STUDIES ON ROOTING AND VEGETATION OF DATE PALM SUCKERS

By

MAHMOUD AHMED MAHMOUD BAKIR
B.Sc. Agric. Sci. Fac. Agric., Minia Univ., Egypt 2000.

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APPROVAL SHEET

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Title of Thesis: Studies on Rooting and Vegetation of Date Palm Suckers
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ABSTRACT

This investigation was carried out to enhance suckers rooting ability and leaf growth to some date palm cultivars through vegetative propagation by plant growth regulators injection and replanting under greenhouse conditions.

In this research, suckers of date palm cultivars Sewy, Hayani and Zaghloul weights (2 to < 4 kg and 4-8 kg) were planted in two dates, mid of March and September in each season (2007 and 2008) at nursery in Horticulture Research Institute, Agricultural Research Center, Giza, Egypt.

All suckers were treated by 9 injection treatments, before planting, by 3 ml auxin solution as follows: 1) distilled water (control treatment), 2) 1000 ppm NAA, 3) 1500 ppm NAA, 4) 2000 ppm NAA, 5) 2500 ppm NAA, 6) 3000 ppm NAA, 7) 1000 ppm IBA, 8) 2000 ppm IBA and 9) 3000 ppm IBA.

The obtained results cleared that ’Hayani‘ increased significantly roots number/suckers than ’Zaghloul‘ and ’Sewy‘. Whereas, the reverse was true concerning root length. Planting at mid of March was better than that of mid September for all recorded parameters of suckers. Using auxin injection in the suckers bases significantly increased survival percentages and means of roots, number, length, diameter, moisture and leaves number, length and growth rate.

Moreover, suckers injected by IBA at 3000 ppm or NAA 3000 ppm and planted in mid of March were the preferable for survival percentages of ’Hayani‘, ’Sewy‘ and ’Zaghloul‘ cultivars and means of roots number, length and length of developed leaves.

Key words: Suckers, Cultivars, Date palm, growth regulators, IBA, Injection, NAA, *Phoenix dactylifera* L., Rooting, Survival percentage, ’Sewy‘,.’Hayani‘, ’Zaghloul‘.

DEDICATION

I dedicate this work to whom my heart felt thanks; to my parents, wife, daughter and brothers for their patience and help, as well as to for all the support they lovely offered along the period of my post graduation.

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INTRODUCTION

Date palm, *(Phoenix dactylifera* L.) belongs to family Palmaceae (Arecaceae). The family contains over 200 genera and 2500 species. The approximated number of date palm plants is about 100 million worldwide, where 62% of this number is found in the Arabian areas and Middle East (FAO and Arab Countries Council, 2000).

Date palm is one of the oldest fruit trees in the world and is mentioned in Holy Qur'an and Bible. Date palm trees are essential components of farming systems in dry and semi arid regions, and can be produced equally well in small farm units and in large scale commercial plantation units. Palm tree is an excellent candidate for cultivation in Egyptian agriculture projects in new reclamed regions, *i.e.* Toshkay and Shark El-Ouainat. Date palm is one of the most important fruit trees in the Saharan and Sub-Saharan regions of Africa. In some areas, this is the only tree which provides food, shelter and fuel to the communities. Dates are not only a staple food but are also an important export cash crop (Bougeudoura, 1983; and Zaid and Hegarty, 2006).

Date palm is widely cultivated in arid regions and it plays an essential ecological role in Arabian countries. The exact origin of the date palm is considered to be lost in Antiquity. However, it is certain that date palm was cultivated as early as 4000 B.C. More proof of the great antiquity of the date palm is in Egypt's Nile Valley where it was used as the symbol for the year in Egyptian hieroglyphics and its frond as a symbol for the month (Dowson, 1982).

Date palm is the most important crop that is cultivated in the Egyptian oasis, where it offers dates as staple food and ecological conditions for other cultivated plants .The importance of date palm lies in its high tolerance to environmental stresses ranging from salinity to drought and high temperature, in addition to low maintenance and yield harvesting costs. Date palm, which is an irreplaceable tree in desert lands, provides protection to under-crops from the harshness of the climate (heat, wind and even cold weather), reduces damage caused by sand storms and wind erosion. Furthermore, with the micro climate created by date palm plantations, the cultivation of some fruit palms and annual crops will be possible (Moursy and Saker, 1998).

There are three techniques to propagate date palm: seed propagation, offshoot propagation (traditional method) and the recently developed tissue culture techniques (Zaid and Jimenez, 1999).

Seed propagation, also called sexual propagation, although useful for breeding purposes, is not a proper method of date palm vegetative propagation, and should be discouraged. If date palm propagated by seed, half of the progeny will be males and half will be females, in addition, female plants originating from seedlings usually produce late maturing fruits of variable and generally inferior quality compared to established clonal palms. Because date palms are heterozygous, and thus there will be much variation within the progeny which will not be true to type and seedling palms will be alike. Also, seedling differ considerably with regard to production potential, fruit quality and harvesting time, making them very difficult to market as