

Chapter 1

Overview of winch-assist ground-based harvesting



In this chapter you will find out:

- ✓ What is winch-assist harvesting.
- ✓ Why use winch-assist systems.

What is a winch-assisted harvesting system?

Winch-assist is a ground-based harvesting system that uses wire rope(s) attached to a machine to operate in a broader range of conditions, often on steeper slopes. A common New Zealand use of winch-assist is steep slope felling or shovelling with a tracked excavator. However, a range of other machines can be successfully winch-assisted including skidders and forwarders. Winch-assist is often called cable-assist or tethered.

The Best Practice Guide uses the term winch-assist because it is in the Approved Code of Practice for Health and Safety in Forest Operations (ACOP). The term traction aid, also widely used, has an important difference from winch-assist. Traction aid uses a rope to support a machine capable of operating on the slope, but winch-assist gives access to terrain that could not otherwise be operated without the support of a winch and wire rope.



Why use winch-assisted harvesting?

A big drive has been to improve safety, productivity, operational flexibility, and forest owner returns. There is a global trend toward more mechanised harvesting systems. Winch-assist is specifically designed to extend the operating range of machines on steep slopes.

Safety

An initial driver for winch-assisted harvesting systems was to improve felling safety. Machines protect workers from many of the risks associated with manual felling. The forest industry has invested heavily in mechanisation, and winch-assist technology has been encouraged by forest companies. WorkSafe's position on new technology is that companies should adopt it when it better manages risk. The move to winch-assist has been an important safety step to protect workers through new technology.

Cost and Productivity

On average, cable logging is more expensive than ground-based operations. Winch-assisted harvesting increases the operating range of ground-based machinery. It can also be used to support cable logging operation through mechanised directional felling for extraction, bunching and shovelling. Through careful planning, it can reduce infrastructure costs like roading, landing number and size.

However, there's a significant capital investment and higher operating costs associated with winch-assist harvesting over other ground base operations.

The supporting winch-assist machine may not always be required and often needs to be relocated, so their utilization is likely lower than other machinery on a harvesting site. When done effectively, there's substantial productivity improvements and financial benefits.

Environment

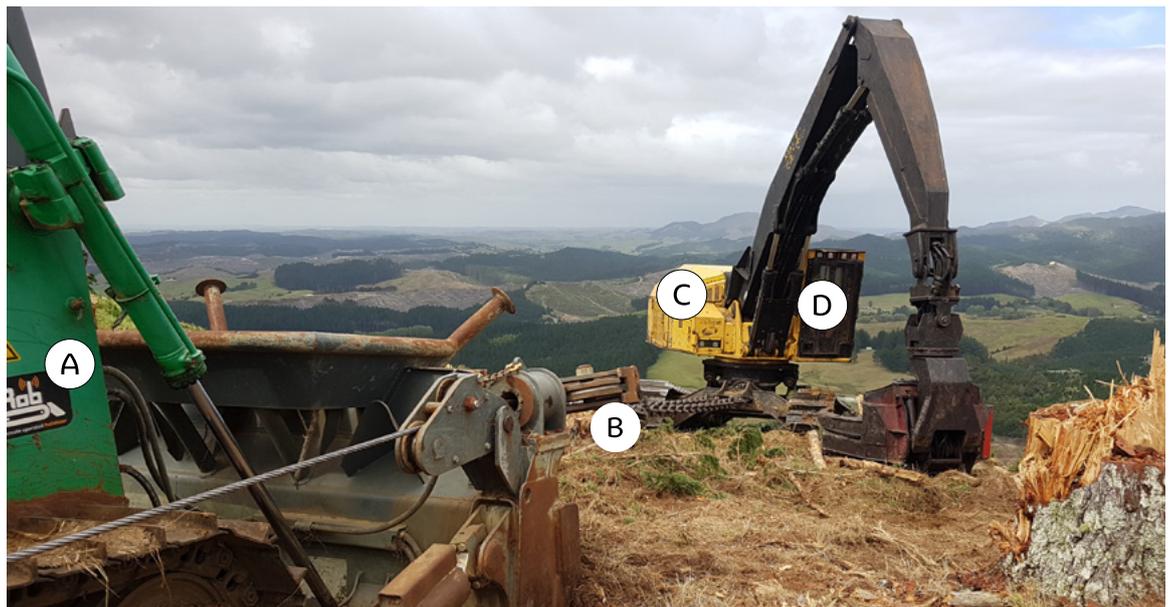
There can be environmental benefits, but this depends on the site and its management. Winch-assist improves machine traction, and with good operators and site conditions, deep soil disturbance is often significantly less than operating machinery without winch-assist support. Where cable assist replaces cable logging, less roading and landing earthworks may be required.

However, winch-assist allows harvesting machinery to operate on steeper slopes where previously no machine could have worked. Machines have a higher level of soil disturbance and compaction compared to manual felling. However, soil type and weather conditions, and operator skill play a big part in getting a light environmental footprint.

System parts

Irrespective of whether you are using the winch-assist system to fell, skid, shovel or forward, there are four essential parts. These are the:

1. Operator.
2. Steep Slope Harvesting (SSH) machine.
3. Winch on the harvesting machine or an anchor machine.
4. Rigging.



A Winch anchor machine

B Rigging

C Steep Slope Harvesting (SSH) machine

D The operator