STUDIES ON THE EFFECT OF SALINITY ON SOME FRUIT PLANTS (APPLE AND OLIVE)

BY

RAWHEYA BEDIER MOHAMED ATTIA

A thesis subbmitted in partial fulfiment

OF

رسالة

THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

AGRICULTURAL SCIENCE

(POMOLOGY)

DEPARTMENT OF HORTICULTURE

FACULTY OF AGRICULTURE

AIN SHAMS UNIVERSITY

1994

STUDIES ON THE EFFECT OF SALINITY ON SOME FRUIT PLANTS (APPLE AND OLIVE)

BY

RAWHEYA BEDIER MOHAMED ATTIA

A thesis subbmitted in partial fulfiment

OF

THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

AGRICULTURAL SCIENCE

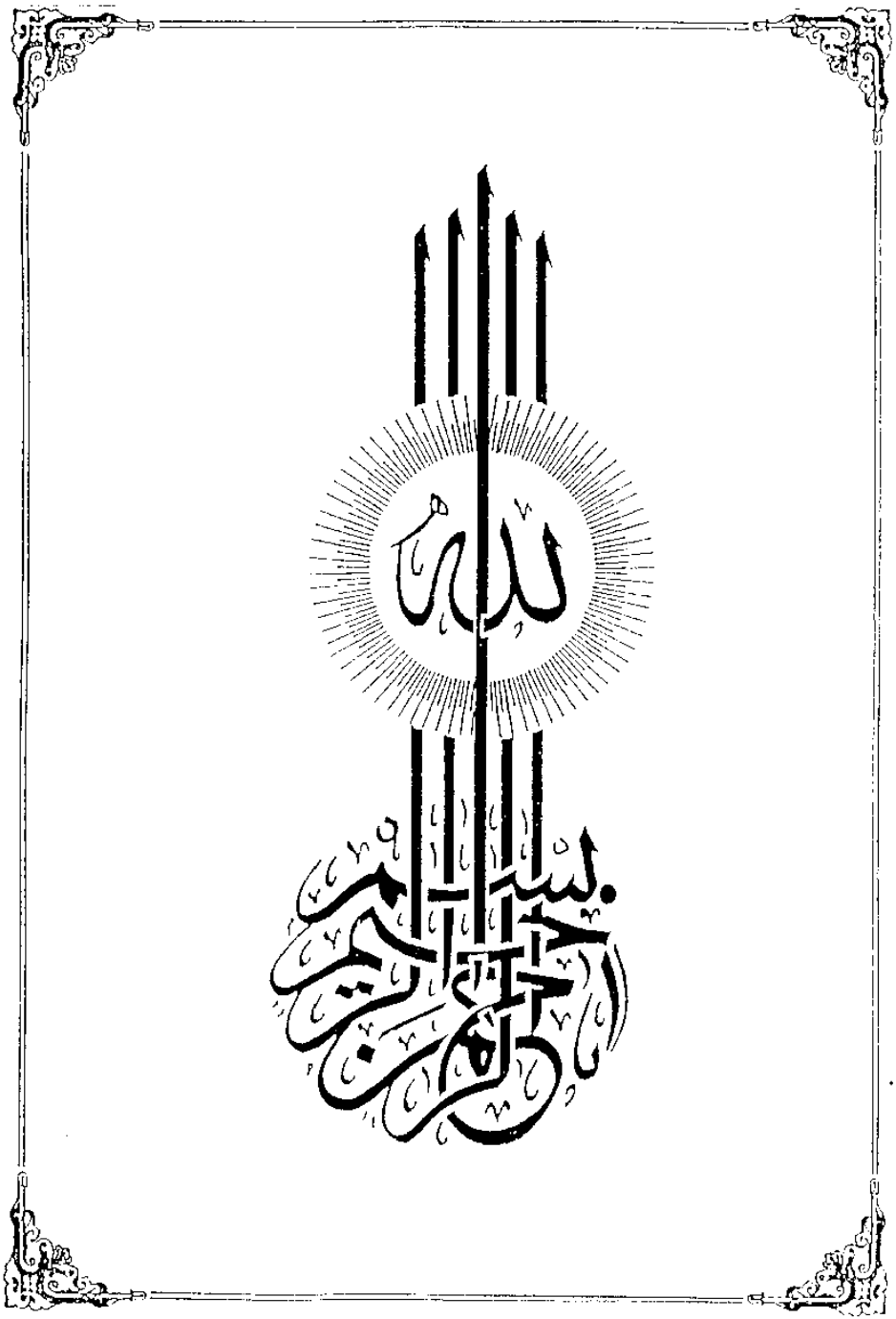
(POMOLOGY)

DEPARTMENT OF HORTICULTURE

FACULTY OF AGRICULTURE

AIN SHAMS UNIVERSITY

1994



EFFECT OF SALINITY ON SOME FRUIT PLANTS

(APPLE AND OLIVE)

BY

RAWHEYA BEDIER MOHAMED ATTIA

B.Sc. Agric. (Horticulture), Ain Shams Univ., 1980.

M.Sc. Agric. (Fruit crops), Ain Shams Univ., 1986.

Under the Supervision of

Prof. Dr. Shawky E. Maximos.

Prof. of pomology, Fac. Agric. Ain Shams Univ.

Prof. Dr. Zeinab, H. Behairy.

Prof. of Pomology. Fac. Agric. Ain Shams Univ.

ABSTRACT

The present investigation was undertacken during the seasons 1989, 1990 and 1991 to study the durability of MM106 apple rootstock, Anna scion budded on MM106 and Agezi olive transplants to various irrigation salinity levels. The data reveal that the apple rootstock almost tolerated salt level up to 2000 ppm while the Agezi olive transplant tolerated almost salt concentration up to 4000 ppm. The Anna Scion budded on MM106 apple rootstock plants was the lowest in salt tolerance, due to the bud union flanks injury caused by increasing salts' concentrations.

Key words: Apple, Olive, Salinity, Vegetative growth, leaf and root mineral contents, anatomical structure, Salt tolerance.

APPROVAL SHEET

STUDIES ON THE EFFECT OF SALINITY ON SOME FRUIT PLANTS. (APPLE AND OLIVE)

BY

RAWHEYA BEDIER MOHAMED ATTIA

B. Sc. Agric (Horticulture), Ain Shams Univ., 1980

M. Sc. Agric (Fruit crops), Ain Shams Univ., 1986

This thesis for Ph.D. degree has been approved by:

Prof. Dr. Essam A. Hasaballa .. Essam A. Hasaballa ....

Prof. of pomology and Chairman of Dept. of Horticulture

Fac. Agric., Zagazig Univ.

Prof. Dr. Mohamed Abou-Rawash Badr ... M. Abou Rawash

Prof. of pomology. Fac. of Agric., Ain Shams Univ.

Prof. Dr. Shawky E. Maximos .. S. E. M.

Prof. of pomology. Fac. of Agric. Ain Shams Univ.

(Supervisor)

Date of examination 5 / 2 / 1994

ACKNOWLEDGEMENT

TO THE MEMORY

OF

LATE PROF. DR. AHEMED LABIE EL-TOMI.

Professor of Horticulture, Faculty of Agriculture, Ain-Shams University who was a genius man in the horticulture field. I dedicate this work to the spirit of the unforgettable and alive man in our heart to my late Prof. Dr. Ahemed Labib El-Tomi for his supervision, valuable advices, fruitfull encouragment, sincere help and unfailing effects during the course of this investigation.

ACKNOWLEDGEMENT

I wish to express my most sincere gratitude to Prof. Dr. Shawky E. Maximos, Prof. of pomology. Faculty of Agriculture, Ain-Shams University for suggesting the current study, his supervision, continous guidance, kind support, revision of the manuscript, fruitful encouragement, and valuable advices.

Deep thanks are offered to Prof. Dr. Zeinab, H. Behairy, Prof. of pomology, Faculty of Agriculture, Ain-Shams University for her supervision, sincere help, useful criticism during the whole investigation and preparing this manuscript.

I would like to express my great thanks to Prof. Dr. M.A. Salama. Prof. of Pomology. Faculty of Agriculture, Cairo University, El-Fayoum, for his advice, kind help for carrying out the anatomical studies.

My sincere gratitude to all for their kind help during the research.

I also feet that I must extend my deep gratitude for the greatest parent in my life, my father, my mother and my daughter.

CONTENTS

LIST OF TABLES

page

Page

Page

Page

LIST OF FIGURES

Page