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Development of Soil Salinity under Irrigated Land-Use in a Dry Region of Syria

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Abstract

History shows that in dry Mediterranean regions, the long-term use of saline water for supplemental irrigation is a risky practice. The objective of the investigation was to find, if irrigation with saline water was sustainable under the conditions in the study area. The groundwater had an average sodium adsorption ratio (SAR) of 8.5 and an electrical conductivity (EC) ranging from 2-16 dS m⁻¹. In 1998, samples for the determination of EC were taken from the first meter of soil in 1998. After six seasons, the soil EC near the original locations was measured again. Additional soil EC measurements were made before and after irrigation trials in 2003/04.

Crop rotations and past irrigations were reconstructed together with the water users. These were substantiated using irrigation monitoring and rainfall records. After 6 years, the results for the study area gave no indication of any rise in soil salinity. Possible explanations were: favourable infiltration rates, the occurrence of strong rainfall in winter, changing crop types, changing irrigation methods, and the on-farm rotation of irrigated fields.

Keywords: Electrical conductivity (EC), groundwater, low-rainfall zone, soil salinity, supplemental irrigation, sustainability, Syria