PAM and straw residue effects on irrigation furrow erosion and infiltration. (S06-lentz172221-Poster)

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Abstract:

Water soluble anionic polyacrylamide (PAM) is a highly effective irrigation furrow erosion deterrent, but little is known about the effect of plant residue (> few % cover) on PAM efficacy. We applied straw treatments to furrows and irrigated them with PAM or untreated water. Conventionally irrigated furrows had no PAM and no straw. PAM was applied as a 33-g granular patch at the furrow head (1 kg a.i./ha). Increasing straw application from 3.2 to 10 g/m decreased furrow sediment loss 70%, but only for irrigations one and two. In the first two irrigations after straw application, PAM reduced sediment loss in straw-treated furrows (99.9% reduction) more than did untreated water (80.3%), compared to conventionally irrigated furrows. In the last three irrigations, PAM and No PAM treatments in strawed furrows reduced sediment losses equally, PAM + straw cut losses by 99.9% and straw alone cut losses by 95.0% relative to conventional furrows. While addition of PAM to mulched furrows provided increased erosion control during the first irrigations after straw application, it also increased furrow advance time by 1.4x overall and potentially decreased the uniformity of water application.

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