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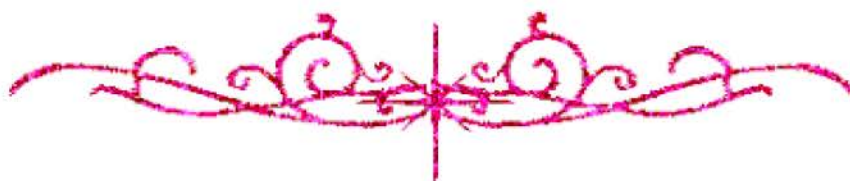
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شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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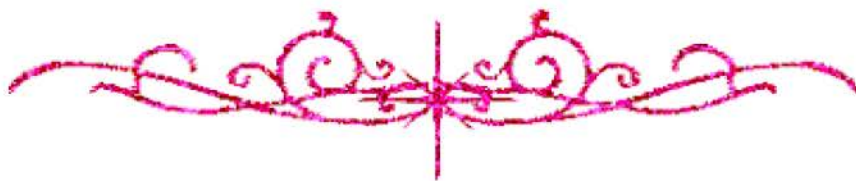
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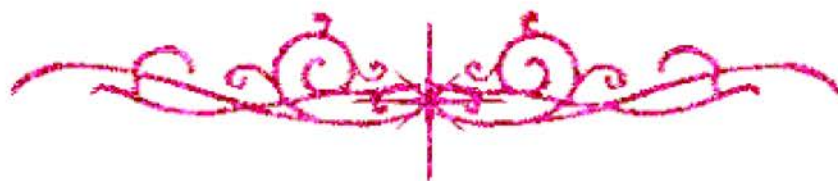
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لم ترد بالأصل



BK1c.

**STUDIES ON ENTOMOPATHOGENIC FUNGI FOR
CONTROLLING CERTAIN LEPIDOPTEROUS
INSECTS ON CORN**

By

HANY AHMED SAYED ABD EL-GAWAD

B.Sc. Agric. (Pesticides) Cairo University, 1988

M.Sc. Agric. (Pesticides) Cairo University, 1995

THESIS

Submitted in Partial Fulfillment of the
Requirements of the Degree of

DOCTOR OF PHILOSOPHY

IN

PESTICIDES

**Department of Economic Entomology and Pesticides
Faculty of Agriculture
CAIRO UNIVERSITY**

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Under Supervision of

Prof.Dr.M.H.Belal Head of Pesticides Branch, Department of Economic Entomology and
Pesticides, Faculty of Agriculture, Cairo University.

Prof.Dr.G.H.Sewify Economic Entomology Department of Economic Entomology and
Pesticides, Faculty of Agriculture, Cairo University.

Prof.Dr.A.H.El-Heneidy, Chief Researcher and Head of Biological Control Dept., Plant
Protection Research Institute, Agriculture Research Center, Ministry of Agric.

**Department of Economic Entomology and Pesticides
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APPROVAL SHEET

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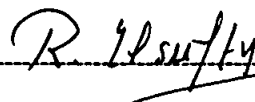
Ph.D.THESIS

IN

**Agriculture Science
(Pesticides)**

Approved by:

Prof.Dr.R.M.El-Safty
Economic Entomology and Dean of
Faculty of Agriculture, Tanta University



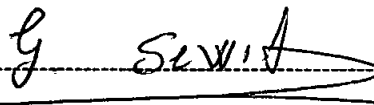
Prof.Dr.M..F.Tawfik
Economic Entomology, Department
of Economic Entomology and Pesticides,
Faculty of Agriculture, Cairo University.



Prof.Dr.M.H.Belal
Head of Pesticides Branch,
Department of Economic
Entomology and Pesticides, Faculty of
Agriculture, Cairo University.



Prof.Dr.G.H.Sewify
Economic Entomology, Department
of Economic Entomology and Pesticides,
Faculty of Agriculture, Cairo University.



Date: 23/ 12 / 2000

**Committee
In charge**

Name of Candidate: Hany Ahmed Sayed Abd El-Gawad **Degree:** Doctor
Title of Thesis: Studies on Entomopathogenic Fungi for Controlling Certain Lepidopterous Insects on Corn
Supervisors: Prof.Dr.M.H.Belal, Prof.Dr.G.H.Sewify and Prof.Dr.A.H.El-Heneidy
Department: Economic Entomology and Pesticides
Branch: Pesticides **Approval.....**

ABSTRACT

Survey of entomopathogenic fungi associated with corn borers, the pink stem borer *Sesamia cretica* Led. (Noctuidae), the purple - lined corn borer, *Chilo agamemnon* Bles. (Crambidae) and the European corn borer, *Ostrinia nubilalis* Hübn (Pyraustidae) in three governorates: Qaluobia, Kafr El-Sheikh and Beni-Suef during 1997-1999 after harvested early, summer and Nily maize plantings (stalks and ears). Isolating and identify these fungi on different medium PDA and SDA. The survey revealed the presence of identified fungi species associated with the three corn borers; *S. cretica*, *O. nubilalis*. and *C. agamemnon*. Four entomopathogenic fungi, *Beauveria bassiana*, *Nomuraea rileyi*, *Verticillium lecanii* and *Entomophthora* sp. were isolated from the collected corn borer cadavers in the three governorates. Besides, eight relatively common fungi associated with the corn borers were isolated from Beni Suef (Sids region), Qaluobia and Kafr El-Sheikh (Sakha region) governorates during 1997/98 - 1998/99. These fungi were identified as; *Fusarium* sp., *Aspergillus flavus*, *Aspergillus* sp., *Pseudogibellula formicarum*, *Alternaria* sp., *Penicillium* sp., *Mucor* sp. and *Trichothecium roseum*. Distribution of entomopathogenic fungi associated with corn borers and survey populations of corn borers (stalks and ears) in previous governorates. Susceptibility of the 1st instar (newly hatched) larvae of *S. cretica* to isolated fungi to estimated LC₅₀ and LT₅₀. Among the tested fungi, *B. bassiana* (B8) proved to be the most pathogenic to 1st the larval instar of *S. cretica* followed by *N. rileyi* and *V. lecanii*. Effect of insecticides on *B. bassiana* (B8). Effect of insecticides on mycelial growth and spore germination was studied. Data revealed that Methomyl and Cyhalothin were promising insecticides for mixing with the fungus, since no or little inhibition occurred either at the recommended dose or at 0.25 of it. Monocrotophos insecticide gave a high rate of inhibition to the tested isolate. In this respect, *B. bassiana* (B8) was the most tolerant isolate, at both tested doses, recording no inhibition, at any of the concentrations tested with Methomyl insecticide. Field applications of the entomopathogenic fungi *B. bassiana* (10⁷ and 10⁸) and *V. lecanii* (10⁷) to evaluate the fungi in controlling *S. cretica* and *S. exigua* were carried out weekly, biweekly and monthly treatments in (Sakha) at Kafr El-Sheikh governorate during summer and Nily plantings 1998 using two plant cultivars (maize hybrid 323 and maize variety Giza 2). Latent effects of fungal application in summer and Nily plantings on populations of corn borers in stalks and ears maize plants after harvested and yield assessment was carried out. The weekly treatment with *B. bassiana*, and *V. lecanii* gave reduction of infestation and latent effect. It appeared that the maize variety (Giza 2) facilitated the efficacy of both fungi more than the maize hybrid 323. The grain yield was affected by the number of fungal sprayings, fungus concentrations and maize variety. The application of fungus alone *B. bassiana* (10⁸) weekly, Methomyl and Monocrotophos at recommended dose, the mixture of Methomyl at ¼ recommended dose + fungus and Methomyl and Monocrotophos at ¼ recommended dose were tested against corn borers carried out in Kafr El-Sheikh (Sakha region) during summer planting 1999. The treatments with Methomyl and Monocrotophos at recommended dose gave high reduction of infestation following by fungus alone, mixture of Methomyl at ¼ recommended dose + fungus and Methomyl and Monocrotophos at ¼ recommended dose. The maize grain yield was increased as a result of previous applications. Effect of fungi on predators after survey common predatory species associated with the corn borers during 1998/1999 in Kafr El-Sheikh (Sakha region): *Coccinella udecimpunctata* L, *Scymnus interruptus* L., *Paedrus alferii* Koch, and *Chrysoperla carnea*. No mycosis was observed among the collected individuals of the predators.

M. Belal

DEDICATION

I dedicate my thesis to my mother and my sisters. I specially dedicate it to the memory of my father for all the generous love and encouragement he gave me throughout my life. I also dedicate it to all my professors and to all those who helped me.

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CONTENTS

	TITLE.....	PAGE
1.	INTRODUCTION.....	1
2.	REVIEW OF LITURATURE.....	3
2.1	Importance of maize plant.....	3
2.2	Distribution of common maize stem borers in the world.....	3
2.3	Maize stem borers in Egypt.....	4
2.4	The pink stem borer, <i>Sesamia cretica</i> L.....	10
2.4.1	Geographical distribution.....	11
2.4.2	Life history.....	12
2.4.3	Seasonal abundance and annual generation.....	14
2.4.4	Laboratory rearing.....	17
2.5	Corn borers control in Egypt.....	18
2.5.1	Chemical control.....	18
2.5.2	Biological control.....	18
2.5.2.1	Parasitoids and predators.....	18
2.5.2.2	Pathogens.....	21
3.	MATERIALS AND METHODS.....	39
3.1	Survey of entomopathogenic fungi associated with corn borers.....	39
3.2	Isolation of fungi.....	41
3.3	Identification of fungi isolations.....	41
3.4	Culturing of fungi.....	42
3.5	Rearing of insect host.....	43
3.6	Susceptibility of <i>Sesamia cretica</i> larvae to isolated fungi.....	50
3.7	Effect of insecticides on fungus, <i>Beauveria bassiana</i>	50
3.7.1	Mycelia growth rate.....	50
3.7.2	Conidiospores germination rate.....	51
3.8	Production of infective spores for field application.....	52
3.9	Field applications.....	52

3.10	Effect of fungi applications on predators.....	58
3.11	Statistical analysis.....	58
4.	RESULTS	59
4.1	Survey of entomopathogenic fungi associated with corn borers.....	59
4.1.1	The pathogenic fungi.....	59
4.1.2	Common fungi associated with corn borers.....	69
4.2	Occurrence of entomopathogenic fungi associated with corn borers.....	73
4.3	Distribution of entomopathogenic fungi associated with corn borers.....	77
4.3.1	In Qaluobia governorate.....	77
4.3.1.1	Seryakous region.....	77
4.3.1.2	Met-Halfa region.....	77
4.3.1.3	Moshtohor region.....	84
4.3.1.4	Bathim region.....	84
4.3.2	In Kafr El-Sheikh governorate (Sakha region).....	85
4.3.2.1	Harvested summer planting.....	86
4.3.2.2	Stored harvested summer planting.....	86
4.3.2.3	Stored harvested Nily planting 1997/98 season.....	93
4.3.2.4	Stored harvested Nily planting 1998/99 season.....	111
4.3.3	In Beni Suef governorate (Sids region).....	112
4.4	Susceptibility of the first 1 st instar (Newly hatched) of larvae <i>Sesamia</i> <i>cretica</i> to isolated fungi.....	132
4.5	Effect of insecticides on <i>Beauveria bassiana</i> isolate (B8).....	141
4.5.1	Effect on mycelial growth.....	141
4.5.2	Effect on spore germination.....	141
4.6	Efficacy of the entomopathogenic fungi under field conditions.....	144
4.6.1	Field trial in 1998.....	144
4.6.1.1	Latent effects of fungal application in summer planting.....	153
4.6.1.2	Latent effects of fungal application in Nily planting.....	170
4.6.2	Field trail in 1999.....	176
4.6.2.1	Latent effects of fungal and chemicals applications in summer planing.....	181
4.7	Effect of fungi predators.....	187

5.	DISCUSSION	192
5.1	Survey of entomopathogenic fungi	192
5.2	Fate of hibernating corn borers.....	193
5.3	Susceptibility of the first 1 st instar (Newly hatched) of larvae <i>Sesamia cretica</i> to isolated fungi.....	195
5.4	Effect of the insecticides on <i>Beauveria bassiana</i> (B8).....	195
5.5	Evaluation of the efficacy of entomopathogenic fungi under field conditions.....	196
5.6	Effect of fungi on predators.....	198
6.	SUMMARY	199
	REFERENCES	212

ARABIC SUMMARY