Mona maghraby

# بسم اللّه الرحمن الرحيم

## مركز الشبكات وتكنولوجيا المعلومات

## قسم التوثيق الإلكتروني

Mona maghraby

# جامعة عين شمس

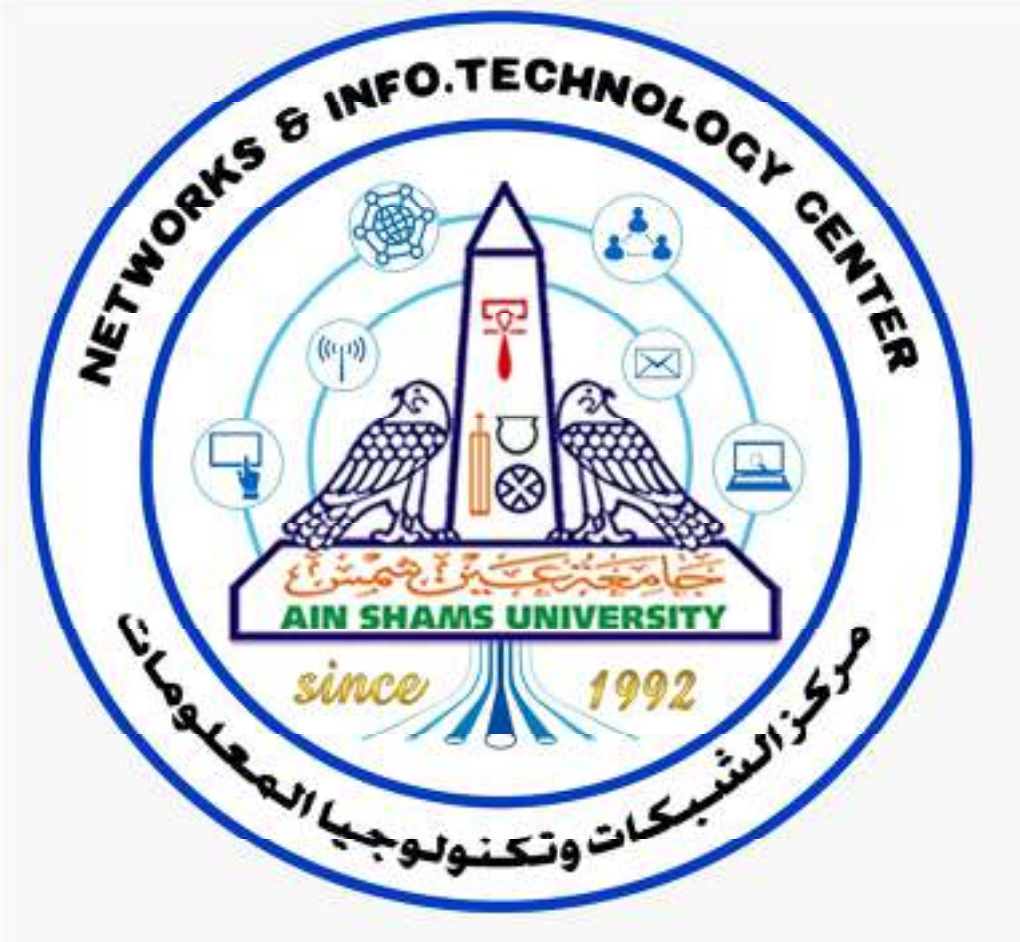
## التوثيق الإلكتروني والميكروفيلم

## قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

Mona maghraby




# بعض الوثائق الأصلية تالفة
# وبالرسالة صفحات لم ترد بالأصل

Alexandria University
Faculty of Agric. (Saba-Bacha)

# EVALUATION OF NEW CONTROL MEASURES FOR REDUCING THE INFESTATION OF THE COTTON LEAF-WORM

BY

IBRAHIM BAKR MOHAMED BAKR

A thesis submitted in partial fulfillment of the requirements governing the award of the degree of

MASTER OF AGRICULTURAL SCIENCES
(ENTOMOLOGY)

Department of Plant Protection

From

Alexandria University

2002

Alexandria University
Faculty of Agric. (Saba-Bacha)

# EVALUATION OF NEW CONTROL MEASURES FOR REDUCING THE INFESTATION OF THE COTTON LEAF-WORM

Presented by

IBRAHIM BAKR MOHAMED BAKR

For the degree of

MASTER OF AGRICULTURAL SCIENCES

(Plant Protection)

Examiner's Committee: Approved

Prof. Dr. Abdel-Khalek Hamed El-Sebae
Emeritus Prof. of Pesticide Chemistry & Toxicology,
Fac. of Agric. (El-Shatby) Alex. Univ.

Prof. Dr. Hassan Aly Abdel-Hamid Mesbah
Prof. of Entomology and Head of Plant Protection
Dept., Fac. of Agric. Saba-Bacha, Alex. Univ.

Prof. Dr. Nagda Ahmed Aly El-Sayed
Prof. of Economic Entomology, Plant Protection
Dept. Faculty of Agric. Saba-Bacha, Alex. Univ.

Dr. Farida Aly Fahmy Taman
Head Researcher, Plant Protect. Res. Instit.,
Agricultural Research Center

## SUPERVISION'S COMMITTEE


**Prof. Dr. Hassan Ali A. Mesbah**

Prof. of Entomology and Head of Plant Protection Dept.,
Fac. of Agric., (Saba Basha),
Alex. University

**Prof. Dr. Osman Ahmed Zaghloul**

Emeritus Prof. of Entomology
Fac. of Agric., (Saba Basha),
Alex. University

**Dr. Farida Aly Fahmy Taman**

Head Researcher, Plant Protect. Res. Instit.,
Agricultural Research Center

# CONTENTS

# ACKNOWLEDGEMENT

I would like to express my best gratitude and deep thanks to the supervising committee of my M.Sc. Thesis: **Prof. Dr. Hassan Aly A. Mesbah**, Prof. of Entomology and Head of Plant Protection Dept. and **Prof. Dr. Osman A. Zaghloul**, Emeritus Prof. of Economic Entomology, Faculty of Agriculture, Saba Pasha, Alexandria University and **Dr. Farida Aly Taman**, Head Researcher of Pesticides, at the Sabahia Plant Protection Experimental Station, Agric. Research Experimental Station, The Research Central for their precious supervision and guidance during conducting the research work and also for their keen revision of the manuscript.

I am also indebted to Prof. Dr. Abd Alfattah Abdel Karrem Saad; Prof. of Toxicology & Pesticides Chemistry, Faculty of Agriculture, Saba Pasha, Alexandria University; for his generous help, encouragement, and interest in my research work.

I would like also to express my deep thanks to Dr. Hamdy Emara; Head Researcher & Director of the Regional Agric. Experimental Station of Alexandria and my collogues and coworkers at Sabahia Station for assistance and encouragement during the experimental work and in the preparation of the thesis.

# Chapter 1

# INTRODUCTION

# Chapter 1
# INTRODUCTION

The gap between production and consumption of sugar in Egypt is increasing yearly. This gap was 34,000 tons in 1960, 880,000 tons in 1986 and became 1104,000 tons in 1998. However, it is expected that consumption of sugar will be increased annually as a result of increasing population and improvement of the standard of living.

This fact encourages the investigators to find new source or alternatives for sugarcane to increase local sugar production. Therefore, the sugarbeet became the second crop for the production of sugar in Egypt. Sugarbeet (*Beta vulgaris* L.; Fa. Chenopodiaceae) constitutes over 40% of the sugar world production. Besides, the foliage of the sugarbeet is useful as an animal feed. Application of pesticides in sugarbeet fields is considered an important factor to maintain the higher yield of such crop. The effect of these pesticides on insect pest and beet quality as well as their environmental behaviour should be carefully assessed.

Due to the continuous use of synthetic insecticides and the ability of the insect to develop resistance; integrated pest management (IPM) was recently adopted in Egypt where the use of insecticides was minimized and the natural alternatives are encouraged.

Amongst the common abundant sugarbeet insect-pests is the sugarbeet fly *Pegomyia mixta* (Witt.) (Dipt., Anthomyiidae) which causes serious losses in sugarbeet plantations in Egypt as well as other foreign countries.

The Polyphagous cotton leaf worm, *Spodoptera littoralis* (Boisd,) (Lepidoptera : Noctuidae); is the utmost serious insect-pest in Egypt attacking cotton and wide varieties of other field crops such as summer sugarbeet.

The present work is an attempt to implement a new promising approach to suppress the population of both the aforementioned insect pests on sugarbeet by using plant oils (Neem oil , Sunflower oil, Sesame oil and Linseed oil). Besides the initial and bio-residual activity of three chitin synthesis inhibitors (Match®, Consult® and Mimic®) and two conventional insecticides were tested against these economic insect pests.

# Chapter 2

# REVIEW OF LITERATURE

# Chapter 2

# REVIEW OF LITERATURE

## 1. Effect of insecticides and the insect growth regulators (IGR) on insect-pests of sugarbeet.

Küthe (1971) reported that $\gamma$ -BHC, methiocarb, chlormephos, fensulfothion and aldicarb were effective against sugarbeet insects when applied as granules to soil. Seed treatment followed by soil-treatment with tested pesticides granules or sprays enhanced the action against *Atomaria linearis* or *Pogomyia betae*. The application of methiocarb, Dursban® $\gamma$ or -BHC in sprays after germination was effective against insect pests that attacked the leaves. It was added by Küthe (1984) that the most effective treatment was seed coating with carbofuran followed by the application of the granular preparation of Curaterr® (carbofuran) at 0.5 g/m row; this treatment also gave the best effectiveness against aphids and the beet fly.

Assem *et al.* (1973) studied the effect of Dipterex® 80% SP at 0.4%, Sevin® 85% WP at 0.4%, Dicarbam® 85% WP at 0.4%, Dimethoate® 40% EC at 0.125%, Noltran® 22.1% EC at 0.4%, Volaton® 50% EC at 0.5%, Orthene® WP at 0.2%, Ortho Dibrom® EC at 0.2%, Gardona® 50% WP at 0.5%, Gardona® 24% EC at 1%, Nexion® 40% EC at 0.4, Lannate® 90% WP at 1%, and Birlane® 24% EC at 0.2% against the beet fly, *Pegomyia mixta* Witt, the beet weevil, *Lixus junci* Boh. and the beet moth, *Scrobipalpa ocellatella*. The most effective chemicals in controlling the three mentioned insects were Lannate®, Noltran®, Volaton®, Nexion®, Ortho Dibrom® and Birlane®, while Sevin®, Dicarbam®, Gardona® and Orthene®gave moderate results.

Akil (1974) reported that beet fly *Pegomyia mixta* (Witt) was highly affected by Chlorothion®, Dipterex® and Endrin®. The beet moth *Scrobipalpa ocellatella* was highly affected by Endrin®, malathion®and Gardona®. The organophosphorus compounds were the best insecticides used against sugarbeet leaf miners and phorate, methyl parathion and Nexion® were the best ones, followed by Trichlorfon and Gardona®. Lannate® was the best carbamate® compound used against these pests. Number of the leafworm, *Spodoptera exigua* larvae mainly decreased sharply after spraying with all tested insecticides.

Bonnemaison (1975 a), declared, owing to the banning of organochlorine insecticides except ɣ-BHC (Lindane®) from France and the coastlines and harmful environmental effects of organophosphates and Carbamates if applied from aircraft or as soil treatments, efforts had been made to reduce the quantity of toxicant applied by experimenting with localized soil treatments and seed coating. In the light of these results, the products recommended as granular soil treatments are Aldicarb (except against *Agrotis* spp.), carbofuran, chlormephos, phorate and AC 92 100 for subterranean insects and myriapods, and aldicarb, carbofuran, phorate and AC 92100 against aphids and *Pegomyia betae* (Curt.). As seed coatings, carbofuran was effective against nematodes, myriapods and *Atomaria linearis* Steph., and methiocarb is also recommended.

Bonnemaison (1975 b) applied sixteen insecticides including carbofuran, aldicarb and terbufos to sugarbeet rows at drilling. Only 600 g carbofuran and 1.2-1.6 kg phorate/ha controlled *Meloidogyne naasi*, *Scutigerella*, *Blaniulus*, *Aphis*, *Agriotes*, *Atomaria*, and *Pegomyia*. Dressing sugarbeet seeds with 45 g of carbofuran/kg gave satisfactory results.