

INTRODUCTION

Maize (*Zea mays*, L.) is a major cereal crop in Egypt. The total cultivated area of maize reached 2.087 million faddan in 1998 season with an average grain yield of 21.69 ardabs / faddan, according to Agricultural Economics of Egypt, **Ministry of Agriculture, 1998**. The total production is not sufficient for the consumption, therefore, efforts are being made to increase the productivity of maize by growing new high yielding varieties under the most favourable cultural practices such as macro and micro nutrients applications. Plants depend greatly on the non-exchangeable-K. In this connection, the non-exchangeable-K amounted to more than 82 % of the K – uptake in the alluvial soils, while this value did not reach more than 58 % in the highly calcareous soil (**Sabit et al. 1976**). However, several workers found positive effect on K application on yield and yield components of many crops in alluvial and new reclaimed soils. Potassium is essential to a number of plant enzyme systems and transpiration. Most plant processes, particularly the translocation of photosynthesis with the plant, are dependent on cell K content. (**Archer , 1988**).

Micronutrients of Fe, Mn, Zn and Cu are required in small amounts; and they are essential for plant metabolism particularly in the functioning of plant growth hormones. Micronutrient deficiencies, are mainly due to low total contents in soils or low availability related to high pH, CaCO₃ % and low organic matter content as well as stress conditions or high demand. In generally, iron uptake is increased by adding potassium. This may be due to K stimulation iron absorption (**Anon., 1985**).

Therefore, the purpose of this study was to investigate the effect of potassium, iron and their interaction on tasseling and silking dates, growth characters, grain yield and grain quality of maize.