

Effect of Irrigation by Diluted Seawater on Growth and Some Macronutrients of Different Wheat Varieties

M.M. Hussein, A.A. Abd El-Khader* and N.M. Badr

Water Relations & Irrigation Dept. and *Soil & Water Resources Dept., National Research Center, Cairo, Egypt.

A POT experiment was conducted in the greenhouse of the National Research Centre at Dokki, Cairo Egypt during 2005/2006 winter season to evaluate the effect of different salt stress degrees by diluted seawater [Tap water (250 ppm), 2000 and 4000 ppm] on the growth and yield characters of different wheat varieties. Gemmeza 9 was the superior in flag leaf area among the other varieties followed by Giza 168, where the lowest value of this criterion was by Sakha 69 and Sakha 93. Non significant differences were detected between the used varieties in number of green leaves/mean stem and length of spikes. Increased salt concentration in the root media decreased plant height, area of flag leaf and spike length. The differences in number of green leaves/mean stem were not significant. The highest negative effect of salinity on plant height was in Sakha 93 and Giza 168 varieties. Plant height of Sakha 69 did not affected by this treatment. The decrement in flag leaf area of Gemmeza 9, Gemmeza 7 and Sakha 69 seemed to be equal. The lowest effect was in Giza 168 followed by that of Sakha 93. Length of spikes of Gemmeza 9, Gemmeza 7 and Giza 168 indicated similar responses. There are no any differences in N concentration while it was slight in P concentration. However, there are wide differences in K concentration specially between Gemmeza 7, Gemmeza 9 and Sakha 69, in side, and Giza 128 and Sakha 93 in the another side which the concentration of this element in the 1st group about 5 - 10 folds of those in the 2nd group. The uptake of these elements significantly differ between varieties. Gemmeza 9 and Sakha 93 showed lesser values than in the other varieties. The highest content of N was in Giza 168 and the lowest by Sakha 93 followed by Gemmeza 9. The uptake of P in Giza 168 and Sakha 69 seem to be similar. The concentration of N and P slightly increased by the 1st level of salinity and tended to decrease by the highest level to be lesser than the control while K concentration increased by both salinity levels. Nevertheless, the uptake of N, P and K negatively responded to the increase in salt concentration in water of irrigation.

Keywords: Wheat (*Triticum aestivum* L.), Varieties, Salinity, Diluted seawater, Vegetative growth, Dry matter, Macronutrients.

Soil salinity is a major environmental constraint to crop productivity worldwide. The "biological" approach to this problem focuses on the management, exploitation, or development of plants able to thrive on salt-affected soils