

سامية محمد مصطفى



شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم



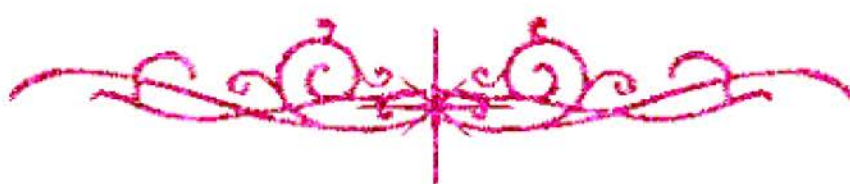
سامية محمد مصطفى



شبكة المعلومات الجامعية



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



سامية محمد مصطفى



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

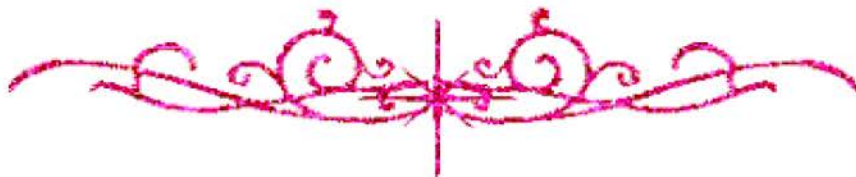
قسم

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



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



سامية محمد مصطفى



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة



سامية محمد مصطفى



شبكة المعلومات الجامعية



بالرسالة صفحات لم ترد بالأصل



**Studies on soil persistence of some entomopathogens
(wild-type and recombinant Baculoviruses)
on some field crop pests**

THESIS

**Presented to the Faculty of Science
Cairo University
for the Award of the Degree of**

**DOCTOR of PHILOSOPHY
in Entomology**

By

Atef Abdel-Rahman

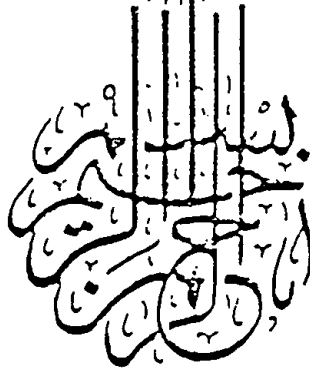
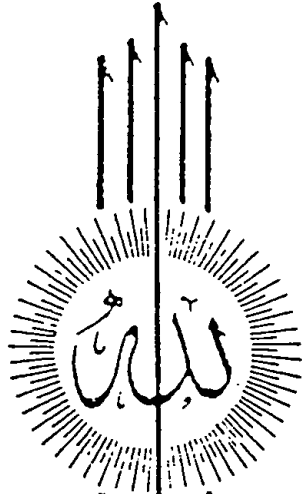
**B. Sc. (Entomology) Ain Shams University
M. Sc. (Entomology) Cairo University**

National Research Centre

**Department of Entomology
Faculty of Science
Cairo University**

2002

13
15-1-2



قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ
صَدَقَ اللَّهُ الْعَلِيمُ
الْبَقَّة - ٢٢ -

APPROVAL SHEET

Title of the Ph.D. Thesis

**Studies on soil persistence of some entomopathogens
(wild-type and recombinant Baculoviruses)
on some field crop pests**

Name of the candidate:
ATEF ABDEL-RAHMAN

Submitted to the
Faculty of Science, Cairo University

Supervision Committee

Prof. Dr. Mahmoud Hafez

Professor of Entomology, Department of Entomology,
Faculty of Science, Cairo University.



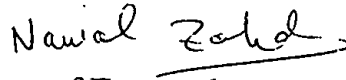
Prof. Dr. Aly A. El-Moursy

Professor of Entomology Department of Entomology,
Faculty of Science, Cairo University.




Prof. Dr. Nawal Z.M. Zohdy

Professor of Entomology Department of Entomology,
Faculty of Science, Cairo University.



Prof. Dr. Mamdouh M. Matter

Professor of Entomology, Plant Protection Department,
National Research Centre, Cairo, Egypt



Prof. Dr. Safia Hassan Ahmed

Head of Department of Entomology
Faculty of Science, Cairo University

DEDICATION

TO

MY FAMILY

AND

THE SOUL OF MY FATHER

CONTENTS

	Page
1 INTRODUCTION	1
2 REVIEW OF LITERATURE	3
Historical Perspectives of Baculoviruses	3
Classification of Insect Pathogenic Baculoviruses	4
Pathology Associated with Baculoviruses Infection	4
Ecology of recombinant and wild-type nucleopolyhedro- viruses	7
Environmental risk associated with the release of genetically engineered entomopathogens recombinant viruses	9
Genetic Engineering of Baculoviruses	12
Recombinant Baculoviruses Expressing Toxins	15
Safety levels of formulated genetically engineered viruses	18
Stability of baculovirus in soil	19
3 MATERIAL AND METHODS	24
Viruses	24
Virus propagation in the Laboratory microcosm experiment	25
Source and rearing of target insects	26
Cotton field persistence experiment	27
Experiment site and sampling techniques	27
Sampling schedule for soil collection	32
Sampling Schedule for Insects and Leaf Collection ...	34
Evaluation of the degree of virus dissemination in soil	35
Bioassay experiments for cotton field experiments	35

	Page
Laboratory Microcosm Persistence Experiment	38
Soil Preparation	38
Bioassay experiment	39
Statistical Analysis	42
4 RESULTS	44
Impact of wild-type and recombinant nucleopolyhedro- viruses application on a mixed population of budworms (<i>Heliothis zea</i> and <i>H. virescens</i>)	44
Distribution of wild-type and recombinant Nucleopoly- hedroviruses in soil	55
Persistence of activity of wild-type (HzSNPV.WT) and recombinant (HzSNPV.LqhIT2) nucleopolyhedroviruses during 1997-1998 cotton seasons	62
Persistence of wild-type AcNPV.WT against <i>Trichoplusia</i> <i>ni</i> in bioassays of soil microcosm inoculated with NPV in the form of viral suspension or virus-killed cadaver of <i>T. ni</i>	100
Persistence of recombinant nucleopolyhedroviruses AcNPV.AaIT against <i>Trichoplusia ni</i> in bioassays of soil microcosm inoculated with NPV in the form of viral suspension or virus-killed cadaver of <i>T. ni</i>	103
Persistence of recombinant nucleopolyhedroviruses AcNPV.JHE-S201G against <i>Trichoplusia ni</i> in bioassays of soil microcosm inoculated with NPV in the form of viral suspension or virus-killed cadaver of <i>T. ni</i>	106

	Page
5 DISCUSSION	116
6 SUMMARY	120
7 REFERENCES	124
ARABIC SUMMARY	

ACKNOWLEDGEMENTS

MY GOD

**THE MOST MERCIFUL, WHO HAS
GUIDED ME TO THE RIGHT WAY IN
MY LIFE, I HUMBLY EXPRESS MY
PROFOUND GRATITUDE**

ACKNOWLEDGEMENTS

I wish to express my sincere thanks and deep gratitude to Prof. Dr. Mahmoud Hafez, Prof. Dr. Aly A. El-Moursy, Prof. Dr. Nawal Z.M. Zohdy, Department of Entomology, Faculty of Science, Cairo University and Prof. Dr. Mamdouh M. Matter, Professor of Entomology, Plant Protection Department, National Research Centre, Cairo, Egypt and Prof. Dr. James R. Fuxa, Professor of Insect Pathology, Department of Entomology, Louisiana State University, USA, under whose supervision this work has been carried out. Their kind encouragement, valuable suggestions, constructive criticism and incessant support, which have rendered many difficulties easily surmountable, are gratefully acknowledged.

Thanks are also due to Dr. M. Gesraha, Department of Plant Protection, National Research Centre, for his kind help, and to Mr. Arthur R. Richter, Researcher Assistant, Department of Entomology, for his assistance and technical support in the laboratory and the field at Louisiana Agricultural Experiment Station, LSU, USA.

Deep appreciation is also expressed to colleagues and assistants of the Department of Pests and Plant Protection, NRC, for their help in various ways throughout the course of the present work.