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Introduction

For more than five years the Bureau of Business and Economic Research at the University of Montana-Missoula has been conducting an ongoing logging cost survey to characterize Montana and northern Idaho timber harvest costs.

Objectives

This study characterizes Montana and northern Idaho timber harvest costs by:

- Updating stump-to-loaded truck cost estimates for several timber harvest systems using expert opinion derived costs
- Quantifying costs for increases or decreases in fuel, labor, insurance, parts and other cost factors affecting harvest to a 2011 cost basis
- Quantifying the effects of tree size and skidding or yarding distances with a constant harvest volume per acre

Methods

A survey was mailed to over 400 independent logging contractors and timber harvesting companies in Montana and northern Idaho asking for cost estimates for several timber harvest systems. Contractors responding to the survey were offered continuing education credits through the Montana Logging Association or Idaho's Associated Logging Contractors Inc. Three scenarios- whole tree ground based (figure 1), whole tree cable/skyline based (figure 2), cut to length in woods processed (figure 3) were presented with a silvicultural/harvest prescription and participants were asked to prepare a cost estimate or bid for each scenario (Table 1).

Table 1. Variables used to determine 2011 costs included:

Average skidding distance	600 feet
Average yarding distance	800 feet
Average forwarding distance	1000 feet
Average DBH removed	13 inches
Trees per acre removed	42 (partial cut)
Cubic foot volume of average tree	24
Volume removed per acre	1,000 ft ³ (30 green tons)
Overall harvest acres treated	40-80 acres

Literature Cited:

Keegan, C.E., and J. Halbrook. Harvest Cost, Employment and Labor Income Estimates for Montana's Forest Products Industry. 2006. Missoula, MT: The University of Montana, Bureau of Business and Economic Research.
Keegan, C.E., M.J. Niccolucci, C.E. Fiedler, J.G. Jones and R.W. Regel. 2002. Harvest Costs Collection Approaches and Associated Equations For Restoration Treatments On National Forests. Forest Prod. J. 52(7/8): 96-99.

Figure 1. Ground Based System

	\$ /Green Ton		\$ /MBF	
	2006	2009	2011	
Feller-buncher	\$6.70	\$6.65	\$6.52	\$40
Skidding 600'	\$4.80	\$5.37	\$4.92	\$31
Skidding 1,200'	N/A	\$7.29	\$6.07	\$38
Skidding 1,800'	N/A	\$9.18	\$7.19	\$45
Processing	\$6.30	\$6.39	\$6.06	\$38
Loading	\$3.60	\$3.20	\$3.40	\$21
Administration	\$1.30	\$1.34	\$1.29	\$8
Total	\$22.70	\$22.87	\$22.18	\$138



Figure 2. Cable System

	\$ /Green Ton		\$ /MBF	
	2006	2009	2011	
Hand-Felling	\$4.30	\$4.72	\$4.59	\$29
Yarding 800'	\$20.80	\$21.08	\$21.90	\$136
Yarding 1,600'	N/A	\$25.81	\$27.03	\$168
Yarding 2,000'	N/A	\$30.14	\$30.87	\$191
Processing	\$6.20	\$6.68	\$6.45	\$40
Loading	\$3.10	\$3.33	\$3.28	\$20
Administration	\$1.80	\$1.79	\$1.60	\$10
Total	\$36.20	\$37.60	\$37.81	\$235

Figure 3. Cut-to-length System

	\$ /Green Ton		\$ /MBF	
	2006	2009	2011	
Harvester	\$13.00	\$13.25	\$12.26	\$78
Forwarding 1,000'	\$9.48	\$9.61	\$8.67	\$54
Forwarding 2,000'	N/A	\$14.40	\$11.01	\$68
Forwarding 3,000'	N/A	\$17.81	\$14.69	\$91
Loading	\$3.50	\$3.50	\$3.60	\$22
Administration	\$1.50	\$1.50	\$1.28	\$8
Total	\$27.48	\$27.86	\$25.81	\$162



RESULTS

• 2011 reported stump to loaded truck costs ranged from \$22 per green ton for ground based systems employing whole tree skidding to nearly \$26 for cut to length and \$38 for cable systems based on Table 1 harvest characteristics.

• Results indicate that smaller-diameter trees and longer skidding/yarding distances tend to increase costs and that cable systems are generally more expensive than ground-based systems.

• 2011 reported logging costs were lower than previous survey based costs despite higher fuel costs.

• Lower harvesting costs are due primarily to attempts by loggers to continue operating in poor economic conditions.

• Loggers feel "The 2009/2011 rates are not sustainable and contractors are bidding to maintain a viable core business & crew at minimal profit levels."

• Because of the survey's simplicity and repeatability, results can be compared with previous (Keegan et al. 1995, 2002) and future cost surveys to examine the impacts through time of changing fuel costs, harvest characteristics, or other items of interest.

SURVEY RESPONSE COMMENTS

•... more down time from running older equipment. Depressed log values and high competition for work is forcing lower pay, does not adequately save for equipment upgrades, finding skilled operators a major concern. Need market recovery soon!

•Overall rates/costs are too low, especially with the cost of fuel and parts going up.

•Changes in fuel costs affect logging costs directly, 10% change in fuel = 2.5% change in logging costs.

•Sometimes there are a number of overlooked conditions that have more effect on expenses vs. production than the obvious ones of TPA/diameter/distance.

•Political policy and federal regulation has sent this industry into a deliberate yet totally unnecessary tailspin-shame-shame-shame!

• We have been operating without profit margins and are not able to attract the quality of employee we need with the wages, benefits and work security that we offer. We are trying to fill the slots with less qualified men to run our more advanced-computerized machines.