

# INTRODUCTION

## **1. INTRODUCTION**

Irrigation supplementary all year round is the backbone of agriculture in arid and semiarid regions.

Salts are added to the soil with each irrigation. These salts will reduce crop yield if they accumulate in the root depth to damaging concentrations. In the past, most water used for irrigation of soils of Egypt was of good to excellent quality and was unlikely to present serious salinity constraints. Expansion in land reclamation as well as intensifying agricultural production from the cultivated land forced the agronomists to use poor quality waters to confront the problem of lack of water. Water sources of limited quality such as drainage and sewage waters were suggested for agricultural use. With poor water quality, various soil and cropping problems can be expected to develop.

Salinization is one of the major soil problems that has turned millions of hectares of our agricultural land unfit for profitable crop production. Special management practices may then be required to maintain full crop productivity. The alternative usage of good quality water with a bad quality one for irrigating crops or leaching salts out of the root zone is a common management practice for reducing salinity hazard. However, frequency among the successive irrigations as well as methods of leaching are dependent on water quality, soil properties and sensitivity of crop to salinity.

Recently magnetizing saline irrigation water through a proper magnetic field, has been introduced as an effective mean for soil

desalination. Magnetic technologies could provide effective units to magnetize water with the aims of using such magnetized poor quality waters for leaching salts out of soil as well as the irrigation purpose.

The current work was conducted aiming at throwing some light on the impact of intermittent leaching with poor water qualities on redistribution of soluble salts within different depths of different soils affected with salinity to different extents. Special managements were practiced to overcome the potential problems arising due to usage of such poor water qualities. These involved usage of different sequences of a good quality water with a poor quality one besides of magnetization of the poor quality waters for the leaching process.

Germination of wheat seeds as well as wheat growth under irrigation with the poor water qualities before and after being magnetized were also a matter of investigation in the current study.