

Technical Reports

BC Coastal Forest Sector Hem-Fir Initiative

Opportunities to Minimize Value Losses from Falling Breakage in Old-Growth Hemlock Stands

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Abstract

FPInnovations collected information about tree dimensions and locations of breaks on 158 hand fallen trees on three old-growth cut blocks in the Port Alberni area of coastal British Columbia. FPInnovations' NCCruise software program was used to establish the value of each tree by calculating the logs that can be cut after breakage occurred, based on the log sorts and values supplied by the industrial cooperator.

Starting from a bench mark of the value that can be manufactured from intact trees, log values were generated and compared using three manufacturing strategies on the broken stems:

- Conventional fell-and-buck operation, where fallers/buckermen manufacture logs according to bucking instructions outlined on a typical faller's bucking card;
- Modified fell-and buck operation, where fallers manufacture large stems into logs and smaller-diameter stems into long stem sections that are transported to dryland sort yards and re-manufactured into best-value log combinations; and
- Intensive Quality Control log manufacturing at harvesting site, where the stems are manufactured by specialized buckermen to best-value log combination under the supervision of Quality Control personal.

Most stems had broken at one or more places along the merchantable stem. The stem section below the first break accounted for about 70% of the total merchantable tree volume and 80 – 85% of the total tree value. Although multiple breaks occurred on some stems, the location of the first break has the main impact on value because most sections above the first break would only be manufactured to lower-quality sawlogs and pulpwood logs.

Intensive quality control had the highest projected value of the three manufacturing strategies, and generated about \$3/m³ more revenue than the conventional fell-and-buck operation. Some value losses resulted from the loss of merchantable volume around the stem breaks, but value losses were not proportional to volume losses caused by trim mistakes. Most of the difference in value losses between the strategies resulted from additional bucking options (i.e. log sorts or lengths) that provide log combinations yielding higher value for the whole stem.

The report also examined and quantified the potential to improve log value recovery by:

- Reducing the overlength tolerance for preferred log lengths (\$0.13/m³ – \$0.34/m³);
- Improving the diameter-measurement accuracy at the point of bucking (\$0.77/m³ - \$1.54/m³); and
- Allowing more preferred log lengths than the 4-m multiples that were generally employed (\$0.59/m³).

Keywords: falling breakage, manual falling, log value, hemlock, old-growth

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