## Study of Soil Macropore Structure and Its Relation to Solute Transport in a No-Till Soil Using Computed Tomography. (S01zhu163139-Oral)

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## Abstract:

A study is conducted to investigate soil macropore structure and flow pattern in an undisturbed Hagerstown silt loam soil column sample from no-till field using an industrial computed tomography (CT) scanner. A PVC pipe with a diameter of 15 cm is used to sample the intact soil column. The parameters reflecting soil macropore structure, including macropore volume, surface area, hydraulic radius, and fractal dimensions, are analyzed for the different soil horizons. A 3-D image of the macropore system in the soil column is reconstructed from a series of continuous 2-D CT images for the soil column. The effect of soil core sizes on macropore parameters is evaluated. Water and solute flow at the different locations within the soil column is monitored with CT using KI solution as a tracer. The flow passing through the soil matrix and macropores is modeled. The experiment reveals the scale effect of soil sample sizes on the determination of soil macropore structure parameters and their relationships to flow pattern.

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