

# OF SEWAGE SLUDGE ON SOME TRACE ELEMENTS ACCUMILATION IN SOIL AND LETTUCE GROWTH AND YIELD.

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## ABSTRACT

A field experiment was carried out in one of Yousifia village fields – Baghdad Province to investigate the effect of dried sewage on accumulation of some trace elements in calcareous clay loam textured soil and their effect on the growth and yield of Lettuce plant using Complete Randomized Design (CRD) of triplicates. The experiment included two treatments ,the first one using mineral fertilizers and the second treatment is using mineral fertilizers with 40 ton.ha<sup>-1</sup> of dried sewage sludge , mixed with soil to a depth of 30 cm. Mineral fertilizers were applied to all treatments in an average of 180, 220 and 80 kg.ha<sup>-1</sup> of Urea (46% N) , super phosphate (20% P) and Potassium sulphate (41% K) respectively. Lettuce were planted on 2/11/2012 and irrigated with a river water after consumption of 75% of available water. In 18/2/2013 the plants were harvested randomly from each replicate , fresh and dry weight measured . Soil and leaves samples from all treatments were taken for analysis.

Results showed: Significant reduction in soil pH and significant increase in each of these parameters : Concentrations of some trace elements (Zn , Mn, Pb, Cd) extracted by DTPA , leaf content of N, P, K, Zn, Mn and Pb. Plant growth and yield, soil content of Zn, Mn, Pb, Cd while there was no effect on available cadmium concentration in soil or leaf content. In general the concentrations of trace elements were lower in soil and plant and did not reach the critical or toxic levels therefore there are no pollution by these elements in soil and plant.

The results indicated the possibility of using sewage sludge as a good organic fertilizers in Iraqi calcareous soils without any pollution or accumumilation by trace elements in soil and plant.

**Key words :** Sewage , sludge , Accumilation of trace elements , pollution Calcareous soil .

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