

ABSTRACT

Volumes of logging residue in pieces >1.5 inches diameter and >4 feet long produced from an intermediate harvest that removed 40% of the basal area of a mature second growth coast redwood stand were examined. Residue production from cable and tractor yarding sites was also compared. Cable logging produced 844 cubic feet of residue per acre while tractor logging produced 554 cubic feet per acre. This low residue volume is uneconomical for building material or fuel with present market prices.

INTRODUCTION

With building materials and energy sources at a premium, alternative sources are constantly in demand. Residue such as limbs, bark, tops, and broken pieces left in the forest after timber harvesting has recently been considered as possible material to meet some resource needs (Grantham and Howard 1980). Forest land managers are also interested in this residue because it affects wildlife habitat, restricts access to stands, increases wildfire potential, diminishes aesthetics, and influences nutrient cycling.

Estimates of the quantity of residue left after harvesting are varied (Howard 1981a, 1981b), because of differences among stands, harvest systems (clear or partial cut), and yarding methods. Residue research in redwood stands has been conducted following harvesting of old growth forests (Boe 1967), but in recent years the majority of harvesting has been in second-growth stands less than 100 years old. Residue volumes from an intermediate harvest in a second-growth stand are presented with emphasis on current utilization potential.

STUDY SITE

The study site is located on the Jackson Demonstration State Forest in Mendocino County, California. The area, 5 miles inland from the Pacific Ocean at an average elevation of about 800 feet, is part of the Hare Creek drainage and totals 346 acres. Precipitation averages 50 inches annually, falling almost entirely as rain from November to April. Coastal fog also provides additional moisture during the summer.

Soils on the upper slopes are Van Damme clay loams (clayey, vermiculitic, isomesic typic tropohumults) and Tramway or Irmulco series (fine-loamy, mixed, isomesic, ultic tropodalfs) on the steeper side slopes (Soil Survey 1986). The site is very good for redwood/Douglas-fir forest.

Historically the area was dominated by old growth coast redwood (Sequoia sempervirens [D. Don] Endl.) with some Douglas-fir (Pseudotsuga menziesii [Mirb.] Franco), grand fir (Abies grandis [Dougl.] Lindl.), western hemlock (Tsuga heterophylla [Raf.] Sarg.), and an occasional Bishop pine (Pinus muricata D. Don). This drainage was first harvested about 90 years ago. The old growth forest was clearcut and logged with primitive equipment, then burned shortly afterward, leaving the site cleared of understory and smaller slash. Redwood regenerated naturally from sprouts and seed, while other conifers regenerated from seed alone. An occasional old growth tree, rejected by early loggers, also remained.

This second-growth stand was harvested in 1976. The harvest was designed to retain approximately 175 to 200 square feet per acre of basal area. This resulted in removing 45% of the 365 square feet per acre of conifer basal area in the unharvested