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Estimating the Effect of Controlled Drainage on Soil Salinity and Irrigation Efficiency in the Harran Plain using SaltMod



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Abstract: Soil salinity and water logging, as well as water scarcity, are the most common problems limiting irrigated agriculture crop production in southeast Turkey. Thus, this study was conducted in order to predict the effect of drainage control factors on irrigation efficiency, irrigation sufficiency, root zone salinity, and drain discharge using SaltMod simulation. Investigations were conducted in the Harran Plain, also known as the Fertile Crescent or Upper Mesopotamia. High crop evapotranspiration rates and deep water table levels have led to visible increases in irrigation water requirements in the region. Therefore, the level of the water table appears to be a factor of great importance to sustainable crop production. Root zone salinity will increase to 3.0 dS m⁻¹ at the end of a 10-year period if the drainage control factor (Frd) increases to above 0.75; however, the drain discharge rate was estimated to decrease from 1.350 m to 0.050 m for the summer season and to increase to 0.026 m in the winter season. In contrast, total drainage is predicted to decrease while irrigation efficiency is forecasted to increase during the summer season.

Key Words: Controlled drainage, SaltMod, Discharge rate, Root zone salinity

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