I. INTRODUCTION

Apple is the most important deciduous fruit in the world. In recent years, there has been a steady increase in the area planted with apple, which is paralleled to the continuous rise in demand for apple fruits for local consumption.

Nowadays, in A.R.E. many thouthands feddans apples plantation are located in new lands of different soil types. Moreover, production of apple is extending rapidly in Egypt after the introduction of low chilling high quality cultivars. According to the statistics of 1995, the total acreage of apple was reached about 55000 feddans. Therefore, many problems are expected to arise. These problems would be related directly to the relative adaptability of the rootstock species to some cultural practices used in such soils and other problems related to vegetatively propagated stocks are mainly taken into consideration.

In Egypt rootstocks usually used for apple are common Crab, Balady apple and quince. They are easy propagate but seem to be easy attacked by woolly aphids. In addition; most of apple rootstocks are imported from some European countries to meet the demand of local nurseries. Therefore, it seems suitable to investigate the possible methods of propagation for such rootstocks. However; vegetative propagation of these rootstocks is very difficult because it requires special treatments to obtain suitable number of plants.

Vegetative propagation of rootstock clones is rather limited in Egypt. Previous trials proved high rooting ability of semi-hard wood stem cuttings of "MM.106" and "MM.111" **(Khattab and Stino, 1986 a)** and "M. 27" **(Khattab and Stino, 1986 b).** However; the percentage of survival of these rooted cuttings is rather low.

The application of exogenous auxin increased rooting in hard-wood cuttings but only when the level of root promoting Co-factors were optimum in the tested plant **(Lanphear and Meahl, 1963 and Hess, 1964).**

Therefore; the studies reported in here were conducted to determine the best time of the year to make both cuttings and air-layering, best concentration of chemical treatment (IBA) to promote rooting and to shed more light on the physiological behaviour for root initiation in both hard-wood cuttings and air-layering for two apple rootstocks **(MM.106 and Mc. 9).**