Introduction

INTRODUCTION

Mung bean or green gram or golden gram or moong (*Vigna radiata* (L) Wilcezk, but its old name was *Phaseolus aureas*) is a legume crop grown in the summer season, early mature, high yielding crop. It is one of the new promising crops grown in Egypt. It is recently introduced to Egypt, seeds are mainly used in human and animal nutrition because of its high protein content(23.6%) and its high lysine content(6%). Dry seeds can be used as food after cooking in a similar manner as faba bean and lentil. as mentioned by Ashour *et al.* (1991 and 1992) Fig. (1) show the type of mung bean plant.

Mung bean is a short duration crop (70 – 90 days) and mostly with a fully determinate nature. (Abd-El-Lateef, et al. 1996). Mung bean seeds can be considered for export demands.

One of the approaches to increase legume production is to expand the cultivation of mung bean in the newly desert reclaimed soils which are mainly irrigated from the underground water under different stress conditions; low fertility, shortage of water, irrigation under saline well water conditions added to soil salinity conditions. These factors are considered of the major problems affecting the production of mung bean plants under desert field conditions in Egypt.

The major effect of salinity on plant growth has been attributed to a) The toxic effect of ions. b) Nutritional imbalance caused by such ions. c) Depression of water availability due to the high osmotic potential. Generally, salinity affects the plant at all growth stages, but the extent of its influence greatly differs according to growth stage and plant specie

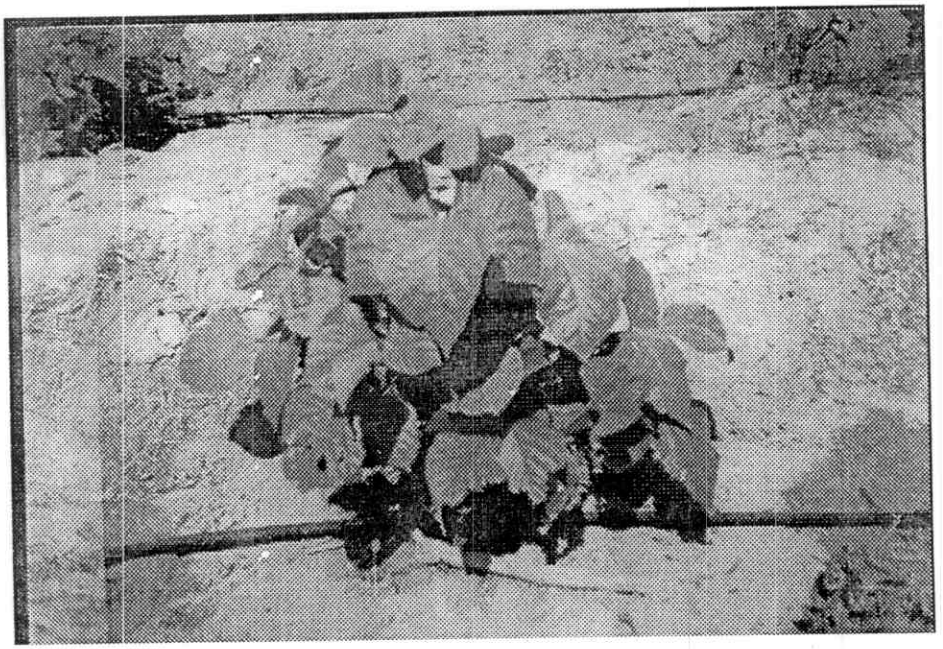

Fig. (1) : Show the type of Mung bean plant

itself. The adverse effects associated with increasing salinity on most plants are well documented (Jaiwal et al., 1997).

In order to solve the salinity problem in arid and semi- arid zones we have to go through several ways; (1) Selecting salt resistance species (2) Establishing agro management regimes to increase plant tolerance to salinity and (3) Treatments with bioregulator or nutrients application to increase resistance and adaptation of plants under salinity stress. Therefore, the importance of salt resistance in agricultural species has been promoted as an agronomic approach for exploitation of forge areas of saline soils and the efficient used of the relatively abundant saline water supplies.

The adverse effect of salinity levels on seed germination (Ashraf and Rasul., 1988), growth (Abel and Mackenzie, 1964) have been mentioned. Moreover, Minhas and Gupta (1990) mentioned that seed yield was decreased by 73% at Ec. 6.4 ds/m and decreased only 3% at Ec. 0.3 ds/m of irrigation water.

Recently, increasing salt tolerance of plants by bioregulators or nutrients application is gaining more importance in some corps. Treatments of thidiazuron (TDZ) revealed positive effect with wheat (Backett and Vanstaden, 1992) and tomato plant (Hassan, 1999) Moreover, the application of K was recommended as an effective agent for improving growth, yield and some chemical composition of legume crops. The increase of Na^+ and Cl^- ions in plant tissues were associated with by a decrease in K uptake upon increasing NaCl salinity stress (Jaiwal et al., 1997).

Legumes have a higher phosphorus requirements for growth (Gill 1985) as well as for nodulation and nitrogen fixation. Vegetative growth

characteristics of mung bean plants increased by phosphorus fertilization or foliar application (Said et al., 1998). Increasing phosphorus fertilization up to 60 kg P_2O_5/ha significantly increased number of bacterial nodules/plant (Sharma *et al.*, 1994).

The aim of this investigation is to increase salinity hardening of mung bean seedlings under different saline conditions in nursery in order to produce highly adapted transplants with high survival and tolerance to salinity stress of well irrigation water in the open field under desert conditions of Ras-Sudr Sinai, Egypt. Furthermore, trails were assessed for increasing salt resistance and improving growth and productivity of mung bean plants by adding the bioregulator TDZ, K, P and Zn as a foliar application. The success of such treatments will be essential for increasing the cultivated area of such crop grown under salinity stress.