Pore Size and Wetness Impacts on Microbial Community Selection. (S01-wraith813058-poster)

Authors:

- J.M. Wraith* - *Montana State Univ.*
- S. Qureshi - *Montana State Univ.*
- J. Martin - *Montana State Univ.*
- R.E. Macur - *Montana State Univ.*
- D. Or - *Univ. of Connecticut*

Abstract:

The amount of soil water and its energy state are critical to soil microbial activity. Most previous studies have focused on implications of soil water potential for microbial communities. Because different soil types may contain substantially different amounts of water at a given matric potential, and soil microbes congregate in aqueous habitats within soil pore space, it is the configuration of water rather than its energy state that critically defines the pathways and extent of diffusion processes to and from these organisms. We evaluated how changes in particle size and matric potential affected community structure of soil microbes. Replicate columns of three silica sand size fractions were inoculated with a geothermal soil from Yellowstone National Park. These were maintained at either -15 or -25 cm matric potential using hanging water columns; the hanging columns also contained dilute nutrient solution. Replicate aliquots were removed at weekly intervals, DNA was amplified using PCR, then communities were compared based on DGGE banding patterns. Microbial community responses to differential pore water configuration are interpreted relative to variable diffusive potentials.

Speaker Information: Jon Wraith, Montana State Univ., Land Resources and Environmental Sciences Dept. P, Bozeman, MT 59717-3120; Phone: 406-994-1997; E-mail: jwraith@montana.edu

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