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Mineralization of 13C glucose in three fine textured soils from the western boreal forest

C. E. Norris (1), S. A. Quideau (1), and D. E. Macey (2)

(1) Department of Renewable Resources, University of Alberta, Edmonton, Canada (charlotte.norris@ualberta.ca), (2) Pacific Forestry Centre, Canadian Forest Service, Natural Resources Canada, Victoria, Canada

Microbial composition is known, on similar soil types, to vary based on differing organic matter inputs, or stand composition. Dominating western upland boreal forests are fine textured soils with a canopy cover of aspen (Populus tremuloides Michx.), white spruce (Picea glauca (Moench) Voss or a mixture of the two. These soils then reflect different belowground biogeochemical processing of organic matter. Anthropogenic soils, formed from a combination of peat litter and fine textured mineral soil, are now also a part of the landscape in the western boreal. This study set out to determine if a simple labelled compound (13C glucose) was processed differently between soils from the two dominant stand types (aspen and spruce) and a soil from an anthropogenic (constructed) site. Results indicate that while all three soils rapidly incorporated, and respired, the labelled carbon each maintained a distinct microbial community structure (as evidenced by phospholipid fatty acid analysis) throughout the 300 hour experiment. Therefore soils with different microbial communities from varied organic matter inputs decompose organic carbon by different processes, even in the case of simple labile compounds.