Spatial Association Between Root Density and Water Flow Paths in Highly Structured Soil. (S01-nobles104905-Poster)

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Abstract:

Field observations have showed that in structured clayey soils roots tend to preferentially follow flow pathways. In addition, it is known that root channels themselves may act as paths for water flow. The purpose of this study was to determine the existence of spatial correlation and association between root length densities and water flow paths. We studied pathways of solute flow and distribution of native grass roots and sorghum roots in a highly structured Haplusterts located in Central Texas. Aqueous solution of erioglaucine was applied to soil surface with a rainfall simulator. Dye patterns were mapped by digital photography on 2 m by 2 m plots at various depths. Root distributions were mapped by tracing root intersections on clear plastic sheets. The relationship between flow paths and root densities was investigated. Spatial association was observed between water flow pathways and medium (2-5 mm) roots. Little spatial association was found between water flow pathways and very fine (<1 mm) roots.

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