

MECHANIZED HARVESTING WITH ARTIFICIAL ANCHORING

The eucalyptus harvesting in steep slope terrain is quite expensive, mainly due to the difficulties to mechanize the operation. In some of these areas, it is not possible to work fully mechanized, so the harvest process is done partially mechanized and part manual, locally called semi-mechanized operation. In Fibria semi-mechanized process, trees are felled manually by chainsaws, extracted by winch and processed by a Harvester at the road. In current operations, semi-mechanized areas represents 10% of the forest base of Fibria Sao Paulo (Paraiba Valley Region), and 90% is harvested by CTL method, using purpose built machines. In areas from 0° to 27° of slope, machines operates with no winch assist. This area corresponds to 70% of the base. In areas from 28° to 35°, machines must work with traction winch assist, and represents 20% of the base. The main objective of this study was to evaluate, technical and economic feasibility, of using artificial anchors to maximize winch assist operation. Artificial anchoring consists in installing poles in predetermined places, instead of using remaining stumps, as did in the conventional anchoring system, making it possible to anchor the harvesting machines. The method showed feasible and allowed the mechanization of part of these areas, increasing the harvest mechanization percentage by 2%, around 792 ha in this region. It turned the mechanization index to 92% of the base, and decreased the total harvesting cost in 1.16% per cubic meter.

Keywords: Harvest; Winch traction assist; Artificial anchoring; Mechanization.

Application: Published abstract

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