Identification of Biogeochemical Gradients within Soil Aggregates. (S01-smucker144646-Oral)

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Abstract:

Biogeochemical processes and solution flow within soil aggregates influence many of the advective-dispersive properties controlling their formation and function. Identification of solution flow rates across aggregate surfaces and among intra-aggregate pore networks add to our knowledge of ion and biopolymer functions within soil aggregates. Increased water sorption coupled with slower desorption rates by aggregates from non-tilled soils sampled at the surface and within soil profiles of long term tillage treatments suggest greater quantities of intra-aggregate porosities are developed and maintained in NT soils high in soil organic carbon. Carbon gradients within soil aggregates, identified by the soil aggregate erosion (SAE) process, generate different microbial communities (Blackwood, C.B., 2001) and respiration gradients in surface and interior regions of aggregates. These micro-thermodynamic properties within soil aggregates have generated new hypotheses for the formation and function of intra-aggregate porosity.

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Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 9:30 am

Keywords:

concentric gradients, biogeochemical, soil aggregates