

Impact of Irrigation Intensity on Matrix and Preferential Flux Components. (S01-gish720912-poster)

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Abstract:

The influence of matrix and preferential flow processes on the flux of mobile tracers through a silt loam soil subjected to different irrigation regimes was evaluated on a tile drain system. After tile outflow reached near steady-state conditions either bromide (Br; 280 kg/ha) or penta-fluorobenzoic acid (PFBA; 121 kg/ha) was applied through the irrigation system inside the shed (3.5 m x 24 m). Bromide fluxes were evaluated at an irrigation rate of 3.1 mm/h while PFBA fluxes were used to study chemical transport at the 0.89 mm/h irrigation rate. Results show that after 225 mm of water had been applied at the low irrigation rate less than 2% of the applied PFBA had been leached through the tile drain. However, after 225 mm of water had been applied at a higher irrigation rate over 59% of the applied Br had been leached through the tile drain. This study demonstrates the usefulness of this tile drain methodology in evaluating field-scale chemical fluxes. In addition, this study demonstrates that there may be a critical input flux whereby preferential flow is initiated and will dominate the total chemical leachate flux.

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Session Information: Tuesday, November 4, 2003, 4:00 PM-6:00 PM

Presentation Start: 4:00 PM (Poster Board Number: 1108)