Use of PAM to control erosion from raised beds under sprinkler irrigation. (S06-horne052308-Poster)

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Abstract:

The movement of soil from raised beds and the associated slumping and degradation of beds is often a serious problem under sprinkler irrigation. The ability of polyacrylamide (PAM) to minimise damage to raised beds under sprinkler irrigation was investigated. In a laboratory-scale study, soil was placed is a series (6) of boxes (1.2 x 1.5 m) and ridged to resemble raised beds as used to grow potatoes. Irrigation water was applied from overhead sprinklers. PAM was added to the water irrigated to some of the boxes at varying rates to give a range of PAM concentrations (0 to 15 ppm). A range of measurements were made during and following each irrigation event including; water and sediment runoff, the moisture content of raised beds, change in the profile of the beds, infiltration rates, and aggregate stability. Initially, the boxes were filled with Portneuf silt loam, and then the procedure was repeated with Wahpeton silty clay. For both soils, PAM significantly improved irrigation efficiency. At the higher rates of PAM, there was less water and sediment runoff, less slumping of the raised bed profile, and increased wetting of the raised bed and infiltration rates. The results presented here suggest an important role for PAM in sprinkler irrigation of raised beds.

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