

Preferential flow in a long-term no-tillage experiment on a silt loam soil in Mediterranean conditions

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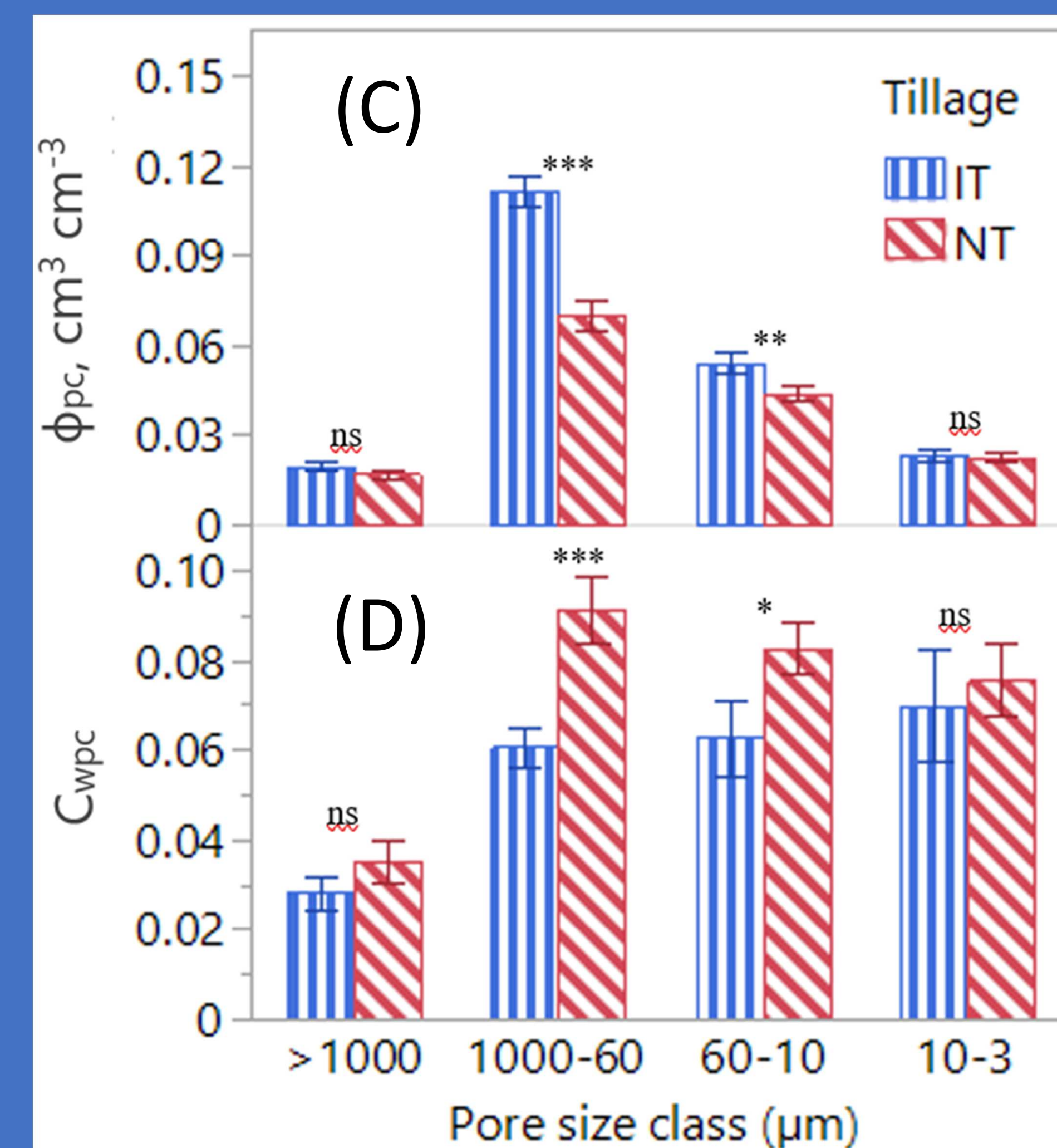
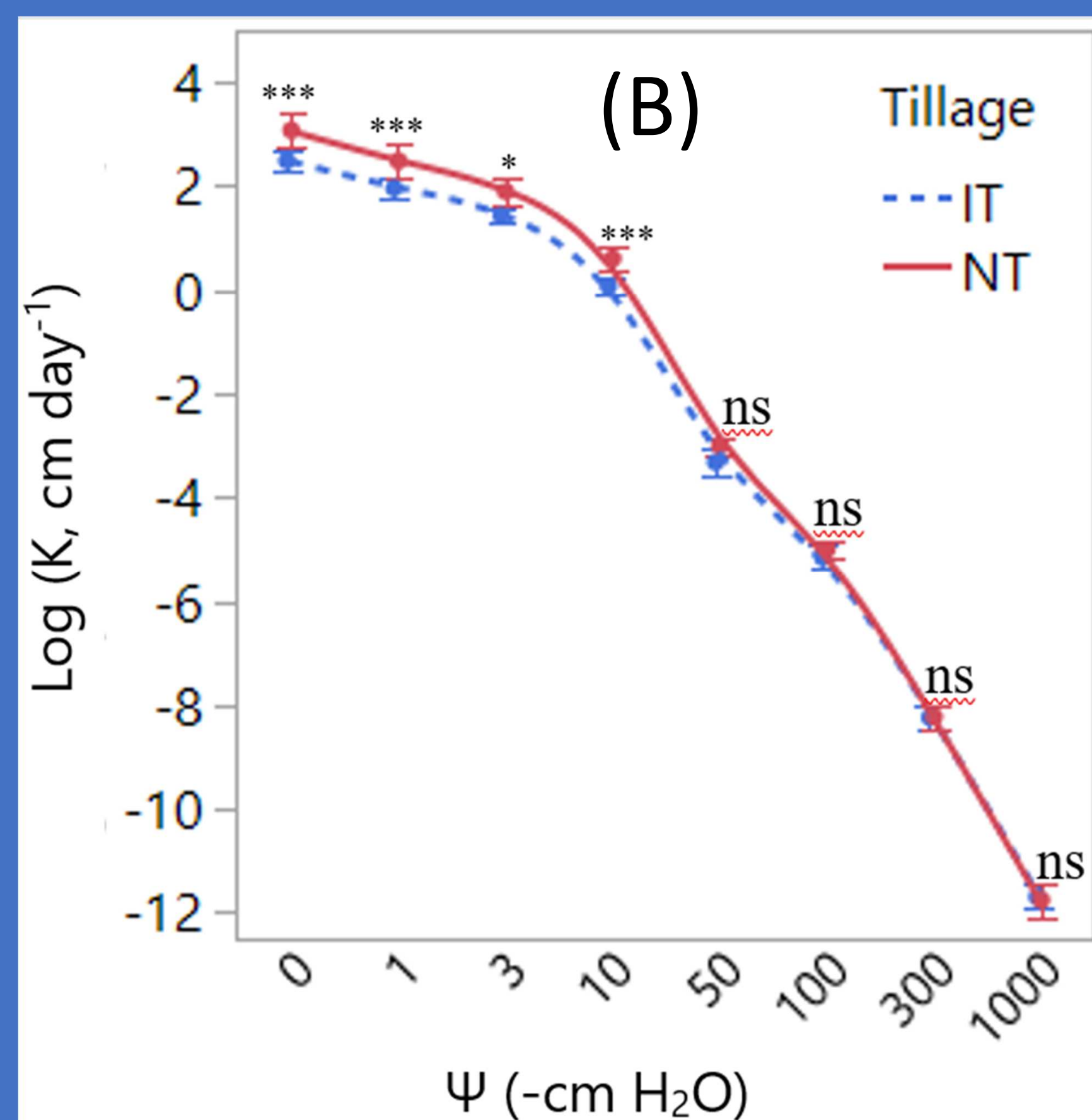
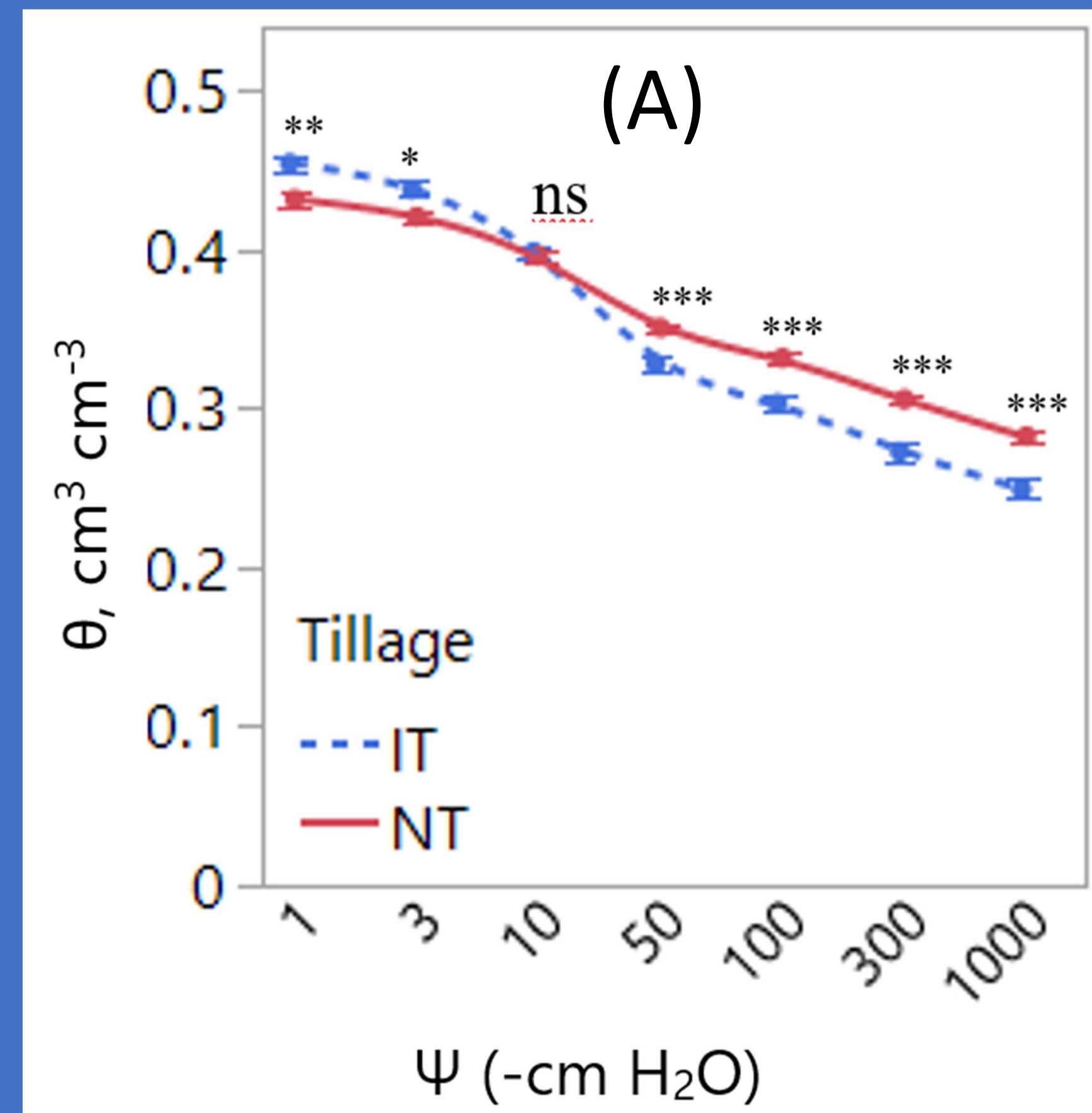
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Background:

- 22-years-old tillage experiment comparing Intensive Tillage (IT) and No-Tillage (NT). Three replications.
- >200 undisturbed soil cores taken during 2 years within (W-row) and between (B-row) irrigated maize rows.

Tillage system effect on: water retention (A),

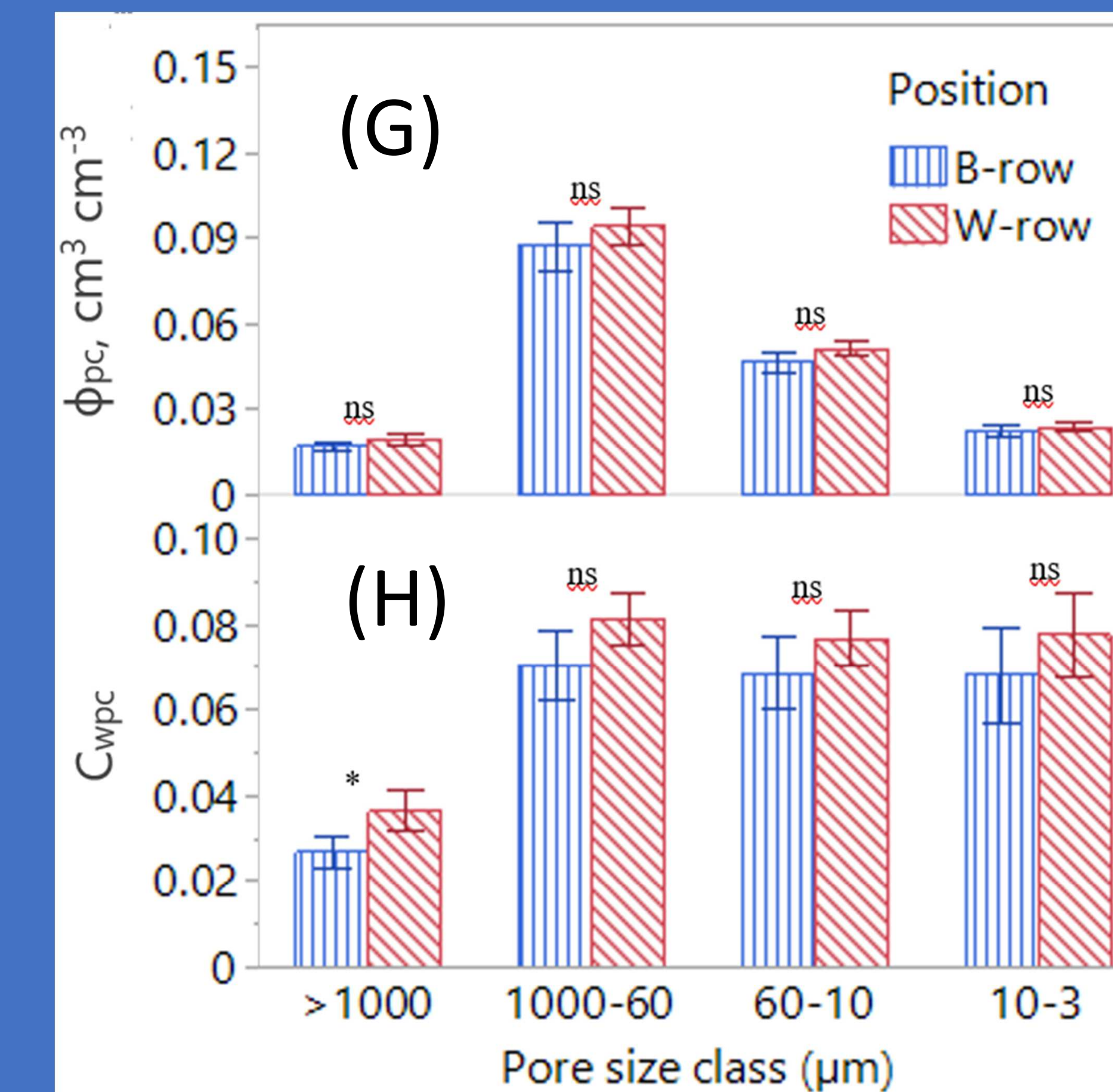
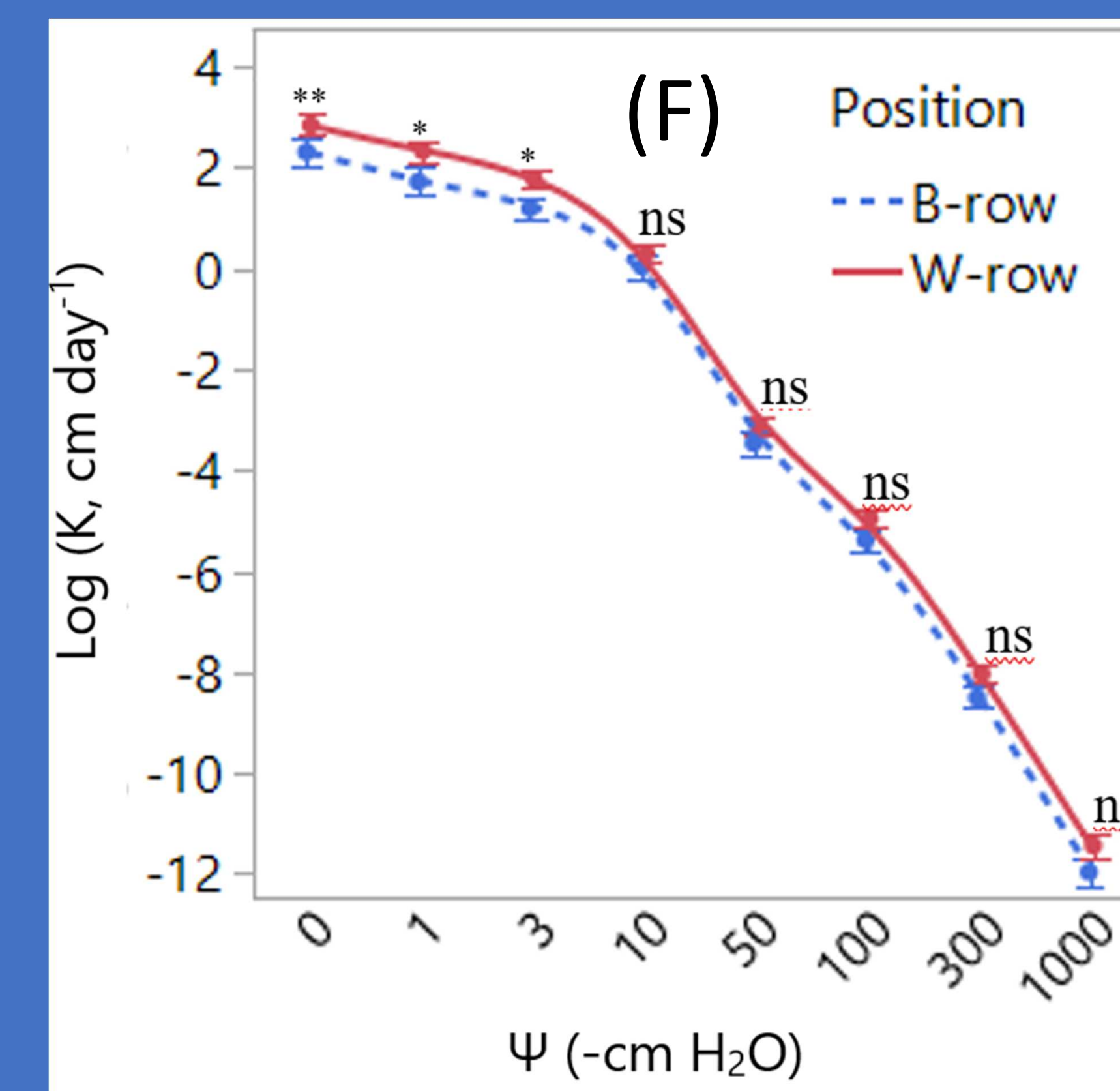
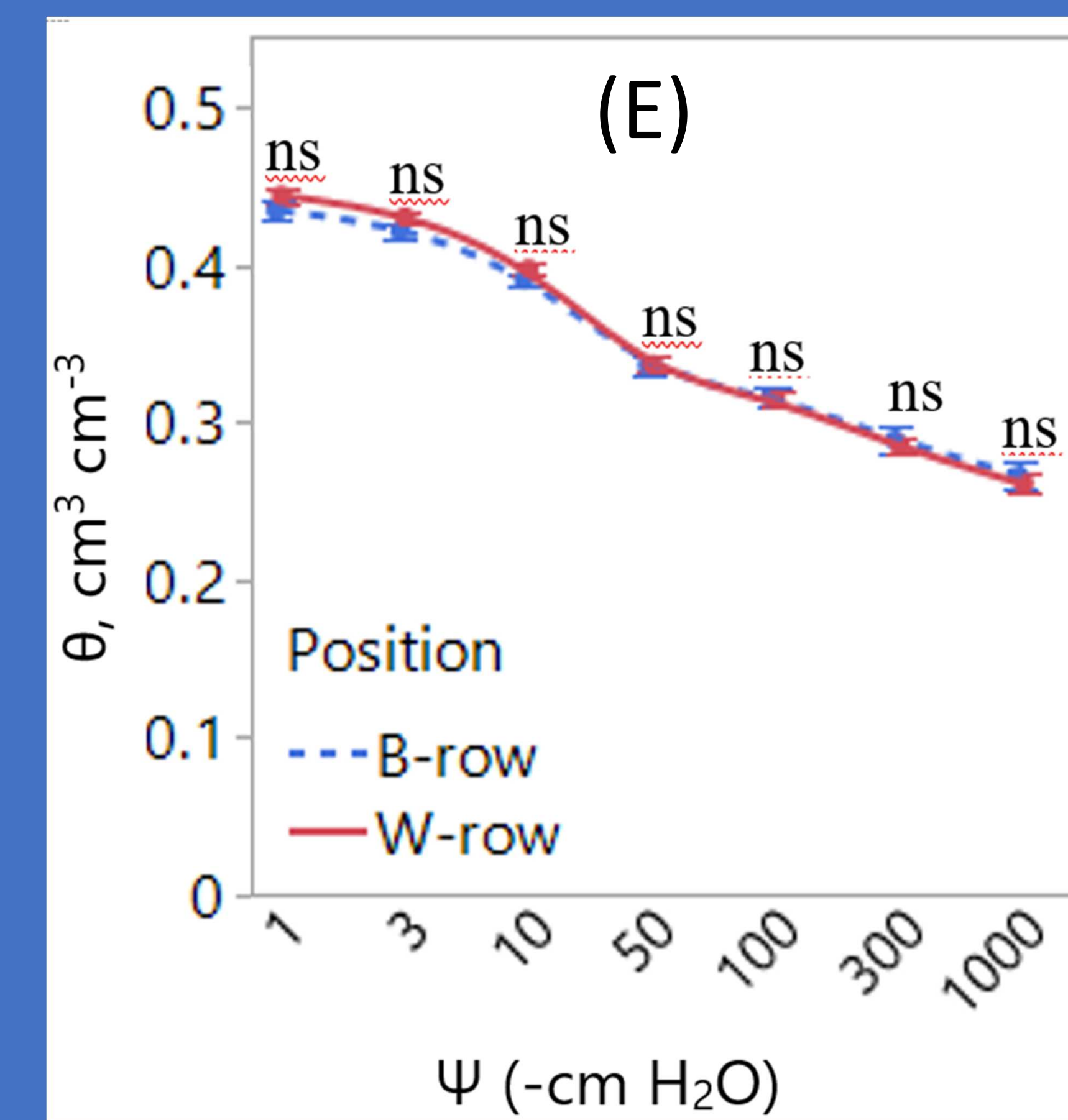
hydraulic conductivity (B), pore class volume (C), and Continuity index (D).



Large volume of mesopores in IT, but higher K in NT due to higher pore continuity.

Position effect on: water retention (E),

hydraulic conductivity (F), pore class volume (G), and Continuity index (H).



Despite no differences on porosity among positions, higher K of macropores W-row due to higher continuity.

Conclusions:

- Differences between positions with respect to the plant row need to be considered to properly characterize hydrological flow phenomena in soils even under the same management practices.
- Differences between tillage systems at small scale foresee the site-specific management impacts on hydrological processes at the catchment scale.

