Effects of Polyacrylamide on the control of soil erosion, runoff and infiltration in sloping land, using rainfall simulator

Abstract

Polyacrylamide (PAM) is a soil additive that increases the absorption of water and nutrients in the soil and rovides appropriate plant growth and with different amounts reduces water losses and the cost of irrigation. In this study the effect of PAM with different amounts with two sequential irrigation events runoff, erosion and infiltration on sloping land was evaluated. PAM (0, 3, 6 and 9 gr/kg) applied in a clay loam soil under rainfall simulator in laboratory. This study was performed on three slopes 2.5%, 5% and 10%. The resuts of this study showed that the runoff and soil erosion, is reduced when PAM application rate is increased and the reduetion in runoff and soil erosion in the second irrigation is much more than the frist irrigation. In 5% slop, the maximum reduction in runoff in the second irrigation corresponding to 6 and 9 gr/kg PAM application was 74%. The maximum reduetion in soil erosion in the first 63.8% and second 84.3% irrigation events was related to 9 gr/kg PAM application rate. The final soil infiltration rate was increased by increasing PAM application rate for two irrigation events.

Key words : Runoff , Soil erosion, Polyacrylamide, Rainfall Simulator

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The Thesis Submitted for the Degree of M.Sc (in the field of Irrigation & Drainage)

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Jun 2012