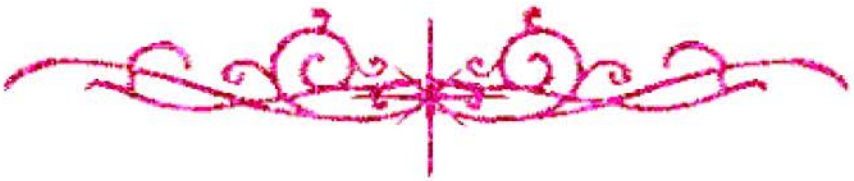
بسم الله الرحمن الرحيم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



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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

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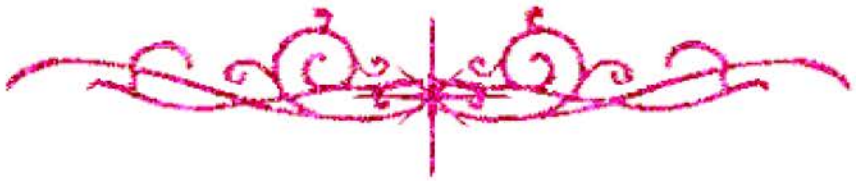
بعض الوثائق الأصلية تالفة



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بالرسالة صفحات

لم ترد بالأصل

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TAXONOMIC STUDIES OF THE GENUS *APHYTIS* HOWARD (HYMENOPTERA : APHELINIDAE) AND ITS ROLE IN CONTROLLING THE SCALE INSECTS (HOMOPTERA – COCCOIDEA : DIASPIDIDAE) IN EGYPT

A THESIS

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DOCTOR OF PHILOSOPHY
IN ENTOMOLOGY

Presented to the Faculty of Science, Zagazig University, Benha Branch, for the Award of the Ph. D. Degree in Entomology

BY

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CONTENTS

INTRODUCTION

I.INTRODUCTION

The armored scale insects (Homoptera: Coccoidea: Diaspididae) are notorious plant pests on fruit and nut trees, ornamental shade trees, shrubs and ground covers, forest trees, in greenhouses, and on indoor plants (Miller and Kosztarab,1979).

The main injury caused by these insects is from their ingestion of plant sap. The damage is manifested in reduction of plant vigor. Severely infested plants grow poorly, may drop leaves prematurely, and suffer dieback of twigs and branches. The infested host plant can be so weakened that it dies (Dekle, 1976).

Control of these pests by the application of chemical insecticides is a quick and easy step towards the reduction of their population density. However, the use of pesticides is accompanied by many problems which include the toxic effects on human beings and animals as well as beneficial insects. Pesticides also badly affect soil fauna through their accumulation in the soil (Doutt and Smith, 1974). However, the control of armored scale insects in Egypt still relies on the use of insecticides, such as Dimethoate, Malathion, or Actellic, especially in the summer season during heavy infestations (Abd-Rabou, 1997a).

The genus *Aphytis* Howard (Hymenoptera: Aphelinidae) constitutes the most effective natural enemy of armored scale insects. Several of its members have been used successfully in biological control against economically significant pests (Rosen, 1988).

The present investigation covers the following points:

1. Collecting species of genus *Aphytis* from different localities in Egypt and recording specific hosts and host plants.
2. Taxonomic studies of the collected *Aphytis* species.

3. A key to species of genus *Aphytis* in Egypt.
4. The role of genus *Aphytis* in the biological control of armored scale insects by studying the population dynamics of the collected species.

REVIEW OF LITERATURE

II. REVIEW OF LITERATURE

1. Taxonomic studies:

1.1. Hosts and distribution of genus *Aphytis* Howard in the world:

According to the review of available literature (Table 1), various *Aphytis* species have been recorded attacking 39 armored scale insect species, infesting 53 host plants in 42 countries.

1.2. Taxonomy:

LeBaron (1870) recorded and described a new species *Aphytis mytilaspidis* LeBaron associated with *Lepidosaphas ulmi* (L.) on *Pyrus malus* in USA.

Howard (1881) recorded and described a new species, *Aphytis diaspidis* Howard associated with *Hemiberlesia rapax* (Comstock) in USA, and the same author (1900) recorded and described *Aphytis chilensis* Howard as a new species associated with *Aspidiotus nerii* Bouche on *Hedra helix* in Chile.

Masi (1911) recorded and described a new species, *Aphytis maculicornis* Masi associated with *Parlatoria oleae* (Colvee) on *Olea* sp. in Italy.

Mercet (1911) recorded and described a new species, *Aphytis aonidiae* (Mercet) associated with *Aonidia lauri* Bouche on *Laurus nobilis* in Spain. Later (1912) he recorded and described a new species,