شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل

"STUDIES ON CERTAIN STORAGE DISEASES OF NEW VARIETIES OF APPLE IN EGYPT"

By

Gabr Abd El-Wanees Nasr El-Kot

B.Sc. (Agric.), Tanta Univ., A.R.E., 1993

Thesis

Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE

In

Plant Pathology

Agricultural Botany Department

Faculty of Agriculture, Kafr El-Sheikh

Tanta University

1998

"STUDIES ON CERTAIN STORAGE DISEASES OF NEW VARIETIES OF APPLE IN EGYPT"

By

Gabr Abd El-Wanees Nasr El-Kot

B.Sc. (Agric.), Tanta Univ., A.R.E., 1993

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree

of

MASTER OF SCIENCE

In

Plant Pathology

Agricultural Botany Department

Faculty of Agriculture, Kafr El-Sheikh

Tanta University

1998

Approved by:

E. Z. Khalifa .....

M. K. El-Kazzaz .....

S. F. Mashaal .....

M. A. Hassan .....

Date: 20 / 9 /1998

Supervision Committee

Prof. Dr. M.K El-Kazzaz

Professor of Plant Pathology,

Faculty of Agriculture, Kafr El-Sheikh,

Tanta University

Prof. Dr. M.A. El-Ansary

Professor of Pomology,

Faculty of Agriculture, Kafr El-Sheikh

Tanta University

Dr. M.A.A. Hassan

Associate Professor of Plant Pathology

Faculty of Agriculture, Kafr El-Sheikh

Tanta University

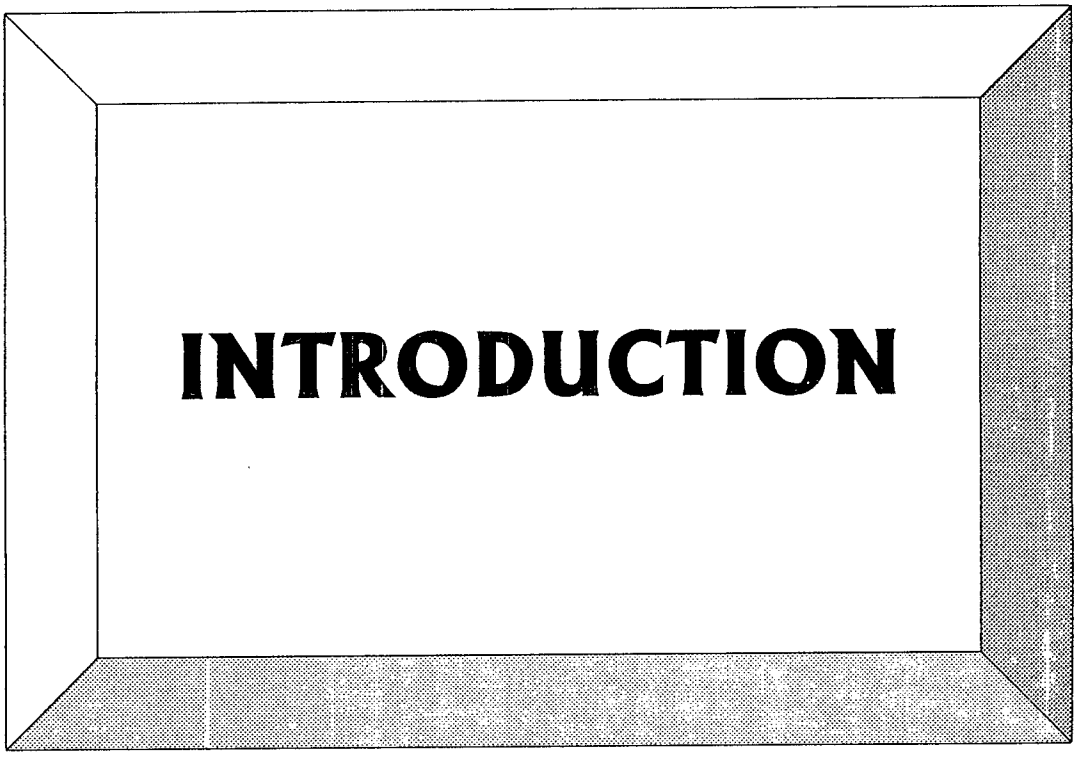
ACKNOWLEDGMENT

The author wishes to express his warmest thanks and deepest gratitude to **Prof. Dr. Mohamed Kamal El-Kazzaz,** Prof. of Plant Pathology, Faculty of Agriculture Kafr El-Sheikh, Tanta University, for suggesting the theme of this study, constructive supervision, the facilities, support and continuous encouragement, he offered to me throughout the entire course of this work.

The author is also indebted to **Prof. Dr. Mohamed El-Ansary,** Professor of Pomology, Dept. of Hort., Fac. of Agric., Kafr El-Sheikh and **Dr. Mohamed Abd El-Rahman Hassan,** Associate Professor of Plant Pathology, Fac. of Agric., Kafr El-Sheikh, Tanta University for their supervision, willing help and valuable technical advices.

Special appreciation is due to al staff member of Agricultural Botany Department, Faculty of Agriculture, Kafr El-Sheikh, Tanta University for their cooperation, encouragement and vital discussions.

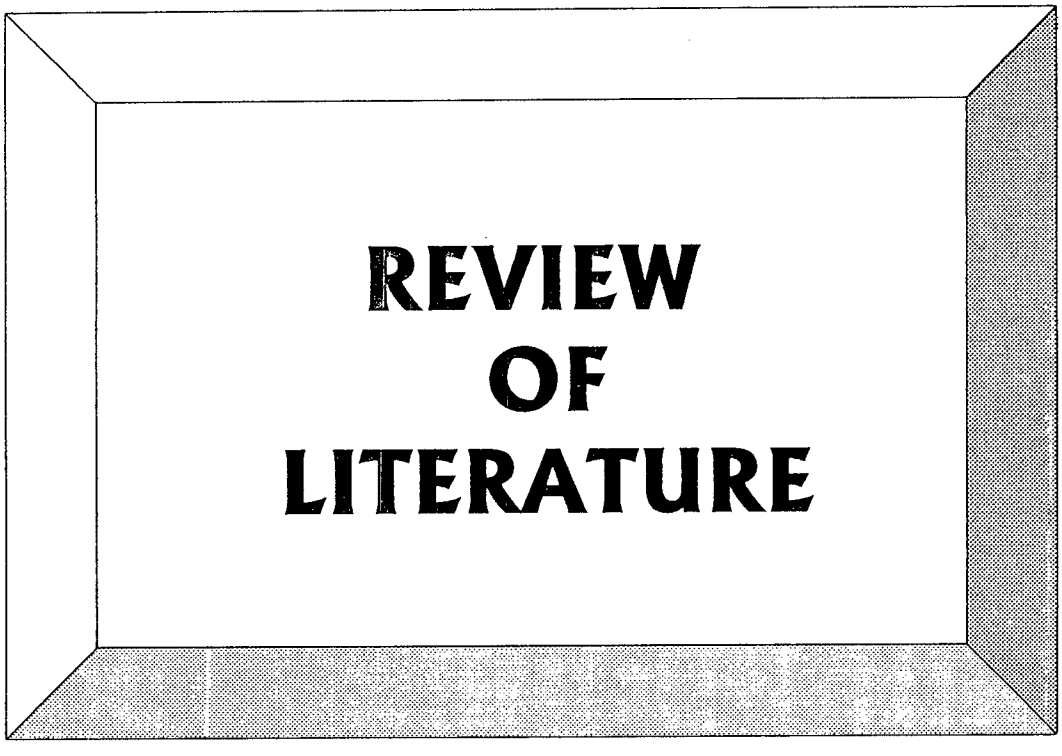
CONTENTS


INTRODUCTION

INTRODUCTION

"Anna" apple cultivar (*Malus domestica* Borkh) is a relatively new crop grown in Egypt during fifteen years ago. The cultivated area of such cultivar has been increased rapidly due to its low chilling requirements needed for growth and yield in Egypt and many subtropical countries **(Zayan & Morsy, 1989 and Lurie &Klien, 1992)**. This cultivar is a summer crop and has a high productivity and regular bearing (**Reid and Olmo, 1972**).

However, depending upon varieties, apple fruits have maximum storage lives from about 2-12 months or longer (**Sommer, 1982; Sams *et al.*, 1993**). Anna cv. has short life storage period, therefore, the present work aimed to prolong the shelf life of such crop during storage by improving its physiological properties as well as studying the control of post-harvest diseases by biocontrol agents.


REVIEW
OF
LITERATURE

REVIEW OF LITERATURE

Apple fruits are subject to infection with many postharvest pathogens i.e. *Alternaria* spp., *Glomerella cingulata, Botryosphaeria* sp., *Penicillium expansum, Monilinia* spp., *Trichothecium roseum, Nectria galligena, Pezicula alba, Pezicula malicorticis, Botrytis cinerea, Mucor piriformis, Rhizopus stolonifer, Venturia inaeqalis, Fusarium spp., Aspergillus niger* and *Phialophora malorum* (**Snowdon, 1990**); *Penicillium verrucosum* (**Penrose and Davis, 1978**); *Stemphylium botryosum* (**Babovic *et al.*, 1979**); *Gloeosporium perenans* and *G. album*, *Phylostica mali* and *Cladosporium herbarum* (**Eiche, 1979**), causing various degrees of losses during storage and marketing.

Cappellini *et al.* (1987) found 12 parasitic diseases, 11 physiological disorders and 9 types of injury on apple fruits during 1972-1984. Unidentified decays and blue mould caused by *Penicillium expansum* accounted for 90% of the parasitic diseases. Scald, bitter bit and internal breakdown recorded 75% of the physiological disorders.

Biological control of postharvest plant diseases have been investigated by many scientists during the last two decades (**Baker & Cook, 1982 and Cook & Baker, 1983**).

Promising postharvest biocontrol agents had been identified, and significant efforts were being made to develop them for commercial use. Pioneering work by **Tronsmo and Raa (1977)** investigated the use of the filamentous fungus *Trichoderma pseudokoningii* Rifai as an antagonist against gray mold (Caused by *Botrytis cinerea*) of strawberry. Biocontrol

yeasts, including *Acremonium breve* (**Janisiewicz, 1988**), *Candida guilliermondii, Debaryomyces hansenii* (**Chalutz and Wilson, 1990; McLaughlin *et al.*, 1990**), *Hanseniaspora uvarum* (**McLaughlin *et al.*, 1989**), *Cryptococcus laurentii*, *C. flavus* and *C. albidus* var. *aerius* (**Roberts, 1990a, 1990b,. 1991**) were effective against various postharvest decays in several fruits and vegetables. Bacterial antagonists with postharvest biocontrol potential include, but are not limited to, *Bacillus subtilis* (**Pusey and Wilson, 1984**), *Pseudomonas cepacia* (**Janisiewicz & Roitman, 1988 and Janisiewicz *et al.*, 1991**), *P. syringae* pv. *Lachrymans* (**Janisiewicz and Marchi, 1990**), *Enterobacter aerogenes* (**Utkhede and Sholberg, 1986**), and *E. cloacae* (**Wisniewski *et al.*, 1989**).

As an alternative to fungicides, treatment of fruit with microbial agents has shown promise for the control of several postharvest fruit diseases, fungi and bacteria are reported effectively to reduce postharvest diseases of peach (**Pusey *et al.*, 1988; Pusey and Wilson, 1984 and Wisniewski *et al.*, 1989**), apple (**Janisiewicz, 1987; Janisiewicz and Roitman, 1988, and El-Boghdady *et al.*, 1993**), pear (**Janisiewicz and Roitman, 1988**), citrus (**Chalutz *et al.*, 1988; Gutter and Littauer, 1953; Wilson and Chalutz, 1989**), cherry (**Utkhede and Sholberg, 1986**), and grape (**Dubos, 1984**).

Tronsmo and Ystaas (1980) stated that biological control of grey rot of apple caused by *B. cinerea* was obtained by spraying the flowers with a conidial suspension of antagonistic fungus *Trichoderma harzianum*.