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Do Thinning And Prescribed Burning Affect The Growth Of Shortleaf Pine?

In January 1946 a small study of thinning and prescribed burning was started in an old-field stand mostly of shortleaf pines about 38 years old. The stand is located on private land in Salem County, N. J.

Four $\frac{1}{4}$-acre plots were used in the study. On two of the plots a low thinning was made, removing 282 pines 2 to 7 inches d.b.h. per acre. These amounted to 34 percent of the original number of pines, or 20 percent of the basal area. In volume the cut amounted to 6.2 cords per acre in pines 4 inches and larger.

After the thinning, there were 271 pines 4 to 11 inches d.b.h. left on the thinned plots. On the unthinned plots there were 403 pines 2 to 10 inches d.b.h.

During the 8 years after the thinning, two of the plots were prescribe-burned three times. One of these plots had been thinned before burning; the other had not. Thus each of the four plots has had a different treatment.

Thinning greatly reduced mortality during the 8 years after treatment. On the thinned plots 9.4 to 9.7 percent of the pines died during that period; on the unthinned plots 32.5 to 33 percent died. Thinning also increased the net volume growth of the pine overstory during this period. Net growth was 2.2 to 2.4 cords per acre more on the thinned plots.

Of course net growth is influenced by the amount of mortality, as are changes in the diameter of the average tree. The average living tree on the unthinned plots increased 0.4 to 0.5 inch more in diameter in the 8-year period than the average tree on the thinned plots. (Possibly all of this computed difference is because more small trees died, leaving the larger trees to be averaged on the unthinned plots.)

But for practical purposes, thinning--if it is to do more than remove trees that will soon die--should affect the growth of the future crop trees. To find out if it did, diameter and volume growth were computed for the 75 largest trees on each plot. In diameter growth (computed to the

Table 1.--Growth on 75 largest pine trees per plot during 8-year period

Plot treatment	Diameter per tree	Basal area per acre	Volume per acre	
	Inches	Sq.ft.	Cu.ft.	Cords
Unthinned, unburned	0.5	11.7	461	5.5
Unthinned, burned	.6	13.7	514	6.2
Thinned, unburned	.5	11.0	436	5.4
Thinned, burned	.6	12.7	509	6.1

nearest 1/10 inch), thinning did not affect these trees at all (table 1). In basal area, cubic feet, and cords the growth of these trees was slightly less on the thinned plots.

In contrast, prescribed burning did favor both net growth of all pines and the growth of the largest pines. Net growth of all pines on the prescribe-burned plots was 1.0 to 1.2 cords per acre more than on the unburned plots. When only the 75 largest pines per plot are considered, the diameter growth per tree was 0.1 inch more on the burned plots; volume growth was 0.7 cord per acre more on the burned plots.

While the effect of prescribed burning was quite comparable for the two pairs of plots used in this study, further confirmation of this effect is needed before it can be accepted as universally true for the old-field pine stands of southern New Jersey. Such confirmation may be obtained within a few years from a more thorough study that has been started recently in sapling-pole pine stands.

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