INTRODUCTION

INTRODUCTION

In order to provide food and agricultural products for the fast – growing population in Egypt, it is necessary to improve the productivity of the cultivated land and put more land into agriculture.

The salt-affected soils are a major constraint for agricultural production in the arid regions. If their salt concentration allows economical plants to grow, their yields are low, cost of production is relatively high,and their need for water is substantially more than the nonsaline soils.

Several investigators consider that excessive exchangeable sodium in saline-sodic soils is sufficiently reduced during leaching and that no special reclamation procedures are required.The hydrolysis of Na-clay in water results in replacement of adsorbed Na^+ by another cation in solution especially divalent cations. If divalent cations were not present, mostly H^+ ions would be retained in place of Na^+. Because of its physical properties, lower cost and natural presence in arid regions , gypsum was used as a calcium supplier for reclamation in the current work. Sewage sludge was tried also but as an organic amendment for saline sodic soils in this work. Some trace elements in sewage sludge (Fe, Mn , Cu , Zn) may serve to correct plant deficiencies, However, some reactions might take place during the reclamation processes .Resultants of these reactions besides the effect of the leaching process, may alter distribution and transport of cations, anions and trace elements in soil . Thus, the present study was conducted to evaluate the influence of reclaiming saline sodic

soils by leaching only or by leaching in presence of sewage sludge as an organic amendment or gypsum as an inorganic amendment on distribution and transport of some trace elements (Fe,Mn, Cu and Zn) , some cations (Ca, Mg, Na and K) and anions (Cl^-, CO_3^{2-} , $HCO_3^-$and SO_4^{2-}) in these soils.