IMPROVING FRUIT SET AND YIELD OF KHADRAWI DATE PALM CULTIVAR

By

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B.Sc. Agric. Sci. (Horticulture), Fayoum University, 2011

A Thesis Submitted in Partial Fulfillment
Of
The Requirements for the Degree of

MASTER OF SCIENCE
in
Agricultural Sciences

(Pomology)

Department of Horticulture
Faculty of Agriculture
Ain Shams University

2018

Approval Sheet

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ABSTRACT

Ali Rabie Abd El-Aziem Moustafa: Improving Fruit Set and Yield of Khadrawi Date Palm Cultivar. Unpublished Master of Science Thesis, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 2018.

Two independent experiments were carried out in this study during 2015 and 2016 seasons on Khadrawi date palm cultivar. The first experiment: dealt with effect of spraying spathes with moringa extract at 3%, garlic extract at 3% or ascorbic acid at 300 ppm at three times (3 hours before pollination then 4 and 8 weeks after pollination) on fruit set, yield and fruit quality.

Spraying date palm spathes with moringa extract or garlic extract recorded the highest initial fruit set in the first and second seasons, respectively. As well as, moringa extract gave the highest fruit retention and yield in both seasons. In addition, all treatments improved fruit physical characteristics *i.e*. fruit weight, flesh weight, fruit volume and fruit length compared to the control treatment (water spray) in the two studied seasons. Also, moringa extract or ascorbic acid increased TSS%, total sugars % and reducing sugars % in both seasons compared to the control. Meanwhile, the lowest fibers % was obtained by garlic extract in the two seasons. Morever, all treatments had no significant effect on total acidity % and tannins content in both seasons.

The second experiment was carried out to study the effect of strand thinning (removing 15% and 30 of the total number of strands from the bunch center after 8 weeks from pollination) on yield and fruit quality. Thinning treatment by removing 15% of the total number of strands after 8 weeks from pollination gave the highest bunch weight and yield per palm compared to thinning 30% in the two seasons. Also, removing 30%

and 15% of the total number of strands improved fruit physical properties i.e. fruit weight, flesh weight, fruit length and fruit diameter than control in both seasons. Meanwhile, thinning by removing 30% of the total number of strands gave the highest fruit flesh % and fruit volume compared to other treatments in the two seasons. On the other hand, both thinning treatments improved some chemical properties such as TSS %, total sugar % and reducing sugar % than control (without thinning). However, all thinning treatments had no significant effect on non reducing sugar %, total acidity % and tannins content in the two studied seasons.

Key words: Date palm, Khadrawi, Fruit set, Yield, Fruit quality, Moringa extract, Garlic extract, Ascorbic acid, Strands thinning.

ACKNOWLEDGEMENT

At first, ultimate great praise for **ALLAH**

I wish to express the deepest grateful thanks and sincere gratitude to **Dr. Nazmy Abdel-Hamid Abdel-Ghany** Professor of Pomology, Faculty of Agriculture, Ain Shams University for his supervision, advices, support and his guidance through the course of study.

Great thanks to **Dr. Ahmed Abd El-Hamid Awad** Associate Professor of Pomology, Faculty of Agriculture, Ain Shams University for his valuable guidance, supervision, sincere help during the preparation of this study.

I am also deeply thankful to **Dr. Saied Kamel Mohamed Abd El-Naby** Professor Emeritus of Pomology, National Research Center, Dokki, Giza, Egypt for his supervision, suggesting the research problem, planning of this investigation, kind encouragement, continuous help and time offered during the course of this study.

Many thank are due to **Dr. Moustafa Ramadan El-Sonbaty** Professor Emeritus of Pomology, National Research Center, Dokki, Giza, Egypt for his supervision and help during the study.

Many thanks also for Horticultural Crops Technology Department staff members, National Research Centre, Dokki, Giza, **Dr. Mohamed Hemdan Baiea** and **Dr. amr Abd El-Khalek Ahmed** for their co-operation during this work. Thanks are also extended **Dr. Ahmed Abd El-Tawab** for their functional help during this study.

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INTRODUCTION

Date palm (*Phoenix dactylifera* L.) belongs to the family Arecaceae and it is considered the tree of life in the desert, because it tolerates high temperatures, drought and salinity more than many other fruit crops **(Lunde, 1978).** Date Palm is the most successful and commercially important crop in Egypt. Numbers of date palm trees in Egypt are about 12827235 palms producing about 1,465,030 tons/year, **(Ministry of Agriculture and Land Reclamation, Egypt, 2015).**

Date palm fruit contains a high percentage of total sugars (44-88%), fats (0.2-0.5%), proteins (2.3-5.6%) and vitamins. Also it contains a high potassium percentage (0.9%) and other minerals like boron, calcium, cobalt, copper, iron, magnesium, manganese, phosphorous, sodium and zinc. In many ways, dates may be considered as an ideal food, providing a wide range of essential nutrients and potential health benefits. **(Al-Shahib and Marshall, 2003)**.

Khadrawi date palm is one of the commercial cultivars that have greenish amber fruits on ripening, slightly tolerant to humid conditions than many other varieties. As well as, fruits are consumed at rutab stage **(Fig. 1)** but the fruit set and productivity is low (**Hussein, 2011).** Nowadays, the modern trend in the field of agriculture to use of natural materials such as plant extracts or antioxidants that improve productivity and fruit quality for reducing the use of chemical materials that have harmful effects on humans and the environment.

In this respect, moringa (*Moringa oleifera* L.) leaves extract contains significant quantities of calcium, potassium, and cytokinin in the form of zeatin, antioxidants, proteins and ascorbates **(Makkar *et al.*, 2007)**. In addition, spraying moringa extract on Hollywood plum trees