Field-scale Monitoring and Simulation of the Overland Transport of Bromide and Pathogens. (S06-pachepsky184526-Poster)

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Abstract:

A two-side lysimeter with 20% slopes was instrumented to monitor the surface and vertical transport of pathogens. Each side of the lysimeter was divided into sub-plots (6.7 m x 7.3 m), one with grass and the other bare soil. Runoff samples were collected at three equidistant transects along the slope and a gutter at the edge of each plot. All plots were equipped with multi-sensor moisture probes to monitor real-time water content through the soil profile. Bovine manure was applied at the top of the slope of each plot in 30-cm strips. Rainfall was simulated at 60 mm/hr, surface flow was measured and sampled at five minute intervals. Soil samples were taken at incremental depths (0-50 cm) after rain simulations. Runoff and soil samples were analyzed for fecal coliform (FC) bacteria. FC data indicate that while 100% of the initial population could be lost to runoff from bare plots, only 1% of the initial population was lost from vegetated plots. FC concentrations decreased with distance along the slope. Results also show that bare plots offered no resistance to surface flow; FC were detected in total runoff at gutter within 10 minutes of rainfall initiation.

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