

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

BY

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Abstract

The study was aimed to study Parasitic bee mites (*Varroosis*) as a major disease of bees in different stages of its development, prevalence and seasonal abundance, and its negative effects on health and production of bee colonies and the natural control programs at three different 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 successive seasons 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 put 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

Subject	Page
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. Economics of Honeybee in Egypt	3
2.2. Varroa mite disease (Varroosis)	3
2.2.1. Negative effects of Varroa mite infestation on honeybee colonies	6
2.2.2. Infestation percentage and suitable conditions for spread Varroa mite	10
2.2.3. Control methods of Varroa mite on honeybee colonies	20
3. MATERIALS AND METHODS	23
4. RESULTS AND DISCUSSION	29
4.1. Varroa mite (<i>Varroosis</i>) in North Sinai	29
4.1.1. Population fluctuation of <i>Varroa destructor</i> in infested honeybee colonies	29
4.1.1.1. Abundance of <i>Varroa destructor</i> in sealed brood drone cells	29
4.1.1.2. Abundance of <i>Varroa destructor</i> in sealed brood worker cells	32
4.1.1.3. Abundance of <i>Varroa destructor</i> on adult worker bees	35
4.1.1.2. Monthly percentages of Varroa mite infestation in honeybee colonies	38
4.1.1.2.1. Monthly infestation percentages of sealed brood drone cells during 2018 and 2019	38
4.1.1.2.2. Monthly infestation percentages of sealed brood worker cells during 2018 and 2019	43
4.1.1.2.3. Monthly infestation percentages of adult worker bees during 2018 and 2019	48
4.1.1.3. Seasonal abundance of Varroa mite infestation in honeybee colonies	53

4.1.1.3.1. Seasonal abundance of Varroa mite infestation in sealed brood drone cells during 2018 and 2019	53
4.1.1.3.2. Seasonal abundance of Varroa mite infestation in sealed brood worker bees during 2018 and 2019	58
4.1.1.3.3. Seasonal abundance of Varroa mite infestation on adult worker bees during 2018 and 2019	62
4.1.2. Prevention and alternative control methods of Varroa mite infestation on honeybee colonies	66
4.1.2.1. Reduction of infested brood drone cells in colonies treated with different extract plant solutions	68
4.1.2.2. Reduction of infested brood worker cells in colonies treated with different extract plant solutions	73
4.1.2.3. Reduction of infested adult worker bees in colonies treated with different extract plant solutions	78
4.1.2.4. Number of <i>Varroa destructor</i> fallen on the bottom board after treating the colonies treated with different extract plant solutions	82
5. SUMMARY	87
6. REFERENCES	91
7. ARABIC SUMMARY	١

LIST OF TABLES

No.	Title	Page
Table 1.a.	Some annual rates of climate data for experiments locations	23
Table 1.b.	Monthly average of some climate data for experiments locations in 2018	23
Table 1.c.	Monthly average of some climate data for experiments locations in 2019	24
Table 2.	Infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of infested brood cells/100 cells)	30
Table 3.	Infestation percentages of sealed brood worker cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of infested brood cells/100 cells)	33
Table 4.	Infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of mites on 100 adult bees)	36
Table 5.a.	Monthly infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 (Mean numbers of infested brood cells/100 cells)	40
Table 5.b.	Monthly infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2019 (Mean numbers of infested brood cells/100 cells)	41
Table 5.c.	Average monthly infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018, and 2019 (Mean numbers of infested brood cells/100 cells)	42
Table 6.a.	Monthly infestation percentages of sealed brood worker cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 (Mean numbers of infested brood cells/100 cells)	45
Table 6.b.	Monthly infestation percentages of sealed brood worker cells with V. destructor in honey bee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2019 (Mean numbers of infested brood cells/100 cells)	46

Table 6.c.	Average monthly infestation percentages of sealed brood worker cells with V. destructor in honey bee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of infested brood cells/100 cells)	47
Table 7.a.	Monthly infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 (Mean numbers of mites on 100 adult bees)	50
Table 7.b.	Monthly infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2019 (Mean numbers of mites on 100 adult bees)	51
Table 7.c.	Average monthly infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of mites on 100 adult bees)	52
Table 8.a.	Seasonal infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 (Mean numbers of infested brood cells/100 cells)	56
Table 8.b.	Seasonal infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2019 (Mean numbers of infested brood cells/100 cells)	56
Table 8.c.	Average seasonal infestation percentages of sealed brood drone cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of infested brood cells/100 cells)	56
Table 9.a.	Seasonal infestation percentages of sealed brood worker cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 (Mean numbers of infested brood cells/100 cells)	60
Table 9.b.	Seasonal infestation percentages of sealed brood worker cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2019 (Mean numbers of infested brood cells/100 cells)	60
Table 9.c.	Average seasonal infestation percentages of sealed brood worker cells with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of infested brood cells/100 cells)	60

Table 10.a.	Seasonal infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 (Mean numbers of mites on 100 adult bees)	64
Table 10.b.	Seasonal infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2019 (Mean numbers of mites on 100 adult bees)	64
Table 10.c.	Seasonal infestation percentages of adult workers with V. destructor in honeybee colonies reared in Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2018 and 2019 (Mean numbers of mites on 100 adult bees)	64
Table 11.	Number of infested brood drone cells in colonies treated with different extract plant solutions at Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2020 (Mean of infested cells per 100 cells)	70
Table 12.	Number of infested brood worker cells in colonies treated with different extract plant solutions at Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2020 (Mean of infested cells per 100 cells)	75
Table 13.	Number of infested of adult workers in colonies treated with different extract plant solutions at Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2020 (Mean numbers of mites on 100 adult bees)	79
Table 14.	Number of V. destructor fallen on the hive floor after treating the colonies treated with different extract plant solutions at Bir El-Abd, El-Arish, and El- Sheikh Zuwayed cities during 2020 (Mean numers/colony)	84

LIST OF FIGERS

No.	Title	Page
Fig.1.	Map of North Sinai.	25
Fig. 2.	Monthly average of infestation percentages in sealed brood drone cells with V. destructor in the three located during 2018, and 2019.	42
Fig. 3.	Monthly average of infestation percentages in sealed brood worker cells with V. destructor in the three located during 2018, and 2019.	47
Fig. 4.	Monthly average of infestation percentages on adult worker bees with V. destructor in the three located during 2018, and 2019.	52
Fig. 5 (a, b, and c).	Seasonal average of infestation percentages in sealed brood drone cells with V. destructor in the three located during 2018, and 2019.	57
Fig. 6 (a, b, and c).	Seasonal average of infestation percentages in sealed brood worker cells with V. destructor in the three located during 2018, and 2019.	61
Fig. 7 (a, b, and c).	Seasonal average of infestation percentages on adult worker bees with V. destructor in the three located during 2018, and 2019	65
Fig. 8 (a, b, and c).	Interaction effects between locations (L), extract solutions (E), and weeks (W) before and after control in infested of brood drone cells at the three experimental located during 2020 (Mean of infested cells per 100 cells)	71
Fig. 9 (a, b, and c).	Interaction effects between locations (L), extract solutions (E), and weeks (W) before and after control in infested of brood worker cells at the three experimental located during 2020 (Mean of infested cells per 100 cells).	76
Fig. 10 (a, b, and c).	Interaction effects between locations (L), extract solutions (E), and weeks (W) before and after control on infested of adult worker bees at the three experimental located during 2020 (Mean of infested cells per 100 cells).	80
Fig. 11 (a, b, and c).	Interaction effects between locations (L), extract solutions (E), and weeks (W) before and after control on Number of V. destructor fallen on the hive floor at the three experimental located during 2020 (Mean of infested cells per 100 cells).	85