THE FUTURE OF PRECOMMERCIAL THINNING

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The preceding panel members have indicated current objectives and methods of precommercial thinning programs and discussed future plans for their respective organizations. In summary, the major objective of precommercial thinning is to increase merchantable yields by concentrating productivity of the site into fewer stems per acre. Earlier control of growing stock and merchantable yield increases can also be achieved by initial plantation spacing. This is demonstrated at the Wind River Spacing Test in Douglas-fir, where various spacings between 4x4 feet and 12x12 feet are tested. By age 43, total volume (all trees with a diameter breast height of at least 7.6 inches and stem length to a 6-inch top diameter) was less than 300 cubic feet per acre in spacings 5x5 feet or closer and over 3,000 cubic feet in spacings 10x10 feet or wider. Evidence from this spacing test and several precommercial thinning studies in Douglas-fir suggests that we can increase gross yields as well as merchantable yields above those anticipated from normal, unmanaged stands.

There are many acres of greatly overstocked stands of Douglas-fir—and probably ponderosa pine—where precommercial thinning with the usual power saws or hand-applied chemicals is prohibitive. For example, costs of precommercially thinning 70-year-old stands having 20,000 to 40,000 stems per acre on the Quilcene Ranger District were $300 to $500 per acre depending on the number of small hemlock trees removed. When such stands are left unthinned, they rarely produce much, if any, merchantable yield during 60- to 80-year rotations. Experimental evidence indicates that these same overstocked stands do respond rapidly and significantly to fertilizers. During the 7 years after treatment, response to fertilizers exceeded the response to thinning. There is some experimental evidence, first reported by the University of Washington and subsequently confirmed by other researchers, that application of fertilizers increased the rate of natural mortality in Douglas-fir stands. We are currently testing to find out if this fertilizer-induced thinning can be accomplished in Douglas-fir stands having an admixture of shade-tolerant western hemlock.

The increases in growth resulting from a combined precommercial thinning and fertilizing treatment are particularly encouraging. Current evidence from a range of site qualities suggests that the effects of the combined treatments exceed the additive effects of either treatment applied alone. For example, 6-year volume growth data from Weyerhaeuser Company's Fuller Hill experiment on Site I supports the hypothesis that fertilizer applied to heavily thinned Douglas-fir stands will provide more additional volume growth than when applied to lightly or unthinned stands.
Finally, prescribed stocking levels for thinned stands may have to be increased if fertilizers are applied. Current stocking levels commonly prescribe a denser residual stand on higher quality sites than on lower quality sites for a given age. Since the net effect of fertilizer is to increase site productivity and thus site index, perhaps some upward adjustment of these recommended figures is necessary.

The need for greater wood production is evident. This production can be met, in part, through precommercial thinning. The prescribed intelligent use of fertilizers alone or especially in combination with thinning is another compatible and effective means for increasing forest production.