QUANTIFYING FUNGI IN LOGGING RESIDUES WITH REAL-TIME PCR

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ABSTRACT

Logging residues, branches and treetops after logging, were considered in the past as unsalable portions of the felled trees and remained on the landing. Currently, logging residues are harvested, stored in piles for variable time periods prior to being utilized as a bioenergy source. However, it is still unclear to what extent the colonization by decay fungi during outdoor storage impairs the fuel quality. Our objective was to find out whether the storage method influenced the amount of basidiomycetous fungi, the main wood degraders in logging residues.

We used fungal DNA quantification with real-time PCR as a novel approach in this field and related the amount of fungi to physical parameters in logging residues measured during the storage. We found that fungal DNA decreased with decreasing moisture in the logging residue over time, but increased with precipitation. Fungal colonization was higher in samples harvested in the spring than harvested during autumn. We also found more fungal DNA in *Pinus sylvestris* than in *Picea abies* logging residues and loose material had higher fungal colonization than bundles.

In conclusion, we show that quantification of fungal DNA is feasible in logging residues, providing accurate information not readily obtainable otherwise. The level of colonization of decay fungi detected using this sensitive method was minor, indicating low level of decay in the logging residues. Our findings indicate that the storage methods or duration of maximum 460 days did not significantly change the fuel quality of logging residues.

Key words: Basidiomycetes, fungal colonisation, forest slash, harvesting residues, wood decay.

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