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Measuring pore contribution to K_{sat} flow using μCT scanning

T.R. Elliot (1), W.D. Reynolds (2) and R.J. Heck (1)

1. University of Guelph, Ontario Canada
2. Harrow Research Station, Agriculture and Agri-Food Research Canada

(telliot@uoguelph.ca / Phone: +1 519-8244120 ext. 54275)

In order to establish the hydraulic conductivity of a soil, typical procedures involve *in situ* tracers or laboratory through-flow experiments. A novel approach to characterizing flow in well-structured soils is to determine the hydraulic radius, typically a perimeter / area relationship in 2D analysis, of pores and calculate potential flow through the column. This study identifies individual pores, using μCT imaging, within a well-structured soil column, characterizes the volume, surface area, tortuosity and shape dimensions of each pore, which ultimately allows the researchers to calculate potential saturated hydraulic conductivity flow. A summation of calculated pore flow demonstrates a high fidelity to experimentally derived flow potential through the saturated columns. The authors surmise that saturated hydraulic conductivity is primarily a function of pore discrete shape, interconnectivity and tortuosity, as opposed to minimal pore radius or matric flow.