ECOLOGICAL STUDIES ON MAJOR DISEASES AFFECTING HONEYBEE COLONIES AND THEIR CONTROL IN NORTH SINAI

BY

SAMY HAMDY ABDEL GHAFFAR SAKR

B.Sc. Environmental Agriculture Sciences,

Suez Canal Univ. (2012)

A THESIS

Submitted in Partial Fulfillment of the Requirements for

The Degree of Master

IN

Agriculture Science

(Economic Entomology)

Plant Production Department
Faculty of Environmental Agriculture Sciences
Arish University

2021

Abstract

The study was aimed to study Parasitic bee mites (*Varroosis*) as a major disease of bees in different stages of it's development, prevalence and seasonal abundance, and it's negative effects on health and production of bee colonies and the natural control programs at three diffrent climatic areas; Bir El-Abd, El-Arish, and El- Sheikh Zuwayed in North Sinai region.

Parasitic bee mite diseases: Varroa mite (Varroosis):

Experiments were conducted in three apiaries at: Bir El-Abd; Agricultural Research Station, El-Arish and Desert Research Station, El- Sheikh Zuwayed.

The experiments were carried out during two successife seasone of 2018 and 2019 on hybrid Carniolan honeybee colonies (*A. mellifera*) which were chosen to be infested with Varroa mite and having relatively similar strength (10 combs covered from both sides with adult bees and a prolific queen each) to study the population density and dynamics of *Varroa destructor*. Ten honeybee colonies were chosen in each apiary to study abundance of *V. destructor* on: Sealed brood cells and Adult bees.

The infestation rates of varroa on both sealed brood cells and adult bees were determined at the beginning and at the end of the experiment using the following procedures:

1. Infestation of Varroa mite (*Varroosis*) on sealed brood cells:

In each tested colony, 20 of sealed worker, and drone brood cells were opened using a sharp needle, the infested cells with varroa mite was counted and recorded. Such technique was repeated every 10 days.

2. Infestation of Varroa mite (*Varroosis*) on adult bees:

To determine the rate of infestation with varroa mite on the adult worker of an experimental colony, sample of about 50 workers were taken in a glass jar which was but directly in deep freezer for 15 minutes. Then, determined infestation of the varroa mite on the adult workers by using soppily solution. This technique repeated every 10 days.

3. Control of Varroa mite (*Varroosis*) by using extracts of natural plants:

Extracts of Natural Plants, widely distributed in north Sinai, were used for the natural control programs at the third year; 2020 in the experimental apiaries

at Bir El-Abd, El- Arish, and El- Sheekh Zwed to Reduction of Varroa mite (*Varroosis*) infestation. For this purpose, 12 honeybee colonies of the same relativity strength (10 combs covered with adult bees from both sides for each colony) were selected and divided into three groups. Extracts of Chamomile, Sage, and Thyme were evaluated the efficiency against the varroa mite on the sealed brood cells and on adult workers. The number of varroa mites fallen on the bottom board was recorded by butting a thin wooden plate, with the same dimensions as the bottom board, covered with thin layer of Vaseline to catch the fallen varroa mites, they were counted, recorded and removed.

CONTENTS

LIST OF TABLES

LIST OF FIGERS