

# **Landscape Controls on Nitrate Removal in Stream Riparian Zones. (S10-vidon143619-Oral)**

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## **Abstract:**

Recent research suggests that landscape characteristics influence nitrate removal in stream riparian zones. The nitrate removal capacity of eight riparian zones located in Southern Ontario on till and outwash landscapes with various widths (30-220 m), soil textures and depth to an impermeable layer (1-10 m) was examined. Subsurface nitrate inputs at the field/riparian zone edge ranged from 6 to 50 mg N/l and overall riparian zone nitrate removal efficiency was often greater than 90 %. However, at several sites, transport of nitrate-rich groundwater occurred across 50 to 75 % of the riparian zone width before significant nitrate depletion occurred. These sites were located either on thick permeable sands and gravels (2-10 m), or on till slopes with a thin conductive subsurface soil layer. Maximum nitrate removal rates varied between 5.3 and 7.8 %·m<sup>-1</sup> for thick sands and gravels and between 10 and 38 %·m<sup>-1</sup> in the spring for sites with less permeable soils developed on till at depth of 0.8- 2 m. These data suggest that the width of riparian zones required for effective nitrate removal can vary considerably in relation to geomorphic setting and site lithology, and that riparian zone lithology can be used as an indicator of nitrate removal.

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