

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 Unpublished Master of Science Thesis, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 2018.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. Moreover, 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.

CONTENTS

	Page
LIST OF TABLES	iv
LIST OF FIGURES	i
INTRODUCTION	1
REVIEW OF LITERATURE	4
1.First experiment: Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit set%, yield and fruit quality of Khadrawi date palm cv.	4
1.1.The Effects of spraying with moringa extract:	4
1.1.1. On fruit set %:	4
1.1.2. On yield:	5
1.1.3. On fruit quality:	7
1.1.3.1. On fruit physical properties:	7
1.1.3.2. On fruit chemical properties:	7
1.2. The Effects of spraying with garlic extract:	8
1.2.1. On fruit set %:	8
1.2.2. On yield:	9
1.2.3. On fruit quality:	9
1.2.3.1. On fruit physical properties:	9
1.2.3.2. On fruit chemical properties:	10
1.3. The Effects of spraying with ascorbic acid:	11
1.3.1. On fruit set %:	11
1.3.2. On yield:	11
1.3.3. On fruit quality:	12
1.3.3.1. On fruit physical properties:	12
1.3.3.2. On fruit chemical properties:	13

2.Second experiment: Effect of strands thinning treatments on yield and fruit quality of Khadrawi date palm cultivar.	14
2.1. Effect of strands thinning on yield:	14
2.2. Effect of strands thinning on fruit quality:	17
2.2.1. On fruit physical properties:	17
2.2.2. On fruit chemical properties:	25
MATERIALS AND METHODS	31
RESULTS AND DISCUSSION	38
The first experiment:	38
1. Fruit set and fruit retention %:	38
2. Bunch weight and yield per palm:	39
3. Fruit quality:	41
3.1. Fruit physical properties:	41
3.1.1. Fruit weight:	41
3.1.2. Flesh weight:	42
3.1.3. Seed weigh	43
3.1.4. Flesh %:	44
3.1.5. Fruit volume:	45
3.1.6. Fruit length:	46
3.1.7. Fruit diameter:	47
3.1.8. Fruit shape:	48
3.2. Fruit chemical properties:	50
3.2.1. Moisture percentage:	50
3.2.2. Total acidity percentage :	52
3.2.3. Total soluble solids percentage (TSS %):	53
3.2.4. Total sugars percentage :	54
3.2.5. Reducing sugars percentage :	55

3.2.6. Non-reducing sugars percentage :	57
3.2.7. Tannins content:	58
3.2.8. Fibers percentage:	59
The second experiment:	60
1. Bunch weight and yield per palm:	60
2. Fruit quality:	62
2.1. Fruit physical properties:	62
2.1.1. Fruit weight:	62
2.1.2. Flesh weight:	63
2.1.3. Seed weight:	65
2.1.4. Flesh percentage:	66
2.1.5. Fruit volume:	68
2.1.6. Fruit length:	69
2.1.7. Fruit diameter:	70
2.1.8. Fruit shape:	72
2.2. Fruit chemical properties:	73
2.2.1. Moisture percentage:	73
2.2.2. Total acidity percentage :	75
2.2.3. Total soluble solids percentage (TSS%):	75
2.2.4. Total sugars percentage :	77
2.2.5. Reducing sugars percentage :	78
2.2.6. Non-reducing sugars percentage :.....	79
2.2.7. Tannins content:	81
2.2.8. Fibers percentage:	82
CONCLUSION	84
SUMMARY	85
REFERENCES	90
ARABIC SUMMARY	

LIST OF TABLES

No.		Page
1.	Chemical analysis of 100 grams moringa leaves powder.	32
2.	Some components in garlic bulbs (<i>Allium sativum</i>).	33
3.	Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit set and fruit retention of Khadrawi date palm cv. in 2015 and 2016 seasons.	39
4.	Effect of spraying with moringa extract, garlic extract and ascorbic acid on bunch weight and yield/palm of Khadrawi date palm cv. at rutab stage in 2015 and 2016 seasons.	40
5.	Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit weight (g) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons.	42
6.	Effect of spraying with moringa extract, garlic extract and ascorbic acid on flesh weight (g) of Khadrawi dates cv. during fruit growth stages in 2015 and 2016 seasons.	43
7.	Effect of spraying with moringa extract, garlic extract and ascorbic acid on seed weight (g) of Khadrawi dates cv. during fruit growth stages in 2015 and 2016 seasons.	44
8.	Effect of spraying with moringa extract, garlic extract and ascorbic acid on flesh percentage of Khadrawi dates cv. during fruit growth stages in 2015 and 2016 seasons.	45

- 9.** Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit volume (cm³) of Khadrawi dates palm cv. during fruit growth stages in 2015 and 2016 seasons. **46**
- 10.** Effect of spraying moringa extract, garlic extract and ascorbic acid on fruit length (cm) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. **47**
- 11.** Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit diameter (cm) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. **48**
- 12.** Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit shape index of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. **49**
- 13.** Effect of spraying with moringa extract, garlic extract and ascorbic acid on fruit moisture percentage of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. **51**
- 14.** Effect of spraying with moringa extract, garlic extract and ascorbic acid on total acidity % and total soluble solids % (TSS%) of Khadrawi dates cv. at khalal and rutab stages during 2015 and 2016 seasons. **52**
- 15.** Effect of spraying with moringa extract, garlic extract and ascorbic acid on total sugars %, reducing sugars % and non-reducing sugars % of Khadrawi dates cv. at khalal and rutab stages during 2015 and 2016 seasons. **56**

16. Effect of spraying with moringa extract, garlic extract and ascorbic acid on tannins content and fibers % of Khadrawi dates cv. at khalal and rutab stages during 2015 and 2016 seasons. 59
17. Effect of strand thinning treatments on average bunch weight and yield/palm of Khadrawi date palm cv. at rutab stage in the 2015 and 2016 seasons. 61
18. Effect of strand thinning treatments on fruit weight (g) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. 63
19. Effect of strand thinning treatments on flesh weight (g) of Khadrawi dates cv. during fruit growth stages in 2015 and 2016 seasons. 64
20. Effect of strand thinning treatments on seed weight (g) of Khadrawi dates cv. during fruit growth stages in 2015 and 2016 seasons. 65
21. Effect of strand thinning treatments on flesh % of Khadrawi dates cv. during fruit growth stages in 2015 and 2016 seasons. 67
22. Effect of strand thinning treatments on fruit volume (cm³) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. 68
23. Effect of strand thinning treatments on fruit length (cm) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. 70
24. Effect of strand thinning treatments on fruit diameter (cm) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. 71

- 25.** Effect of strand thinning treatments on fruit shape index (Length/Diameter) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. **72**
- 26.** Effect of strand thinning treatments on fruit moisture (%) of Khadrawi date palm cv. during fruit growth stages in 2015 and 2016 seasons. **74**
- 27.** Effect of strand thinning treatments on total acidity and total soluble solids % of Khadrawi dates cv. at khalal and rutab stages during 2015 and 2016 seasons. **76**
- 28.** Effect of strand thinning treatments on total sugars, reducing sugars and non reducing sugars of Khadrawi dates cv. at khalal and rutab stages during 2015 and 2016 seasons. **79**
- 29** Effect of strand thinning treatments on tannins content and fibers % of Khadrawi dates cv. at khalal and rutab stages during 2015 and 2016 seasons. **82**

LIST OF FIGURES

No.		Page
1.	Fruit development stages (Khalal and Rutab) of Khadrawi date palm cultivar.	3

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