

Soil Nitrogen Availability Under Disturbance: Net Mineralizable Nitrogen

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Background

Soil nitrogen (N) availability is a key factor in stand productivity. We are determining changes in N availability under different stand types, harvesting and burning, and examining relationships among N availability, foliar nutrition, and productivity in boreal mixedwood stands.

Objectives

1) To estimate net N mineralization rates as an index of N availability under different stand types, disturbance types (harvesting or burning) and disturbance intensities. 2) To determine relationships among N availability, foliar nutrition, and productivity.

Key Results

- Soil properties such as forest floor depth, mineral soil pH, and soil carbon content vary under different stand types under undisturbed conditions, and the effects of disturbance will likely vary with stand type (Figures 1, 2, and 3). - First-year results from variable retention harvesting treatments indicate that properties such as forest floor depth and extractable N are altered with increasing canopy removal within a stand type (Figures 4 and 5). - Results from burned treatments are under evaluation. Harvesting and burning effects on nutrient dynamics, interactions between disturbance and stand type, and long-term effects of disturbance continue to be monitored.