

CONTENTS

1-INTRODUCTION	1
2-REVIEW OF LITERATURE	3
2.1. Concept of the salt-affected soils.....	3
2.2.The Salt –affected soils in U.S. classification system	4
2.3. Sources of salts in soils	7
2.4. Properties of the salt-affected soils	9
2.4.1. The physical properties	9
2.4.2. The chemical properties.....	11
2.5. Reclamation of the Saline-Sodic and Sodic Saline soils.....	14
2.5.1. Reclamation by leaching.	14
2.5.2.Reclamation by application of Amendments.	15
2.5.2.1. Calcium Amendments.	15
2.5.2.2. Organic materials.	17
2.6. Distribution of trace metals among different soil fraction.....	18
2.7.Mobility and transportation of some elements within the soil...	22
3.MATERIALS AND METHODS.....	27
3.1. Soil Sampling.....	27
3.2. The Experimental work.....	27
3.2.1. The column experiment.....	27
3.2.2. Fractionation of soil trace metals.....	31
3.3.Soil samples Analyses.....	33
4. RESULTS AND DISCUSSION.....	35
4.1.Depthwise distribution of some cations (Ca^{2+} , Mg^{2+} , Na^{+} and K^{+}) and trace elements (Fe, Mn,Cu and Zn) within different depths of the leached or/and amended soils.....	35

4.1.1. Depthwise distribution of Ca^{2+} , Mg^{2+} , Na^{+} and K^{+}	35
4.1.2. Depthwise distribution of the trace elements (Fe, Mn, Cu, and Zn).....	40
4.2. Leachability and transport of some cations and anions and trace elements.....	52
4.2.1. Within the unamended soils	52
4.2.2. Within the amended soils	70
4.2.2.1 Within the sludge amended soils.....	70
4.2.2.2 Within the gypsum amended soils	72
4.3. Trace elements fractions in the continuously leached and amended soils.....	78
4.3.1. Iron fractions in the tested soils.....	79
4.3.2. Manganese fractions in the tested soils	81
4.3.3. Copper fractions in the tested soils	87
4.3.4. Zinc fractions in the tested soils.....	89
5-SUMMARY	91
6-CONCLUSION	96
7.REFERENCES	97
8.ARABIC SUMMARY	