Soil Organic Matter Chemistry in Undisturbed and Clearcut Boreal Mixedwoods. (S07-quideau160115-Poster)

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Abstract:

The Ecosystem Management Emulating Natural Disturbance (EMEND) Experiment was established in Alberta, Canada to identify which harvesting practices best emulate natural disturbance regimes in western boreal mixedwood forests. This large-scale replicated experiment allows comparison of soil organic matter processes under different cover types (ranging from white spruce dominated to aspen dominated) and under a decreasing gradient of canopy retention. Here we focus on the two end members of the retention gradient against which variable retention practices will be evaluated: undisturbed stands, and clearcuts sampled one year after harvesting. Carbon structure in fresh foliage, undisturbed and clearcut forest floors was characterized by C-13 solid-state NMR spectroscopy. There was a progressive increase in carbonyl C from the foliage to the undisturbed and clearcut forest floors. Along this sequence, the aromatic/alkyl C ratio decreased in the white spruce dominated stands, but increased in the aspen dominated stands. Harvesting-based disturbance thus preferentially increased the abundance of aromatic moieties in the aspen forest floors, which may be related to their high tannin content.

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