

## **Simulating the Effect of Irrigation Water Salinity on Maize Yield under Climate Change Conditions in Ahvaz Region**

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### **Abstract**

In this research, the amount of maize yield was simulated under condition of different water salinities and climate change scenarios in Ahvaz region. Combined CSIRO-MK3.5 model and emission scenarios A<sub>1</sub>B, A<sub>2</sub>, and B<sub>1</sub> were used as future (2021-2050 and 2070-2100) climate change scenarios (considering 1981-2010 as reference period). Additionally, AquaCrop model was used to predict the impact of climate change scenarios on maize yield under conditions of five salinity treatments including: (S<sub>0</sub>: Karoon river water (salinity: 2.3 dS/m); S<sub>1</sub> (salinity: 3.5 dS/m), S<sub>2</sub> (salinity: 4.5 dS/m); S<sub>3</sub>(salinity: 5.5 dS/m); and S<sub>4</sub> (salinity: 6.5 dS /m). In order to show the impact of climate change alone, the amount of yield for each salinity treatment under different scenarios was compared with the same treatments yield under the reference scenario. Results showed that in the 2021-2050 period, the difference between maize yields for different scenarios was negligible compared to the reference scenario. However, in the 2070-2100 period, yield reduction under A<sub>1</sub>B scenario was %15, under B<sub>1</sub> scenario 24%, and under A<sub>2</sub> scenario, it was 35 percent. The results of salinity and climate change impacts together showed that, in the first future period, maximum reduction of yield would happen under the S<sub>4</sub> B<sub>1</sub>N<sub>1</sub> scenario (37 percent) and for the second future period, it would be under S<sub>4</sub>A<sub>2</sub>N<sub>2</sub> scenario (58 percent). Finally, it was determined that the trend of yield reduction under salinity treatments was linear in all scenarios.

**Keywords: Salinity tension, Mobin variety, Yield simulation, AquaCrop model**

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