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PONDEROSA PINE GROWTH RESPONSE ON A CALIFORNIA DIVISION OF FORESTRY FUELBREAK

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A growth study was established on a 6-year-old California Division of Forestry fuelbreak on Boggs Mountain State Forest to determine ponderosa pine growth response to release from dense brush understory and pine competition.

The study area was a typical California Division of Forestry fuelbreak along forest access roads in dense 15-year-old brush (primarily manzanita) and ponderosa pine reproduction. The brush was 4-8 feet high, and dominant pine reproduction averaged 15 feet high and 4 inches DBH at the time of fuelbreak construction in 1965 (fig. 1). Indicated ponderosa pine timber site is Dunning Class I - 175.

All manzanita and associated brush in a 75 foot strip on each side of the road was hand cut by Conservation Camp Crews in the 1965 fuelbreak construction. Ponderosa pine reproduction was thinned to an average spacing of 10 x 10 feet (fig. 2). Leave trees were pruned, but not more than 1/4 of the live crown was removed from any tree. Brush seedlings and sprouts were spot treated with foliar applied brush killer in 1969.

Leave trees were subjected to very little brush regrowth competition during the post fuelbreak construction growth study period. However, a perennial bunchgrass (*Stipa*) cover developed on portions of the cleared fuelbreak, constituting some degree of soil moisture competition for pine leave trees.

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Fig. 1. Brush with interspersed pine saplings before treatment.



Fig. 2. Pine leaf trees after brush removal.

GROWTH ANALYSIS

In 1971, a 5-year growth analysis was made on 92 released dominant ponderosa pine leaf trees on the fuelbreak and compared with growth of 92 dominant ponderosa pine control trees still growing in competition with dense brush and codominant pine reproduction adjacent to the fuelbreak. Four-tree groups within and outside the fuelbreaks were paired and replicated 23 times in a paired plot design.

Five year diameter growth of released trees on the fuelbreak was 38-1/2 percent greater than diameter growth of control trees adjacent to the fuelbreak. Average 5-year diameter growth of released trees was 1.8 inches compared with 1.3 inches for control trees. Only one released 4-tree group out of 23 sample groups failed to outgrow its paired control group in diameter. Five year height growth of released trees on the fuelbreak was 1.6 percent greater than height growth of unreleased control trees. Average height growth of released trees for the 5-year period was 8.25 feet compared with 8.05 feet for control trees.

CONCLUSIONS

Removal of competing vegetation on fuelbreaks substantially increased ponderosa pine leaf tree diameter growth but had little effect on height growth in the first 6 years after release. Released fuelbreak leaf trees were noticeably more vigorous with higher live crown to total height ratios than unreleased control trees.

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