# Hydraulic properties of topsoils and argillic horizons on the Luverne end moraine; eastern North Dakota. (S11casey163646-Poster)

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# Abstract:

Results from soil morphologic investigations at a precision farming site on the Luverne end moraine in eastern North Dakota imply that argillic soils affect soil fertility and hydraulic properties. Fertility comparisons of pre-plant and post harvest soil nitrate levels indicate relatively higher nitrate levels in areas of the field with the argillic soils, suggesting that solute redistribution of fertilizers has occurred. The objective of this study was to determine if these argillic horizons affect water transfer and retention in the landscape by using both in-situ and laboratory measurements. Soil infiltration was determined using tension infiltrometers for both topsoils and the upper argillic horizon at 10 sites. Three replicates were run within a distance of less than 2 m. Water retention curves for these same locations were determined in the laboratory at pressures ranging from 0 to 1500 kPa using Tempe cells, pressure plates, and a Decagon Dewpoint PotentiaMeter. Bulk density and water retention data at less than 100 kPa show only marginally higher values in the argillic horizons than in topsoils. These results suggest mixing of A and Bt horizons during agricultural land use.

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## **Presentation Information:**

Presentation Date: Tuesday, November 12, 2002 Presentation Time: 9:00-11:00 am Poster Board Number: 2132

Keywords: Argillic, topsoils, infiltration, tension-infiltrometer