



Pacific Southwest Forest and Range 0.73  
Experiment Station - Berkeley, California  
Forest Service - U. S. Department of Agriculture

U. S. FOREST SERVICE RESEARCH NOTE PSW-N19 1963

COMPARATIVE SEED-TREE AND SELECTION HARVESTING COSTS  
IN YOUNG-GROWTH MIXED-CONIFER STANDS

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ABSTRACT: Little difference was found between yarding and felling costs in seed-tree and selection harvest cuts. The volume per acre logged was 23,800 board feet on the seed-tree compartments and 10,600 board feet on the selection compartments. For a comparable operation with this range of volumes, cutting method decisions should be based on factors other than logging costs.

Seed-tree and selection harvest cuts were made in 1962 at Challenge Experimental Forest, Yuba County, California, in cooperation with the Soper-Wheeler Company of Strawberry Valley, California. Cutting methods are described by Hall.<sup>1/</sup>

The mixed-conifer stands were established about 1875 and, before cutting, averaged 25,000 board feet per acre, Scribner rule.

Company felling and yarding costs were kept separately for each cutting method (table 1). Six seed-tree and two selection compartments were logged. Compartments averaged 34 acres each. Stand and logging conditions throughout the area were similar so that production and cost data are comparable.

<sup>1/</sup> Hall, Dale O. The effect of advance growth on ponderosa pine seedling mortality at Challenge Experimental Forest. U.S. Forest Serv. Res. Note PSW-8, 7 pp., illus. Pacific SW. Forest & Range Expt. Sta., Berkeley, Calif. 1963.

Table 1.--Company production and cost record

Production item	Seed-tree compartments	Selection compartments
<u>AREA DATA</u>		
Average volume <sup>1/</sup> per acre logged (bd. ft.)	23,800	10,600
Average log volume (bd. ft.)	339	355
<u>FELLING PRODUCTION</u>		
Volume per man-day (bd. ft.)	14,284	14,731
Volume per man-hour (bd. ft.)	1,786	1,841
Man-hours per M bd. ft. (hours)	0.56	0.54
<u>YARDING PRODUCTION</u>		
Volume per tractor-day (bd. ft.)	26,176	25,105
Volume per tractor-hour (bd. ft.)	3,272	3,138
Volume per man-hour (bd. ft.)	1,636	1,570
Tractor-hours per M bd. ft. (hours)	0.31	0.32
Man-hours per M bd. ft. (hours)	0.61	0.64
<u>PRODUCTION COSTS PER M BD. FT.</u>		
Felling (dollars)	\$3.71	\$3.71
Yarding (dollars)		
Labor cost (dollars)	\$2.20	\$2.29
Tractor cost (dollars)	<u>2.29</u>	<u>2.39</u>
Total yarding cost (dollars)	<u>\$4.49</u>	<u>\$4.68</u>
Total cost, felling and yarding (dollars)	\$8.20	\$8.39

<sup>1/</sup> All volumes are net log scale, Scribner rule.

One man performed all felling operations on a given tree (i.e., felling, limbing, bucking, and lopping). A few snags were also felled and are included in the data. Fallers worked at a negotiated "gyppo" rate of \$3.00 per M bd. ft. (thousand board feet), net log scale, Scribner rule. Company payroll expenses for unemployment compensation, Social Security, workmen's compensation and health insurance, holiday pay, bonus (in lieu of vacation), and overtime premium increased this cost to \$3.71 per M bd. ft. The use of these contract rates precludes separation of fixed and variable costs for the felling operations.

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Defect amounted to 2.3 percent of the gross volume trucked to the mill. The minimum log was 8 feet long and 10 inches in diameter inside bark at the small end.

A Caterpillar D-7D tractor and an International TD-20 tractor (113 drawbar horsepower) were used for yarding. Logs were ground skidded an average of 550 feet. Slopes rarely exceeded 20 percent. A skidding crew consisted of the tractor operator and a choker-setter. The tractor-use rate was \$7.50 per hour, including fixed and variable charges. Basic hourly wage rates were \$2.75 for tractor operators and \$2.60 for choker-setters. Additional Company payroll expenses, as for fallers, increased these hourly rates to \$3.70 and \$3.50, respectively.

Cost differences between seed-tree and selection cuts were small and could well have been caused by variations in terrain or similar factors. The volume per acre logged, over a range of 10 M to 24 M bd. ft., had little effect upon felling and yarding costs. Hence, the decision to use a seed-tree or selection cutting method for a comparable operation should be based on silvicultural or management objectives rather than on logging cost. The cost of returning to a cutting area should be considered, but, once a crew is there, the ability of cat-skinners and choker-setters exerts a greater influence on cost than volume per acre removed.

Average log or tree size will greatly affect logging cost. Data to evaluate size factors were collected in conjunction with this study and will be reported in a future paper.