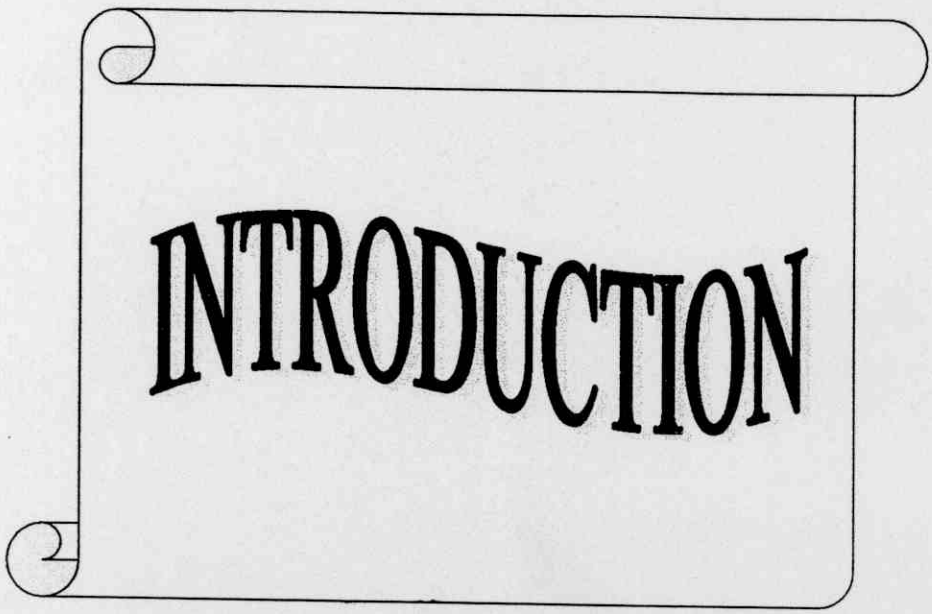
INTRODUCTION

1. INTODUCTION

Apple is considered as the most important economic fruit among the other deciduous fruit trees. The recently introduced apple rootstocks encouraged the horizontal extension of apple trees in the new reclaimed soils. The net return from growing apple trees in newly reclaimed soils is very high as compared with the other fruit trees. Thus, large number of apple rootstock plants are needed. The total cultivated area of apple trees reached about (64810) feddans produced (468269) metric tons according to the latest statistics of Ministry of Agriculture Economic Department (2000). Apple planting and productivity are concentrated mainly in newly reclaimed soils because of its high return to the growers.

Passion fruit on the other hand, is a vigorous prennial vine and it will spread as a new crop in future. The fruit juice contain a good source of ascorbic acid (Vitamin C) and carotenoids (Vitamin A) with rich flavore and pleasant aromatic. It has many uses i.e. eaten fresh, added to fruit juice, jelly, pie, ornamental uses, for its foliage, flowers, and different hedges in the gardens. Passion fruit plants can be grown well in a various of soils as well as tolerate drought stresses.

Conventinal propagation of either apple rootstocks or passion fruit plants failed to overcome the gab between the large number demanded and the actual number produced. Also, evaluation of some apple rootstocks to drought stress tolerance are time consuming. Thus, application of tissue culture techniques either for micropropagation or evaluation of apple rootstocks tolerance to drought are urgently needed. This technique was also, adopted for the evaluation and adaptation of several plant species tolerant to osmotic stress using *In Vitro* proliferated callus, shoots, plantlets or embryo cultures .Therefore, the

evaluation for drought tolerance would be reliable and favorable when time, space, and environmental conditions are limiting factors.

The main objectives of this investigation are to establish a suitable protocol for micropropagation of some apple rootstocks (Malling Mertom-106 & 111 and Balady) and passion fruit. Also, evaluating the abilities of *In Vitro* studied apple rootstocks to tolerate drought stress for selecting the best ones in this respect.