AN ABSTRACT OF THE THESIS OF

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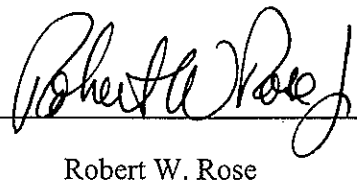
Title: Temporal Effect of Vegetation Management on Growth and Wood Quality of Conifers in a Western Oregon Plantation.

Abstract approved:



Robert W. Rose

Concern over the increasing proportion of juvenile wood grown in second-growth plantations has led to a large amount of research on the effects of common silvicultural practices on wood quality. Lacking is research on the effect of timing and duration of vegetation control on wood quality near the pith of young trees. This study was designed to quantify differences in specific gravity, ring width, percent latewood, biomass increment and eight-year diameter growth of Douglas-fir seedlings among different vegetation control regimes applied over the first five years of stand establishment. Largest year-eight volumes were observed in plots having five consecutive years of vegetation control, resulting in 239% more volume than control plots with no vegetation control. Mean specific gravity values ranged from 0.41 to 0.45 in rings 3, 4, and 5 from the pith and from 0.37 to 0.41 in rings 6, 7, and 8, with no significant treatment effect. Average ring width increased with increasing years of

vegetation control for both ring segments, reaching consistent lengths of approximately 30 mm after three years of initial treatment. Percent latewood decreased with increasing years of vegetation control, ranging from 3.73% to11.13% in rings 3, 4, and 5. No significant treatment effect was observed for percent latewood in rings 6, 7, and 8, indicating consistent ring width production over time. Biomass increment was significantly affected by treatment, increasing by a maximum of 376% with increasing intensity of vegetation control. The lack of significant differences in specific gravity among treatments and the significant gains in volume and biomass from a greater intensity of vegetation control suggests a lack of adverse impacts on wood quality. Future silvicultural treatment and age at the time of harvest will likely have a more significant influence on the end-use quality of the wood.