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Fuelwood moisture content management through meteorological data based modelling

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Moisture management, through the whole supply chain, is the key element in improving the cost-efficiency of energy wood supply. Numerous studies have been done based on traditional sampling of piles or weighing. Constant weighing of piles in racks built on load cells has been the latest methodology for moisture change monitoring.

Aim of the paper was to develop a weather data based drying model for beech [*Fagus sylvatica* L.] and oak [*Quercus* spp.] logwood. A further, momentarily running, experiment addressed drying performance of beech only.

Metal racks on load cells were used to constantly weigh piles of beech and oak logwood from spring to autumn. The piles had a volume of 12 m³ and the average log was 15 cm thick and 4 m long. Weather data was recorded at a nearby meteorological station and used to develop daily step regression model predicting moisture content alteration related to meteorological data. An average accuracy ± 2 % in moisture content was achieved.

These models can help to improve the performance of the whole supply chain through tightening drying schedules due to exact knowledge about the current moisture content of a pile. Cost for sampling can be reduced for only sampling has to be carried out only in the beginning for starting moisture content and at the end, to check the calculated moisture content.