

Maize cultivars response to saline irrigation scheduling.

Abstract

The cyclic strategy to use saline water can produce satisfactory yields for salt-sensitive maize than the blending strategy if only once irrigation is needed during the crop season. If more than twice irrigations are needed, it is preferable to alternate applications of poor quality and fresh water. A glass house study was conducted to investigate the effect of saline irrigation scheduling on different maize cultivars in 2007. Four maize cultivars from Pakistan salt-tolerant (EV-1098 and Agaiti-2002) and sensitive (EV-4001 and Akbar) were used in the experiment. Eight irrigation patterns based on canal irrigation and NaCl salinized water (EC 4.0 dS m⁻¹) was applied at three crop growth stages. The treatments comprised: I1 =Irrigation by canal water during whole growing period, I2 = canal water for soaking and at early whorl stage and by saline water (EC 4.0 dS m⁻¹) at the late whorl stage, I3 =Irrigation by canal water for soaking and at late whorl stage and saline water at early whorl stage, I4 =Irrigation by saline water for soaking and by canal water at early whorl and late whorl stages, I5 =Irrigation by canal water for soaking and by saline water during the early whorl and late whorl stages, I6=Irrigation by saline water for soaking and at late whorl stage and by canal water at early whorl stage, I7 =Irrigation by saline water for soaking and at early whorl stage and by canal water at late whorl stage, and I8=Irrigation by saline water throughout growing period. Satisfactory maize growth and fodder yield was noted with application of canal water applied at all growth stages and treatments comprising canal water application at soaking, early whorl stage and brackish water (EC 4.0 dS m⁻¹) during late whorl stage. Performance of maize cultivars under water scheduling revealed that EV-1098 and Agaiti-2002 responded well as compared to EV-4001 and Akbar. Both cultivars accumulated less Na⁺ and Cl⁻ and maintained more K⁺, ultimately better K⁺/Na⁺ ratio.

Keyword: Maize; Saline water; Irrigation scheduling; Soil properties; Salts content.