



The Woodland Workbook

Logging

Timber Harvesting Options

Timber harvesting methods are complex, and there is a need for general information, particularly on the performance of different types of yarding systems. You may find this general information of value as an introduction to more intensive examination of timber harvesting options.

To meet this educational need, the Forest Engineering Program has developed a slide-tape program and two Extension publications. This circular is to accompany the slide-tape, titled *Timber Harvesting Options*. This circular, by itself, provides a useful summary of the performance of yarding systems in several categories if certain qualifications are recognized. (The other publication, EC 956, *Logging Woodland Properties: A Worksheet for Landowners*, also can be used with the slide-tape.)

All of these are available at county Extension offices or from the Forestry Media Center, School of Forestry, Oregon State University, Corvallis 97331.

This circular is simply a general comparison of yarding systems for those who are not familiar with timber harvesting. See table 1. In most cases, characteristics of the harvest site, such as terrain and timber type, will have the most influence in determining the appropriate type of yarding system.



The performance categories listed in table 1 have a significant influence when comparing the feasibility of different yarding systems. However, these are not the only performance categories to consider when matching yarding systems to particular logging needs.

The comparisons within each category are general and will not be meaningful for some situations. For example, the production potential of several yarding systems is described as low, medium, high, and very high—yet, under certain circumstances, skyline yarding will outproduce tractors and wheeled skidders. Within a performance category, there will also be overlap between the descriptors of low, medium, high, and very high.

The costs of production for yarding may range from \$15 to \$200 per thousand board feet of timber produced, but the cost range of \$50 to \$150 per thousand board feet includes almost all yarding systems under some conditions.

Furthermore, exact specifications of limits such as 35- to 45-percent topography limits are only guidelines; some tractors or wheeled skidders are capable of operating on steeper slopes. These specifications serve only as caution indicators within a category.

You may address your questions to your county Extension office or to the Extension timber harvesting specialist, 221 Peavy Hall, Oregon State University, Corvallis 97331.

This publication was prepared by John Garland, Extension logging methods specialist, Oregon State University. It is one of a series of publications being developed as an Extension Woodland Workbook. Your county Extension forestry agent has additional information.

Table 1.—General performance of various timber yarding systems

Performance categories	Horse	Tractors & wheeled skidders	Feller-bunchers tree processors	Cable & skyline	Balloon	Helicopter
Timber size capability	Small timber generally less than 24" DBH	Capable of handling all sizes in design range of machine	Small to medium timber less than 24" DBH	Medium to big timber; small timber in thinnings	Timber weight limit	Timber weight limit
Production potential	Low production	High production	High production possible	Medium to high production	Medium to high production; winds over 25 knots limit operability	Very high production but weather restricts operability
Costs of production	Low	Low	Low to medium	Medium to high	High	Very high
Limits on silvicultural system	None	None	Thinning in rows or strips possible	Generally clearcuts; partial cuts possible	Suited to clearcuts; experimental in partial cuts	No limitations
Topography limits	Gentle; occasional short, steep pitches over 50%; downhill yarding preferred	Up to 35-45% Downhill yarding preferred	Up to 30%	Deflection necessary but suited to steep slopes	Adaptable to topography within limits	No limits
Road access requirement	Haul road close to skid road (300-500' desirable)	Long skid distances feasible but not economical	Medium distances from haul road up to 1,500'	High lead logging 1,500' approaching maximum yarding distance—some skylines operational at 5,000'	About 5,000' limit	No limit except by economy
Stream protection	Generally excellent with proper practices	Can be excellent depending on proximity to stream & practices; crossings need preparation	Good with proper practices; stream crossings need preparation	High lead poor if logging across streams, otherwise good; skylines can lift log free of streams	Capable of lifting logs free of streams; large landings near streams are problems	Excellent protection
Site disturbance	Minimum disturbance; little slash handling capability; small landings 50' diameter	Medium to high disturbance; soil compaction potential; damage to residual stand possible; slash handling possible; medium landings approximately 75' diameter	Medium to high disturbance; soil compaction potential; damage to residual stand possible; slash handling possible; medium landings approximately 75' diameter	Minimum to medium disturbance possible with proper practices; slash handling possible; may damage residual stand in partial cuts; medium landings; about 75' diameter	Minimum disturbance; slash handling a problem; requires 100' diameter landing + 200' diameter tie down area	Minimum disturbance; slash handling a problem; requires 100' diameter landing + 50' x 100' setdown/maintenance area
Availability	Depends on local area	Common usage by most contractors	Limited to areas in state with suitable terrain; few contractors available	Common use in western Oregon's steep slopes; increasing use east of Cascades	Few contractors available	Few contractors available

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