



## Clearcut Harvesting Costs and Production Rates for Young-Growth Mixed-Conifer Stands

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**ABSTRACT:** In clearcutting 90-year-old stands at the Challenge Experimental Forest, all merchantable trees greater than 12 inches d.b.h. were removed. Felling costs averaged \$3.86 and required 0.55 man-hours per M bd. ft. in cut volumes averaging 19,700 bd. ft. per acre. Yarding, at a rate of 0.54 hours per M bd. ft., cost \$4.42.

Timber harvesting at the Challenge Experimental Forest,<sup>1</sup> Yuba County, California, in 1965 consisted of a series of clearcuttings. This cutting method is one of several being tested there to determine the most efficient and economical method of harvesting and regenerating young-growth, mixed-

conifer forests. Earlier reports have dealt with logging production and costs in seed-tree and single-tree selection cuts<sup>2</sup> and in group-selection cuts.<sup>3</sup> As in those other studies, 90-year-old stands were cut in this experiment in cooperation with the Soper-Wheeler Company, of Strawberry Valley, California.

Five compartments, totaling 112 acres, were logged. All merchantable trees greater than 12 inches d.b.h. were removed. The cut volume averaged 19,700 board feet per acre (Scribner rule). Stand and logging conditions closely approximated those for the selection and seed-tree cuttings, with one exception--the intention in clearcutting was to clear the ground to prepare it for seeding. As a result, skidding progressed more rapidly because crews were not concerned with saving a residual stand. Yarding costs reflect this higher production.

Two fallers worked independently, that is, one man would fell, limb, buck and lop a given tree. A few snags also were felled and are included in the cost data. Fallers worked at a negotiated rate of \$3 per M bd. ft., net log scale (Scribner rule). Payroll expenses for unemployment compensation, social security, workmen's compensation, health insurance, holiday, and bonus (in lieu of vacation) increased this cost 28 percent to \$3.86 per M bd. ft.

<sup>1</sup>U.S. Forest Service research at the Challenge Experimental Forest is conducted in cooperation with the Soper-Wheeler Company, Strawberry Valley, Calif.

<sup>2</sup>Atkinson, William A., and Hall, Dale O. Comparative seed-tree and selection harvesting costs in young-growth, mixed-conifer stands. U.S. Forest Serv. Pacific SW. Forest & Range Exp. Sta., Berkeley, Calif. Res. Note PSW-N19, 3 pp. 1963.

<sup>3</sup>McDonald, Philip M. Logging costs and production rates for the group-selection cutting method. U.S. Forest Serv. Pacific SW. Forest & Range Exp. Sta., Berkeley, Calif. Res. Note PSW-59, 4 pp. 1965.

Defect amounted to 1.3 percent of the gross volume trucked to the mill. The minimum log was 10 feet long and 10 inches in diameter inside bark at the small end.

The yarding tractors were rated at a capacity of 113 drawbar horsepower. Logs were ground skidded an average of 500 feet on slopes that rarely exceeded 20 percent. The skidding crew consisted of a tractor operator and a choker-setter.

The tractor use-rate was \$8.55 per hour, including fixed and variable charges. Basic hourly wage rates were \$3.01 for tractor operators and \$2.80 for choker-setters. Additional payroll expenses, as described for fallers, increased these hourly rates 32 percent to \$3.97 and \$3.70, respectively.

Logging and production data, including costs, for the clearcuttings were as follows:

Area:	
Average volume <sup>1</sup> per acre logged (bd. ft.)	19,700
Average log volume (bd. ft.)	314
Felling production:	
Volume per man-day (bd. ft.)	14,632
Volume per man-hour (bd. ft.)	1,829
Man-hours per M bd. ft. (hours)	0.55
Yarding production:	
Volume per tractor day (bd. ft.)	29,341
Volume per tractor hour (bd. ft.)	3,668
Volume per man-hour (bd. ft.)	1,834
Tractor hours per M bd. ft. (hours)	0.27
Man-hours per M bd. ft. (hours)	0.54
Production costs per M bd. ft.: <sup>2</sup>	
Felling (dollars)	3.86
Yarding	
Labor cost (dollars)	2.09
Tractor cost (dollars)	<u>2.33</u>
Total yarding cost (dollars)	4.42
Total cost, felling and yarding (dollars)	<u>8.28</u>

<sup>1</sup>All volumes are netlog scale (Scribner rule).

<sup>2</sup>Soper-Wheeler Company costs in 1965, representing a 6.5 percent hourly labor increase and 14 percent hourly tractor use increase over those reported earlier (see footnotes 2,3).

Clearcutting production and costs for young-growth stands do not differ noticeably from those previously reported for the seed-tree and group-selection cutting methods. A detailed comparison of costs and production rates for all three cutting methods is planned. The influence of log and tree size on logging cost also will be reported in a future paper.

#### The Authors

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