

The cost calculators for sustainable procurement of logging residues, thinning wood and stumps for fuel

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Abstract:

Cost calculators for the procurement of thinning wood, delimbed longwood, industrial roundwood, logging residues and stumps for energy are gained from the several work and field studies. The main purpose of the forest fuel procurement cost calculators, developed in the Finnish Forest Research Institute (METLA), is to familiarize the user with the various ways different factors affect the cost of forest chip production within each working stage of the procurement system. The user can review, for instance, how changes in materials' heating value or in the productivity and hourly cost of machines influence the procurement cost of the whole system.

In the cost calculators forest chip procurement procedures are estimated at a stand level. The analysis of the supply chains starts with organizing the procurement activities, continuing to the harvesting and transportation and finally to delivering the forest fuels to the end users. The comparison includes each step of the procurement chain. Costs are expressed as either €/m³ (solid cubic meter) or €/MWh. Procurement chains are based on chipping at the roadside landing, in the terrain, at the terminal or at the end use facility.

In the logging residue chip and stump wood chip calculators the accumulation of logging residues and stump wood is derived from the collection of commercial timber. In the whole tree chip and the delimbed energy wood calculators the user can input the accumulation of energy wood per hectare and the medium volume of the harvested trees. To help the estimation of the medium volume of the harvested trees there is a separate cell, where the volume of different tree species, delimbed or as whole tree, can be calculated by the DBH and length.

The production of bioenergy from forest fuels is a growing trend in Europe. An increasing demand of forest fuels calls for means to transfer valuable research and development knowledge into practice.

Keywords: logging residues, stumps, thinning wood, procurement costs, decision support, solid wood fuels, chips

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