

ASSESSING THE FEASIBILITY AND PROFITABILITY OF CUT-TO-LENGTH HARVESTS IN EASTERN HARDWOODS

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Cut-to-length (CTL) logging applications are becoming more popular in hardwood forests. CTL harvesting causes much less damage to the residual stand than conventional harvesting because logs and trees are not pulled through the stand and trees can be felled directionally. Because delimiting occurs in front of the harvester, limbs and slash are used as a mat upon which the machine travels. As a result, soil disturbance and compaction are minimized. Also, working conditions are safer with CTL versus conventional harvesting, and the CTL harvester holds an important advantage over the rubber-tired system in areas where there is a shortage of woods workers. The greatest disadvantage is that initial investments are higher for CTL harvesting than for the conventional operations that use chainsaws and cable skidders. Using data from our own field time and motion studies on small and large CTL machines operating in New England, Forest Inventory and Analysis (FIA) stand-level plot data from Vermont, New Hampshire, and Maine, and prices for delivered sawlogs and pulpwood for this region, we conducted a profitability assessment for CTL operations in Eastern hardwood forests. The FIA plots selected represent 5,242,142 acres. Of this total, it is profitable to log 4,531,247 (86.4%) and 4,000,986 (76.3%) acres with the small and large CTL systems, respectively. Delay-free results suggest that harvesting can be profitable with small CTL machines at a minimum tree size of 4.7 cubic feet (ft^3), and with large machines at a minimum tree size of 6.6 ft^3 . Average tree diameter at breast height (d.b.h.) should be 6.5 and 6.8 inches for small and large CTL machines, respectively. Where a mix of sawlogs and pulpwood is being handled, an average mix of 971.57 ft^3 of sawlogs and 1,140.97 ft^3 of pulpwood is needed for the small machine to be profitable. For the large machine, an average mix of 1,051.09 ft^3 of sawlogs and 1,146.73 ft^3 of pulpwood is required for a profitable operation. Results suggest that a substantial amount of eastern hardwoods can be harvested profitably with CTL technology, and that profitability can be increased substantially if CTL machines are matched to the size of trees harvested. Small CTL should not be used in stands in which the average tree dbh exceeds 14 inches. CTL methods are highly effective in thinning operations to reduce levels of forest fuels. These results should be valuable to loggers, landowners, consultants, and hardwood sawmills and pulp and paper industry in the eastern United States.