INTRODUCTION

1. INTRODUCTION

Citrus is the main fruit crop grown in Egypt. It is one of the most important fruits favoured by consumers due to it's nice taste, excellent flavor, high content of vitamins and nutritional and medical value. Moreover, citrus can be used in juice and jam production, as well as, some food, oil, and pharmaceutical industries. Recently, its acreage reached 344789 feddans and total production was about 2594853 tons in 2001 (ministry of Agriculture Statistics, 2001).

Generally, most citrus cvs. are propagated by budding onto a suitable rootstocks. In Egypt, sour orange (*Citrus aurantium*, L.) is used as a traditional rootstock for different citrus varieties since it is tolerant to Gummosis fungi, as well as, good growth under Delta and Nile Valley soil conditions. Also, fruits of cultivars, budded on it, have a high quality of taste, volume and colour.

On the other hand, sour orange rootstock is sensitive to many virus diseases like Psorsis, also it is easily infected with nematodes.

Moreover, it grows slowly under sandy soil conditions, which include most of the new reclaimed areas. Besides, sour orange rootstock is unable to tolerate the unfavorable soil factors of the new reclaimed area such as salinity, high pH and poor drainage.

Also, it is very sensitive to virulent strains of Tristeza virus which cause quick decline to citrus trees, that caused great losses in many citrus producing countries.

Therefore, it is important to consider the replacement of sour orange rootstock by other more suitable citrus rootstocks especially for the newly reclaimed areas that are tolerant to Tristeza, phytophthora, parasitic nematodes as well as other diseases and pests.

In general, this investigation evaluates some morphological and physiological characteristics of six *Citrus* varieties used as rootstocks for citrus cvs. These rootstocks were compared through the following characteristics: (1) Vegetative growth, (2) Tree fruiting (3) Seed yield (4) Leaf fresh and dry weight and dry matter percentage, (5) Leaf nutrient content (6) Seed characteristics, such as seed weight, seed polyemberyony, seed germination and germination rate (7) Seed content (8) Seedling growth.

Furthermore, this investigation studied the morphological aspects of rootstock seeds and leaves either macro morphological, such as shape, colour and size, as well as, seed and leaf surface scan by Scanning Electron Microscope (SEM). According to seeds and leaves macro morphological and surface scanning aspects by (SEM), citrus rootstocks under this study have been differentiated and a key was developed to help in separating and identifying citrus rootstocks under this study.