

INTRODUCTION

Small fruit plants occupied the most important section in fruit crops in the worldwide. Grape, strawberry, blackberry, and other berries are categorized among small fruit plants. Grapevines (*Vitis vinifera* L.) is considered as one of the main fruit crops in Egypt, since it took the second rank after citrus. The grape fruit has many uses, it may be eaten fresh or processed into raisin, fermented into wine, grape juice or canned. The cultivated area of the grape in Egypt reached 138972 feddan according to the statistics published by Agricultural Economic Department of the Ministry of Agriculture in 1993 book arabic pamphlet. Introduction of new varieties into Egypt was prohibited in the past for controlling spreading of phyloxera. Hence improvement of local grapes was very limited which resulted in restricting the competition and reducing exportation of grape in the international markets.

Recently, the policy of the Egyptian Agriculture Ministry aims to extensively increase the grape production area specially in newly reclaimed lands. Also, some new varieties with outstanding fruit qualities and high yielding abilities were introduced. Surveying of new varieties and selecting the best varieties suitable for local conditions were the main interest.

Strawberry plants are the leading small fruit plants either for the nutritional value of the fruit or for the economic return. Strawberry fruits can be eaten fresh or processed into Jam, Jelly, and Syrub. Strawberry plantation in Egypt reached to 4500 feddan in 1994 / 1995 season which produced about 54000 tons. Imported varieties of strawberry have heavy yielding ability with large fruit size as well as good handling and transportation properties. These

advantages of the imported cultivars were missing and considered disadvantages in balady strawberry plants. However, balady strawberry fruits have an excellent flavour which is lacking in imported varieties. Disadvantages of Balady strawberry plants almost led to its disappearance and displaced by imported varieties.

Recently, there is a great interest to restore the previous Balady strawberry position through planning an intensive breeding program for overcoming its disadvantages through hybridization with high quality imported strawberry varieties. Large numbers of either Balady or imported varieties of strawberry were required which cannot be realized by conventional propagation methods.

Tissue culture technique became the most important practical method of clonal propagation of grape or strawberry plants during the last two decades. The runner plants produced from tissue culture techniques were at least 10 times much more than those produced by conventional methods (Maliarcikova -1981). Also this technique was helpful in introducing healthy plants free from bacterial, fungal, viral diseases and insects infestation specially phyloxera which was the main causal factor inhibited the introduction of new grape varieties lately.

Meanwhile, tissue culture techniques save costs, time, and labour since each m² of growing area of strawberry can produce 4000 plantlets / year (Boxus 1981). Also, from one meristem 3000 shoot primordia were produced in 6 months and half of these developed into normal plants. These plants were very vigorous and after transplanting into the soil, some of them produced up

to 500 new runner plants (Abramenko 1983). In addition, The apical fragmentation methods of grape can produce 20,000 to 24,000 plants from a single apex in a year (Harris and Stevenson, 1979). Barlass and Skene (1978) reported that approximately 8000 grapevine plantlets could be produced from one shoot tip in 3-4 months. Also, Harris and Stevenson (1982) obtained 12,000 plantlets from grapevine stem segment 3-5 mm in length.

The ultimate goal of this investigation is to find out the best possibilities for establishing some new grape and strawberry cultivars as well as Balady strawberry plants. Also, selection of the best ways for enhancing proliferation for covering unlimited requirements from these plants. In addition, suitable methods for rooting and acclimatization of these plants were involved. Meanwhile, evaluation of some new cultivars of either grape or strawberry and studying the response of these cultivars to different physiological factors as the consequences of light and dark conditions, different phytohormones and hormonal balances on development and rooting of the tissue cultured plants as well as acclimatization process were included.