those cut in the summer, this difference was not statistically significant.

But diameter differences were important. Sprouts from the stumps of trees cut in the summer had nearly a half season more to grow than sprouts from the stumps of trees

Table 1.--Summary of sprouting by 11 hybrid poplar clones 2½ growing seasons after thinning

Time of weeding	Sprouts per stump, average	Average diameter (b.h.)	Average height	Stumps with sprouts
	Number	Inches	Feet	Percent
Summer	4.6	0.4	6.1	57.9
Winter	7.1	.7*	11.8*	96.8*

*Differences between summer and winter thinning statistically significant.

cut in winter. Even with this advantage, their average diameter was about half that of sprouts from winter-cut stumps. This slower growth may have been due in part to depletion of food by the new summer sprouts, when food storage normally takes place. As a result the top and roots had fewer food reserves next spring when growth started again.

Sprouts from winter-cut stumps were almost twice as tall as those from stumps cut in the summer. The smaller sprouts on the summer-cut stumps offer considerably less competition to the residual trees. Since the crop trees are growing rapidly, these smaller sprouts will probably never be serious competitors.

Another significant advantage of summer thinning is the smaller number of stumps with living sprouts 2 years later. At that time nearly all the winter-cut stumps had living sprouts, while only about 58 percent of the summer-cut stumps had sprouts. Again, depletion of food reserves may have been the cause.

The results of this study indicate that summer thinning is better than winter thinning for two reasons. First, the stumps have fewer sprouts. Second, the surviving sprouts are about half the size of those from the stumps of trees cut in the winter. Thus, thinning during the summer more effectively achieves the purposes of thinning in hybrid poplar plantations.

--HAROLD F. FORD and ALBERT G. SNOW, JR.

Virginia Pine-Hardwoods Research Center
Northeastern Forest Experiment Station
Forest Service, U.S. Dept. Agriculture