

HEAVY METALS POLLUTION ASSESMENT IN SANDY SOILS IRRIGATED WITH SEWAGE WATER

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ABSTRACT:

Seven heavy metals (Cd, Cu, Fe, Cu, Mn, Ni, Pb and Zn) were analyzed in Soil samples. The results showed that the total content of heavy elements in the soil ranged from 2.02 to 2.74 mg / kg for cadmium, from 159.785 to 248.77 mg / kg of copper, from 4546 to 7268.55 mg / kg of iron, from 65.43 to 226.89 mg / kg of manganese, from 41.89 to 57.06 mg / kg of nickel, from 55.51 to 72.46 mg / kg of lead, from 105.428 to 190.82 mg / kg of zinc. Results indicated that the concentration of the Cd is in the critical, the concentration of Cu is higher than critical level and Mn, Ni, Pb and Zn concentrations were in the permissible levels. Enrichment Factors (EF) of the heavy metals in soil calculated ranged from 0.362 to 1.52. The Geoaccumulation Index (Igeo) calculated gave values indicating no pollution in sandy soil and ranged from -1.052 to -0.619. While the Contamination factor (Cf) ranged from 0.84 to 1.26, on the other hand Cd, Fe and Pb were described as moderate contamination while other metals described as low contamination. Degree of contamination (Cd) ranged from 0.85 to 1.35 with an average 0.95 these values were nil to very low degree of contamination.

Key words: Heavy metal, Soil, Enrichment factor (EF), Geoaccumulation Index (Igeo), Contamination factor (Cf) a

THE COMBINED EFFECT OF PHOSPHATE FERTILIZATION AND IRRIGATION WATER SALINITY ON THE CALCAREOUS SOILS PRODUCTIVITY

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ABSTRACT:

This experiment was carried out on five calcareous soils varied in their content of CaCO₃ (%) and other soil properties to study the effect of individual and combined applications levels of phosphate fertilization and irrigation water salinity and sodicity on some properties of these soils and its productivity. A pot experiment was carried out in split split plot design with three replicates, where the main plots were the used calcareous soils, the sub plots were application rates of P fertilization and the sub sub plots were irrigation water salinity and sodicity levels. The tested P levels were 0, 50, 100 and 200% of recommended dose (RD) for barley (300Kg superphosphate / fed) which used as tested plant. Five irrigation water sources varied in their salinity and sodicity levels were used in this study. The obtained data show a clear increase of soil content of both total soluble salts and soluble ions with irrigation by the tested saline water and also with the increase of added P. The obtained dry matter yield of both straw and grains of barley plant were decreased with the increase of irrigation water salinity and sodicity. The decrease associated with the increase of water sodicity levels were higher than that resulted from the increase of water salinity levels. On the other hand, increasing of added P resulted in an increase of obtained dry matter yield. The high dry matter yield was found in the soils irrigated with tap water at P level of 200% of RD. Also, the obtained dry matter yield was greatly affected by the studied calcareous soils properties. Straw and grains of barley plants content of N, P and K was greatly affected by the studied treatments and soil properties. This content was decreased with the increase of irrigation water salinity or sodicity, where it was varied widely with P fertilization. The significant levels of relationships between the content of these nutrients and soil properties were varied from nutrient to another.

Key words: Water quality, Phosphate fertilization, Calcareous soil, Barley, Soil properties and Nutrients conte

