

GROWTH OF CORN PLANTS CULTIVATED IN DIFFERENTLY MANURED ARID SOILS AND IRRIGATED WITH VARIOUS WATER QUALITIES.

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ABSTRACT:

This work was carried out to study the individual and combined effects of organic manures and irrigation water quality on growth of corn plants (*Zea mays* L (triple hybrid 310) and their contents of some macro nutrients. Surface soil samples representing alluvial, calcareous and sandy soils were used in these greenhouse experiments. The soils were manured with farmyard manure (FYM at 2 % C) and alfalfa plants as a green manure (GR), plus the control treatments. The used irrigation water sources were tap water (TW) agricultural drainage water (DW), mixed TW + DW at a ratio of 1:1, synthetic saline water at 2000 mg/l of TSS of CaCl₂ + NaCl at Ca : Na ratio of 1:1 (SW1) and synthetic saline water at the same content of TSS and Ca : Na ratio of 2:1 (SW2). All pots were planted with 5 corn seeds /pot. Plant samples were taken after 45 and 65 days of planting. Dry weights of plant samples were recorded and their contents of N, P and K were determined. The dry matter yield of corn plants increased as a result of organic manures application. Those increases were clearer with FYM especially at the first growth period. Under the different treatments of manures, the dry matter yield increased with advancing the plant age. The highest dry matter yields were found for the plants grown on the alluvial soil followed by those on the calcareous soil, to leave the sandy soil last in such concern. Also, with the different manure treatments, the highest dry matter yields were found for the plants irrigated with DW, whereas the lowest values were found with the treatments of SW2. The obtained data also showed greater positive effects of manure treatments on corn plant contents (% and mg/Kg) of N, P and K at both growth stages under the different soil conditions. The highest contents of such nutrients were found in the corn plants grown on the alluvial soil manured with FYM and irrigated by DW.

Key words: Maize, Organic fertilization, Irrigation water quality, Nutrients uptake, cereal crops.