Microbial Community Structure and the Rhizosphere Effect. (S03-buyer123344-Poster)

Authors:

- J.S.Buyer USDA-ARS, Beltsville, MD
- C.B.Blackwood USDA-ARS, Beltsville, MD
- D.P.Roberts USDA-ARS, Beltsville, MD
- E.A.Paul NREL, Colorado State University, Fort Collins, CO

Abstract:

We hypothesized that the effect of plant roots on microbial community structure would be strongest for r selected bacteria, while there would be little or no effect on K selected microorganisms. Communities were characterized by soil fatty acid analysis and by substrate utilization assays for bacteria and fungi. Fatty acid analysis revealed a very strong soil effect but little plant effect, indicating that the overall microbial community structure was not greatly affected by the rhizosphere. There was a strong rhizosphere effect detected by the substrate utilization assay for bacteria and a much weaker rhizosphere effect on fungal communities. At this coarse level of community analysis the rhizosphere microbial community was impacted most by soil effects, and the rhizosphere only affected a small portion of the total bacteria. This suggested that a rhizosphere community may be assembled in part through random encounters between roots and dormant 'r' selected bacteria. This was consistent with the results of a preliminary field experiment using T-RFLP of community ribosomal DNA which indicated that the rhizosphere community was less stable than the bulk soil community.

Corresponding Author Information:

Jeffrey Buyer USDA-ARS Bldg. 001 Room 140 BARC-W bu

phone: 301-504-8436 fax: 301-504-8370 e-mail: buyerj@ba.ars.usda.gov

Beltsville, MD 20705-2350

Presentation Information:

Presentation Date: Monday, November 11, 2002 Presentation Time: 10:00 am-12:00 pm Poster Board Number: 1709

Keywords:

rhizosphere, microbial community structure