

ABSTRACT

The current work aims to evaluate the effect of using the low quality irrigation water on both soils and two successive grown crops (wheat and corn) at Wadi El-Rian region, El-Fayoum governorate.

Data showed that soil pH values decreased while EC values increased due to using low quality water in irrigation. The dominant soluble anions in the saturated soil paste extracts were Cl^- and $\text{SO}_4^{=}$ while the dominant soluble cations were Na^+ and Ca^{++} as well as relatively lower content of Mg^{++} . Generally, values of all tested soils SAR were less than 13, hence considered as non-sodic soils. Although, total and available values of macronutrients (N, P and K) didn't change appreciably, values of micronutrients (Fe, Mn, Zn and Cu) and heavy metals (Pb, Ni, Co and Cd) increased in the tested soils.

Dry matter yield (straw and grains) of wheat and corn decreased due to using low quality water in irrigation for Wadi El-Rian soils compared to that received the Nile water. The contents of macronutrients (N, P and K) had no significant influence on wheat and corn plants. In contrast, the contents of micronutrients (Fe, Mn, Zn and Cu) in yields of wheat and corn crops (straw and grains) increased significantly due to using low quality water in irrigation. Heavy metals (Pb, Ni, Co and Cd) recorded the highest response to be increased particularly in wheat yields. The calculated accumulation indices, however, revealed the sensitivity of corn more than wheat to cultivation under such conditions.

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