Earthworm Species and Residue Placement Effects on Macropore Characteristics and Preferential Transport. (S01-gupta145900-Oral)

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Abstract:

A laboratory study was undertaken to quantify the effects of three earthworm species (Lumbricus terrestris, L. rubellus, and Aporrectodea trapezoides) and two depths (surface and 10 cm) of residue placement on burrow morphology and water and tracer fluxes through soil. Infiltration rates were higher for soil columns incubated with residue at the soil surface than at 3-10 cm depth. Infiltration rates followed the trends: L. terrestris > L. rubellus > A. trapezoides. Pore volume displacement needed to reach the relative tracer concentrations of 0.3, 0.5, and 0.7 followed the trends: L. terrestris < L. rubellus < A. trapezoides. Similarly, pore volume displacement needed to reach a relative concentration was smaller for surface residue placement than at 3-10 cm depth. Macroporosity and macropore penetration was higher for L. terrestris followed by A. trapezoides and L. rubellus. Macroporosity was maximum near the depth of residue placement for all three species. We conclude that earthworm species to a larger extent control macropore flow in soils.

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