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GROWTH OF POLE-SIZE PONDEROSA ON CUTOVER LAND IN RELATION TO SELECTION OF TREES FOR PRUNING

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The expected growth of pole-size^{2/} ponderosa pine on cutover land should be considered in selecting those trees which will grow fast enough in the future to warrant investment in pruning. This consideration is especially important because most pruning work is done within 2 or 3 years after cutting and before the release effect of cutting is evident on reserved trees.

A study on the Fremont National Forest has shown that diameter growth of pole-size ponderosa pine more than doubled following partial cutting of old-growth trees, and that average increase in growth was sufficient to warrant pruning (table 1).^{3/} However, there is a wide variation in response to release by individual trees which must be considered when selecting trees for pruning.

Three representative sale areas on the Fremont National Forest, Lake County, Oregon, were studied where 50 to 60 percent of the original merchantable volume had been removed 12 to 22 years ago. All

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^{2/} The pole-size trees in this study ranged from 6 to 14 inches d. b. h.

^{3/} Present U. S. Forest Service Region 6 guides indicate that the number of annual growth rings should not exceed 10 or 12 to the inch to justify investment in pruning.

three sale areas were in the ponderosa pine type, with some white fir in mixture on north slopes. Site index^{4/} averaged about 76 with variations from 71 to 84. On each area, pole-size trees were selected at random for measurement. Diameter growth in annual rings per inch was measured on increment cores for the period since cutting and for a like period before cutting.

Table 1. -- Growth expressed in annual rings per inch before and after cutting on three sale areas on the Fremont National Forest

Sale area and date of cutting	Samples taken	Growth in rings per inch		Percentage increase after cutting
		Before cutting	After cutting	
Dent Creek, 1937	43	19.5	9.4	107
Westside, 1930-32	43	18.9	10.5	80
Thomas Creek, 1941	37	21.4	9.4	128
Total and weighted averages	123	19.9	9.8	103

Although average diameter growth doubled following cutting, there was a large variation between individual trees. Those growing slowest before cutting usually showed the greatest percentage increase in growth following cutting. Some increased as much as eight times. All but four trees showed some increase.

An attempt was also made to relate growth response of individual pole-size trees to amount of release by cutting. Total basal area of all stumps within 40 feet of each selected tree was divided by the sum of the distances (feet) between stumps and tree. Analysis of this proposed "release index" showed that on the average the growth response was greater when the index was higher. Because of the wide variation, however, it was not reliable as a guide for selecting those individual trees which respond most to release. It was evident that other factors, not included in this study, had more influence on the growth of an individual released tree than the proposed index.

However, where average growth of poles is expected to be adequate following cutting, a trained forester should be able to select the most promising trees with fairly good assurance. He should of course weigh such factors as dominance, stand density, site, and amount of release expected. In the meantime, more studies should be made to provide more reliable guides for selecting trees to prune.

4/ Meyer, Walter H. Yield of even-aged stands of ponderosa pine. U. S. Dept. Agr. Tech. Bull. 630, 59 pp. 1938.