Topographic Influences on Nitrate and Carbon Concentrations in Snowmelt Water from a Steep Forested Slope. (S07-hazlett153653-Oral)

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Abstract:

Topographic regulation of nitrogen (N) and carbon (C) leaching from soil during spring snowmelt was examined, over a four-year-period, in a one ha microcatchment on a steep, forested Precambrian Shield slope within the Turkey Lakes Watershed (TLW) in central Ontario, Canada. The discharge and chemistry of soil water collected by plastic non-suction lysimeters and solution NO3- and DOC from ceramic cup suction lysimeters were contrasted at three slope positions. Soil water from suction lysimeters had higher DOC concentrations throughout the snowmelt period than non-suction water, but differences decreased from lower to upper slopes. Differences in NO3- concentrations between sampler types were slope dependent. For example, the lowest, and relatively constant, NO3- concentrations were observed in non-suction water from lower backslopes. Suction lysimeters at shallow depth sampled NO3- and DOC in slowly percolating water within the bulk soil. Non-suction lysimeters, at shallow and deep depths, were ideal for sampling isolated zones of saturation, that were the source of NO3- and DOC in rapid subsurface runoff within the ablation till on steep slopes.

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Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 1:30 pm

Keywords:
Carbon, Hillslope, Nitrification, Sugar maple