Contribution 43 in session “Fuelwood quality and moisture content management“

Precision Measurement of Forest Harvesting Residue Moisture Change and Dry Matter Losses by Constant Weight Monitoring

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The moisture content of forest wood chips is one of the most important quality factors for the rapidly growing bioenergy sector. Increased use of forest biomass for energy and rising transportation costs are forcing biomass suppliers towards better moisture content management in the supply chain. In the research on natural drying of forest biomass, numerous studies have been conducted based on traditional sampling of piles or weighing. The latest methodology for moisture change monitoring has been constant weighing of piles in racks built on load cells. Constant weight monitoring shows the drying of the biomass, but the monitoring can be disturbed by dry matter losses. The weight change is the sum of the water to be removed or added and the dry matter (mainly) removed from the pile by microbiological processes. The material, moisture, temperature, size and shape of the energy wood pile, amount of nutrients, and oxygen content of the pile all together, affect the microbial activity and degradation of energy wood. In this study, piles of logging residues were monitored for 36 to 85 weeks in Finnish climatic conditions. After 60 weeks of drying, a remarkable dry matter loss was observed in the logging residue piles.