CHICKEN MANURE AS A NATURAL SOIL CONDITIONER FOR CONTROLLING THE HAZARDS OF IRRIGATING CALCAREOUS SOIL WITH SLUDGE EFFLUENTS.

Dahdoh, M.S.A, S.E.EL-Maghraby** and B.I.M.Mousa**
** Soil Fertility & Microbiology Dept. and ** Soil Conservation Dept., Desert Research Center, Mataria, Cairo, Egypt.*

ABSTRACT

Two successive factorial pot experiments were conducted under green house conditions. The aim of those experiments is to study the effect of chicken manure as a natural soil conditioner on controlling the hazards of irrigating calcareous soil with low quality waters as sludge effluents. Each experiment included 12 treatments arranged in a split split plot design with 9 replicates. The main plots received two types of low quality waters of sludge effluents (SE_1 & SE_2), beside the Tap water (TW). The sub main plots include four rates of chicken manure namely: 0,1,2,and 4%. While the sub- sub plots included two methods of applying chicken manure, i.e., mixing with the soil or in a carpet-like layer at 15 cm depth.

Results pertaining to soil analysis indicate that, increasing application rate of chicken manure increased soil EC values & available soil (N, P, K, Fe, Mn, Zn, Cu, Ni, Pb, Cd, Co and Cr). The rate of increase differed from one element to another, however the highest values of such elements were found with the higher application rate of chicken manure whether the soil was irrigated with tap water or sludge effluents.

The dry matter yields of both corn and barely plants are significantly increased with different magnitudes depending upon the rate and /or the method of applying chicken manure under any type of sludge effluent irrigation. Mixing the highest rate (4 %) of chicken manure with the used calcareous soil is the best treatment in this respect. This is reflected on significant increases in the uptake of macro, micro nutrients & heavy metals by corn and barley plants. Therefore, it is good enough to mix the chicken manure with calcareous soil to ensure better distribution of the organic manure and to obtain high quantity & quality of the grown plants, especially when using low quality water such as sludge effluents for irrigation.

Key words: calcareous soils, sludge effluent, chicken manure, corn & barley plants, content & plant uptake of N, P, K, Fe, Mn, Zn, Cu, Ni, Pb, Cd, Co, Cr and Zn- equivalent.