



Salt Accumulation and Leaching Requirement for Saline Irrigation: A Comparative Study of Surface and Drip Irrigation Methods

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Abstract

Irrigation with saline water results in the build-up of soil salinity and reduces crop yield. Irrigation method influences amount of salt added to soil through irrigation. In this study, salt additions to crop root zone by both surface and drip method were computed and leaching requirement (LR) in both cases were estimated. The data of cauliflower experiment conducted at Hisar in Haryana where crop was grown with 0.4, 2.5, 5.0 and 7.5 dS m⁻¹ levels of irrigation water salinities (EC_{iw}) under surface and drip irrigation used in this study. As experimental results cauliflower tolerated 3.2 and 5.9 EC_{iw} (dS m⁻¹) under surface and drip irrigation, respectively. Overall, cauliflower yield was 13.64-42.86% higher in drip irrigation as compared to surface irrigation. However, the salt accumulation was 22-23% lower, and LR was 38-42% lower in drip irrigation than the surface irrigation. It was observed that cauliflower tolerated higher level of EC_{iw}, with lower salt accumulation and LR as compared to surface irrigation system. The results would be helpful in convincing vegetables growers to use drip in case of saline water irrigation as it would give more yield per drop of water while using higher saline water at lower level of salinization.

Key words: Saline water, Micro irrigation, Salinity development, Yield loss, Leaching requirement