

## **Effect of Wheat Residues Management and Irrigation with Saline Water on Spring Maize Yield and Soil Profile Salinity Changes**

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### **Abstract**

Salt accumulation in the root zone and yield declining are the main problems in using saline water for irrigation in arid areas. So, this study was performed with the aim of investigating the effect of different management of wheat residues on maize (Mobin variety) yield and its components and soil salinity under irrigation with saline water. Therefore, a factorial experiment in a randomized complete block design was carried out in the Agricultural Farm of Shahid Chamran University, in one crop season. The first studied factor was different management use of wheat residues (M1: without use of crop residues, M2: use of crop residues on the soil surface as mulch, and M3: mix of crop residues with surface soil layer to 30 cm depth) and the second factor was irrigation water salinity (S1: Karun river water salinity: 2 dS/m, S2: 4.5 dS/m and S3: 7 dS/m). Management of crop residues as mulch and mixed with soil, compared with non-use of residues, decreased the salinity of surface layer on average by 16.1% and 7.8%, respectively, and transported the salts to lower layer. The effect of salinity and crop residues management on evapotranspiration, yield, and yield components was significant, but their interaction effect was significant only on evapotranspiration, grain yield, biomass, and ear length. So, the maximum effect of crop residues on adjusting the reduction of grain yield (14.6%) and biomass (19.8%) compared to the control was obtained in M2 and S2 treatments. Therefore, the use of crop residues as mulch can be recommended as an effective solution to reduce the negative effect of using saline water in agriculture.

**Key words: Soil leaching, Salinity stress, Mulch, Grain yield.**

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