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GROWTH OF DOUGLAS-FIR SEEDLINGS AFTER SLASH BURNING

By

Robert F. Tarrant and Ernest Wright

An understanding of the ways slash burning may affect seedling growth is important in evaluating present slash-disposal practices. Some observations of early seedling development after slash burning are now available from a recent exploratory study.

Natural Douglas-fir seedlings growing on unburned, lightly burned, and severely burned soils ¹/₃ were dug and their height and root length measured. Seedlings were collected on two widely separated areas that had been clear cut and broadcast burned. One was at Big Butte, on the Gifford Pinchot National Forest in southeast Washington. The second was on the H. J. Andrews Experimental Forest in the Oregon Cascades. Altogether, 419 seedlings including both 1- and 2-year-old trees were measured. The sample for severely burned soils was relatively small because only a very small portion of the two slash-burned areas could be classed as severely burned. The soil at Big Butte is a clay loam derived from mixed andesitic and agglomerate rock, while that at the H. J. Andrews Experimental Forest is a sandy clay loam derived principally from andesitic rock.

¹/₃ These 3 degrees of burn are defined in an earlier publication "Effect of slash burning on soil pH," by Robert F. Tarrant. Pacific Northwest Forest and Range Experiment Station, Research Note No. 102, 5 pp. 1954.

Average height and root length of 1- and 2-year-old seedlings growing on soils of three degrees of burn are shown in figure 1. On the H. J. Andrews Experimental Forest, seedlings differed little in average height and root length; none of the differences were statistically significant. On the Big Butte area, differences in seedling growth among the three degrees of burn are more pronounced. However, statistical tests showed that differences were significant in only 2 of 12 possible comparisons. For 1-year-old seedlings at Big Butte, height growth was significantly greater on severely burned than on unburned soil. For 2-year-old seedlings at Big Butte, height growth was significantly greater on lightly burned than on unburned soil. The reason for these differences is unknown.

Although the findings are not considered conclusive, they strongly indicate that for the two areas studied growth of young Douglas-fir seedlings under field conditions was not inhibited by slash burning. In making this statement, we emphasize that the data do not cover possible effects of slash burning on germination, seedling survival, and seedling growth after the first 2 years. These effects, which could be equally important, are the subject of a more intensive study currently under way.

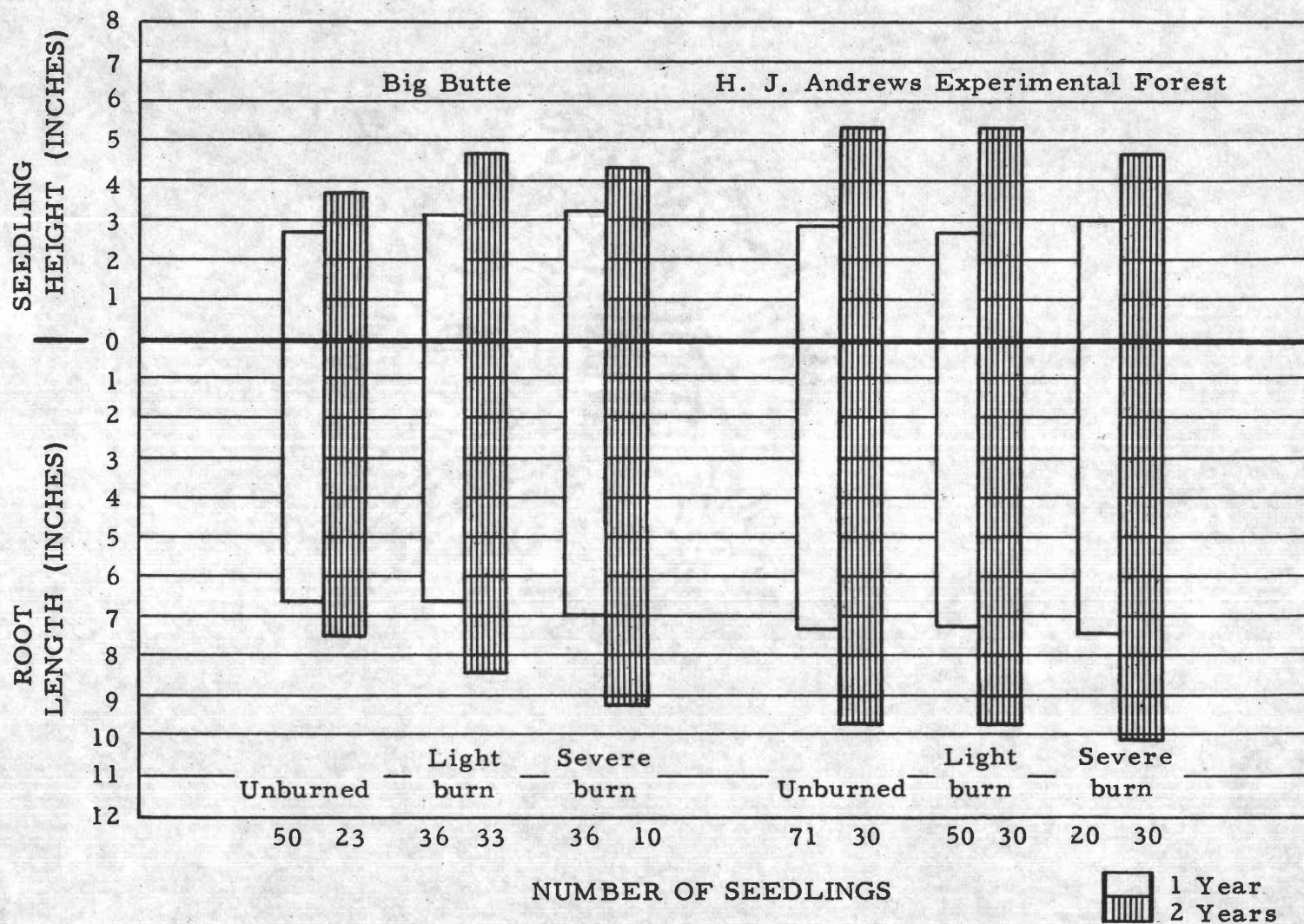


Figure 1.--Average height and root growth of natural Douglas-fir seedlings after slash burning.