Effect of Irrigation Water Salinity, Foliar Application of Salicylic Acid and Potash Fertilization on Salt Tolerance of Wheat Crop (Triticum aestivum L.)

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Summary

Two experiments were conducted, one Of them laboratory experiment was concluded To study four levels of salinity (0.4,4.0,8.0,and 16.0)ds m^{-1} and four concentrations of salicylic acid (0 , 1.5 , 3.0 *and* 4.5)mgL^{-1} and their interactions on percentage of wheat (*Triticum aestivum L.*) seed germination. Other was field experiment was conducted in sharsh township affiliated to Gurna district on silty clay soil.

The experiment was included planting of wheat Crop (Bengal Variety) to study the effed of Three levels of irrigation water salinity (1, 3 *and* 6)ds m^{-1}, potash fertilization (0 *and* 120 kg k ha^{-1}) and foliar application of four concentrations of salicylic acid (0,150, 300, and 450) mg L^{-1} and their interactions on Physiological parameters of crop growth ,by using Split-Split plot design with complete randomized desingn. After harvesting of crop ,dry matter of crop shoot was measured, grain yield, concentration and uptake of sodium potassium in leaves and seeds .concentration of amino acid (proline) was determined in leaves and seeds. Nitrogen concentration and protein were determined in seeds. Soil electrical conductivity (E.C) of field soil were measured after crop harvesting.

Results of the study showed:-

First: Laboratory experiment

A: Increasing of salinity levels caused singnificant decreased in seed germination percentage with surpassed of 4ds m^{-1} levels on other levels with highest seed germination percentage.

B: Increasing of salicylic acid concentrations resulted in a singnificant effect on seed germination percentage with surpassed of 3 mg L^{-1} of salicylic acid on other concentrations

Second: Field experiment

A: Increasing of irrigation water salinity levels (3 *and* 6) ds m^{-1},caused not significant effect on dry weight of grain yeild of crop. Significant effect was showed in decreasing of potassium concentration in leaves and seeds, potassium to sodium ratio (k/Na) in leaves and seeds, potassium up take in leaves and seeds, and concentration of nitrogen and protein in seeds

B: Potash fertilization and foliar application with salicylic acid caused significant increased in dry matter of crop shoot ,grain yield , concentration of potassium in leaves and seeds ,K/Na ratio in leaves and seeds, up take of potassium in leaves and seeds. concentration of nitrogen and protein in seeds. The concentration 300mg L-1 salicylic acid was surpassed on the concentration.The two treatment (potash fertilization and salicylic acid) were caused significant decreased in concentration and up take of sodium in leaves and seeds ,and proline concentration in leaves and seeds.

C: Most of combination treatments between potash fertilization and foliar application with salicylic acid showed positive effects on crop production of wheat, while combination treatments with irrigation water salinity showed negative effects on crop production of wheat crop.

D: Irrigation water salinity, potash fertilization and Foliar application of salicylic acid had a significant effect on salt accumulation in soil after harvesting.