6- SUMMARY

Field experiment was carried out on reclamation of a saline sodic silty clay soil El-Salam Canal water (EC 1.5 dSm^{-1}, SAR 7.1, Adj. SAR 16.0) was used in a field in south El-Hosoiniya Plain, north east of Delta, Sharqueya Governorate. The aim was to asses the efficiency of reclamation using four amendments, each at two rates. Materials were gypsum "G" (8.0 and 10.0 ton/fed) sulphur "S" (1.5 and 1.9 ton/fed.), lime "L" (4.6 and 5.8 ton/fed), and manured lime "ML" (4.6 + 10.0 ton/fed) and (5.8 + 10.0 ton/fed) for each material, rate 1 represents the gypsum requirement GR, and rate 2 represents 1.25 GR. After reclamation, rice was grown and yield was measured. El-Salam water was used adopting intermittent leaching for 2 cycles. Each cycle comprised applying 600 m^3/ fed followed by 900 m^3/fed with 2 weeks between water applications per each cycle, and one month between the 2 cycles.

Original values of soil parameters before reclamation were: EC: 17.71 dSm^{-1} in top soil and 12.81 dSm^{-1} in subsoil, other comparable parameters were: ESP: 38.9 and 40.1, pH: 8.1 and 8.0, SAR: 30.8 and 40.8 for topsoil and subsoil, respectively for each parameter. Application with either surface or mixing in the top soil 0-15 cm layer. "ML" by surface application with rate 1 reduced EC to 2.95 in topsoil and 3.74 dSm^{-1} in subsoil, "G" or "ML", (surface application with rate 2) reduced soil pH. "L" showed an increase in pH.

"G" was the most efficient material in reducing soil sodicity rendering SAR 10.7 and ESP 13.5 in topsoil. It also increased soluble Ca^{++} "ML" reduced to 23.3 and ESP to 25.4 in the subsoil. The comparative efficiency concerning reduction of sodicity (as ESP) of the 4 amendments may be stated as follows (concerning response in the 0-30 cm. Sulphur; 80%; lime; 72%; manured lime; 84%. Yield of grains of rice

was 3.0 "ML", 2.7 "S", 2.5 "G" and 1.6 ton/fed. "L". Yield of straw was 3.6 "ML", 3.1 "S", 3.0 "G" and 2.4 ton/fed "L". Such comparative efficiency was calculated taking in consideration, the final ESP reached by the alternative amendment companion with that of gypsum (in terms of %).

Regular annul or biannual or every 4-5 years application of "G" and manure should be done to improve soil fertility and increase soil productivity. Lime may be used mixed with farmyard manure in order to obtain effective response in reducing sodicity an increased yield of crops subsequently grown after reclamation.