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**ECOLOGICAL AND TOXICOLOGICAL STUDIES
ON THE MAIN INSECT PESTS INFESTING FABA
BEAN AT KAFR EL- SHEIKH**

By

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CONTENTS

Subject	Page
I. INTRODUCTION.....	1
II. REVIEW OF LITERATURE.....	5
1. Ecological studies on faba bean plants	5
1.1. Seasonal abundance of the key insect pests and the correlated natural enemies.....	5
1.1.1. Seasonal abundance of certain piercing-sucking insect pests and the correlated predators.....	5
A. Insect pests	5
B. Associated predators	7
1.1.2. Seasonal abundance of <i>Liriomyza congesta</i> and its ectoparasitoid, <i>Diglyphus isaea</i>	10
A: <i>Liriomyza congesta</i>	10
B: <i>Diglyphus isaea</i>	12
1.2. Influences of certain weather factors and natural enemies complex on population size of the key insect pests.....	14
1.3. Influences of sowing dates on the key insect pests and the correlated natural enemies	16
A: Insect pests.....	16
B: Natural enemies.....	18
1.4. Influences of sowing dates on the chemical components and yield traits in relation to insect pests infestation:	20
1.5. Influences of faba bean varieties on the key insect pests.	21
1.6. Plant chemical analysis and yield traits of faba bean varieties in relation to insect pests infestation.	24
1.6.1. Plant chemical analysis:	24
1.6.2. Yield traits.....	26
1.6.3. Molecular characters of faba bean varieties under insects infestation stress	27
2. Toxicological studies.....	28
2.1. Toxicity of some selective insecticides against <i>Aphis craccivora</i>	28
2.2. Botanical insecticides and nano emulsions.....	31
2.3. Analysis of enzymes.....	32
III. MATERIALS AND METHODS.....	35
1. Ecological studies on faba bean plants.....	35
1.1. Seasonal abundance of key insect pests and the correlated natural enemies on faba bean plants.....	35
1.2. Influences of certain weather factors and natural enemies complex on population size of the key insect pests in faba bean fields.....	37
1.3. Influences of sowing dates on the population size of insect pests and its natural enemies.....	37
1.4. Influences of sowing dates on the biochemical features and yield traits of faba bean plants in accordance with insects infestation	38
1.4.1. Biochemical features.....	38
1.4.2. Yield traits as influenced by sowing dates	41
1.5. Influences of nine faba bean varieties on insect pests infestation	42

Contents

1.6. Plant chemical analysis, molecular and yield traits of faba bean varieties in relation to insect pests infestation	43
1.6.1. Relationships between chemical components of faba bean varieties and the insect pests infestation	43
1.6.2. Molecular studies.....	44
1.6.2.1. Protein electrophoresis.....	44
1.6.2.2. Peroxidase and Polyphenyl Oxidase Isozymes electrophoresis.....	47
1.6.2.3. Sequence-related amplified polymorphism-polymerase chain reaction (SRAP-PCR) of DNA.....	49
1.6.3. Yield traits as influenced by faba bean varieties	53
1.7. Statistical analysis.....	53
2. Toxicological studies.....	53
2.1. Aphid rearing.....	54
2.2. Chemicals and essential oils.....	54
2.3. Synthesis and characterization of Nanoemulsions.....	55
2.3.1. Droplet size analysis.....	55
2.3.2. Analysis of TEM.....	55
2.3.3. GC-MS analysis.....	56
2.4. Toxicity tests	57
2.5. Biochemical aspects.....	58
2.6. Statistical analysis.....	61
IV. RESULTS AND DISCUSSION	63
1. Ecological studies on faba bean plants.....	63
1.1. Seasonal abundance of key insect pests and the correlated natural enemies on faba bean plants.....	63
1.1.1. Seasonal abundance of certain piercing-sucking insect pests and the correlated predators on faba bean plants.....	63
A: Insect pests	63
B: Associated predators.....	75
1.1.2. Seasonal abundance <i>Liriomyza congesta</i> larvae and its ectoparasitoid, <i>Diglyphus isaea</i>	77
1.2. Influences of certain weather factors and natural enemies complex on population size of the key insect pests.....	81
1.3. Influences of sowing dates on key insect pests and the correlated natural enemies.....	83
1.3.1. Influences of sowing dates on certain piercing-sucking insect pests and the correlated predators.....	84
A: insect pests	84
B: Associated predators.....	93
1.3.2. Influences of sowing dates on <i>Liriomyza congesta</i> and its ectoparasitoid, <i>Diglyphus isaea</i>	96
A: The leaf miners, <i>Liriomyza congesta</i>	96
B: The ectoparasitoid, <i>Diglyphus isaea</i>	100
1.4. Influences of sowing dates on the biochemical and yield traits of faba bean plants in accordance with insects infestation	106

Contents

1.4.1. Biochemical features.....	106
1.4.2. Yield traits as influenced by sowing dates.....	109
1.5. Influences of nine faba bean varieties on insect pests infestation	110
1.6. Plant chemical analysis, molecular and yield traits of faba bean varieties in relation to infestation with key insect pests.....	118
1.6.1. Relationships between chemical components of faba bean varieties and the infestation with key insect pests.....	118
1.6.2. Molecular studies.....	124
A: Protein electrophoresis.....	124
B: Peroxidase and Polyphenyl Oxidase Isozymes electrophoresis.....	127
C: Sequence-related amplified polymorphism-polymerase chain reaction (SRAP-PCR) of DNA.....	128
1.6.3. Yield traits as influenced by faba bean varieties.....	133
2. Toxicological studies.....	134
2.1. Toxicity of some selective insecticides against <i>Aphis craccivora</i>	134
A: Susceptibility factors.....	137
B: Specific activity of some enzymes in laboratory and field strains of <i>Aphis craccivora</i>	138
2.2. Botanical insecticides and nanoemulsions.....	140
2.2.1. Characterization of the nanoemulsions.....	140
A: zeta potential.....	144
B: Gc mass.....	145
2.2.2. Susceptibility of <i>Aphis craccivora</i> to tested compounds.....	147
2.2.3. Inhibitory activity evaluation of essential oils and synthesized nanoemulsions on insect enzymes.....	150
V. CONCLUSION.....	155
VI. SUMMARY.....	157
VII. REFERENCES.....	179
ARABIC SUMMARY	

Contents

LIST OF TABLES

No.	Title	Page
Table 1	SRAP primer combinations used in molecular analysis	51
Table 2	List of tested insecticides with their common names, trade names, manufacturer company, chemical group and field rate	54
Table 3	list of essential oils along with their scientific names, common names and family name	55
Table 4	Seasonal abundance of certain piercing-sucking insect pests and the correlated predators on faba bean plants during 2017/18 season at Kafrelsheikh Governorate	64
Table 5	Seasonal abundance of certain piercing-sucking insect pests and the correlated predators on faba bean plants during 2018/19 season at Kafrelsheikh Governorate	75
Table 6	Seasonal abundance of <i>Liriomyza congesta</i> larvae and its ectoparasitoid, <i>Diglyphus isaea</i> on faba bean plants during 2017/18 season at Kafrelsheikh Governorate	78
Table 7	Seasonal abundance of <i>Liriomyza congesta</i> larvae and its ectoparasitoid, <i>Diglyphus isaea</i> on faba bean plants during 2018/19 season at Kafrelsheikh Governorate	79
Table 8	Seasonal mean of key insects and the common correlated natural enemies on faba bean plants during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	81
Table 9	Statistical parameters for <i>Aphis craccivora</i> , <i>Empoasca spp.</i> , <i>Bemisia tabaci</i> , <i>Nezara viridula</i> and <i>Liriomyza congesta</i> population in relation to temperature, relative humidity %, wind speed, rain fall and the natural enemies complex on faba bean plants during 2017/18 and 2018/19 seasons	82
Table 10	Mean numbers of <i>Aphis craccivora</i> /10 faba bean plants at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	85
Table 11	Mean numbers of <i>Bemisia tabaci</i> /30 faba bean leaflets at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	88
Table 12	Mean numbers of <i>Nezara viridula</i> /10 faba bean plants at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	89
Table 13	Mean numbers of <i>Empoasca spp.</i> /30 faba bean leaflets at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	91
Table 14	Mean numbers of total correlated predators/10 faba bean plants at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	94
Table 15	Seasonal means of four piercing-sucking insects and the correlated predators in faba bean fields at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate	95
Table 16	Mean numbers of <i>Liriomyza congesta</i> /30 faba bean leaflets at three sowing dates during 2017/18 season at Kafrelsheikh Governorate	97
Table 17	Mean numbers of <i>Liriomyza congesta</i> /30 faba bean leaflets at three sowing dates during 2018/19 season at Kafrelsheikh Governorate	99

Contents

Table 18	Mean numbers and parasitism% of <i>Diglyphus isaea</i> /30 faba bean leaflets at three sowing dates during 2017/18 season at Kafrelsheikh Governorate	102
Table 19	Mean numbers and parasitism% of <i>Diglyphus isaea</i> /30 faba bean leaflets at three sowing dates during 2018/19 season at Kafrelsheikh Governorate	103
Table 20	Seasonal means of <i>Liriomyza congesta</i> and its ectoparasitoid, <i>Diglyphus isaea</i> on faba bean plants at three sowing dates during 2017/18 and 2018/19 seasons at Kafrelsheikh Governorate.	105
Table 21	Influences of sowing dates on the chemical features of faba bean leaves in accordance with key insect pests infestation in 2018/19 season	106
Table 22	Influences of sowing dates on the biochemical features of faba bean leaves in response to the infestation with key insect pests among 2018/19 season	107
Table 23	Plant height (cm), numbers of branches/plant, number of pods/plant, number of seeds/pod, seed yield/plant (gm), 100-seed weight (gm) and seed yield/hectare (kg) as influenced by sowing dates in 2018/19 season	110
Table 24	Seasonal mean numbers of <i>A. craccivora</i> and susceptibility degree (SD) of faba bean varieties during two constitutive growing seasons, 2017/18 and 2018/19 at Kafrelsheikh Governorate	111
Table 25	Seasonal mean numbers of <i>Bemisia tabaci</i> and susceptibility degree (SD) of faba bean varieties during two constitutive growing seasons, 2017/18 and 2018/19 at Kafrelsheikh Governorate	112
Table 26	Seasonal mean numbers of <i>Nezara viridula</i> and susceptibility degree (SD) of faba bean varieties during two constitutive growing seasons, 2017/18 and 2018/19 at Kafrelsheikh Governorate	114
Table 27	Seasonal mean numbers of <i>Empoasca spp.</i> and susceptibility degree (SD) of faba bean varieties during two constitutive growing seasons, 2017/18 and 2018/19 at Kafrelsheikh Governorate	115
Table 28	Seasonal mean numbers of larvae, intensity and percent of infestation induced by <i>Liriomyza congesta</i> and susceptibility degree (SD) of faba bean varieties during two constitutive growing seasons, 2017/18 and 2018/19 at Kafrelsheikh Governorate	117
Table 29	The relationships between leaves chemical components of some faba bean varieties and the insects infestation during 2018/19 season	120
Table 30	The relationships between leaves biochemical components of some faba bean varieties and the insects infestation during 2018/19 season	121
Table 31	Molecular weight of protein banding patterns extracted from leaves of some faba bean varieties as influenced by insect infestation in 2018/2019 season	125
Table 32	Distribution of peroxidase and polyphenyl oxidase isozyme groups of some faba bean varieties as influenced by insect infestation in 2018/19 season	128
Table 33	DNA patterns of leaves of some faba bean varieties as influenced by insect infestation in 2018/19 season	130
Table 34	Number and types of the amplified DNA bands as well as the percentage of the total polymorphism generated by SRAP primers in the studied faba bean varieties	131
Table 35	Similarity index using SRAP and protein combination analysis for the nine faba bean varieties	131

Contents

Table 36	Plant height (cm), numbers of branches/plant, number of pods/plant, number of seeds/pod, seed yield/plant (gm), 100-seed weight (gm) and seed yield/hectare (kg) of some faba varieties as influenced by insects infestation in 2018/19 season	133
Table 37	Susceptibility of <i>A. craccivora</i> to tested insecticides	135
Table 38	susceptibility factor of some insecticides against <i>Aphis craccivora</i> (Koch) collected from faba bean fields during 2018 season	138
Table 39	Specific activities of certain enzymes in laboratory and field strain of <i>A. craccivora</i>	141
Table 40	Particle diameter (nm), Polydispersity index (PDI) Conductive (CD) for four nanoemulsions	144
Table 41	Volatile components obtained from basil and cumin essential oils	146
Table 42	Volatile components obtained from basil and cumin nanoemulsions	147
Table 43	Toxicity of four essential oils, nanoemulsions and chemical insecticides against <i>A. craccivora</i> laboratory strains	148
Table 44	Toxicity of four essential oils, nanoemulsions and chemical insecticides against <i>A. craccivora</i> field strains	149

LIST OF FIGURES

No.	Title	Page
Fig. 1	Inspection and sampling in the field	36
Fig. 2	Determining essential oils and nanoemulsions characterization	56
Fig. 3	Seasonal abundance of <i>Aphis craccivora</i> in faba bean during 2017/18 season	66
Fig. 4	Seasonal abundance of <i>Aphis craccivora</i> in faba bean during 2018/19 season	67
Fig. 5	Seasonal abundance of <i>Bemisia tabaci</i> in faba bean during 2017/18 season	68
Fig. 6	Seasonal abundance of <i>Bemisia tabaci</i> in faba bean during 2018/19 season	69
Fig. 7	Seasonal abundance of <i>Nezara viridula</i> in faba bean during 2017/18 season	70
Fig. 8	Seasonal abundance of <i>Nezara viridula</i> in faba bean during 2018/19 season	71
Fig. 9	Seasonal abundance of <i>Empoasca spp.</i> in faba bean during 2017/18 season	73
Fig. 10	Seasonal abundance of <i>Empoasca spp.</i> in faba bean during 2018/19 season	73
Fig. 11	Seasonal abundance of total predators in faba bean during 2017/18 season.	74
Fig. 12	Seasonal abundance of total predators in faba bean during 2018/19 season	76
Fig. 13	Seasonal abundance of <i>l. congesta</i> , <i>D. isaea</i> and percentage of parasitism during 2017/18 season	78
Fig. 14	Seasonal abundance of <i>l. congesta</i> , <i>D. isaea</i> and percentage of parasitism during 2018/19 season	80
Fig. 15	Mean numbers of <i>A. craccivora</i> /10 plants at three sowing dates during two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	86
Fig. 16	Mean numbers of <i>B. tabaci</i> /30 leaflets at three sowing dates during two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	88
Fig. 17	Mean numbers of <i>N. viridula</i> /10 plants at three sowing dates during two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	90
Fig. 18	Mean numbers of <i>Empoasca spp.</i> /30 leaflets at three sowing dates during two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	92
Fig. 19	Mean numbers of total predatory insect/10 plants at three sowing dates during two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	95
Fig. 20	Mean numbers of <i>L. congesta</i> /30 leaflets at three sowing dates in two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	98
Fig. 21	Mean numbers of <i>L. congesta</i> infestation/30 leaflets at three sowing dates in constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	100
Fig. 22	Mean numbers of intensity/30 leaflets at three sowing dates during two constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	100
Fig. 23	Mean numbers of <i>D. isaea</i> and parasitism%/30 leaflets at three sowing dates during constitutive seasons; 2017/18 and 2018/19 at Kafrelsheikh Governorate	104

Contents

Fig. 24	Electrophoretic banding pattern and dendrogram of protein analysis of protein extracted from leaves of some faba bean varieties as influenced by insect infestation in 2018/19 season.	125
Fig. 25	Zymogram analysis of peroxidase and polyphenyl oxidase isozyme in some faba bean varieties as influenced by insect infestation in 2018/19 season.	127
Fig. 26	DNA polymorphism and dendrogram using SRAP-RAPD in <i>Vicia faba</i> leaves from varieties influenced by insect infestation in 2018/19 season.	129
Fig. 27	Dendrogram of SRAP and protein analysis combination for the nine <i>Vicia faba</i> leaves from varieties influenced by insect infestation in 2018/19 season	132
Fig. 28	UV-vis spectrum of nanoemulsions for four essential oils. (A) <i>Basilicum ocimum</i> (basil), (B) <i>Matricaria chamomilla</i> (chamomile), (C) <i>Origanum marjorana</i> (marjoram), and (D) <i>Cuminum cyminum</i> (cumin)	141
Fig. 29	The TEM image of synthesized nanoemulsions using (A) <i>Basilicum ocimum</i> , (B) <i>Matricaria chamomilla</i> , (C) <i>Origanum marjorana</i> and (D) <i>Cuminum cyminum</i> essential oils	142
Fig. 30	(A) SEM image of synthesized nanoemulsions using <i>Basilicum ocimum</i> essential oil. (B) EDX pattern of synthesized BoEO-NEs	143
Fig. 31	Zeta potential of biosynthesized nanoemulsions by four essential oils (A) <i>Basilicum ocimum</i> (basil), (B) <i>Matricaria chamomilla</i> (chamomile), (C) <i>Origanum marjorana</i> (marjoram) and (D) <i>Cuminum cyminum</i> (cumin).	145
Fig. 32	Impact of four essential oils and their nanoemulsions on the enzyme activities. (A) Acetylcholine esterase, (B) alkaline phosphatase, (C) β -esterase, (D) GST, and (E) MFO enzymes.	152

Abstract

The current study was conducted during 2017/18 and 2018/19 seasons, to collect enough ecological data on key insect pests infesting faba bean plants at Kafrelsheikh. Resistant varieties provides an alternative nonchemical option for controlling insects. Varieties were categorized into susceptible (Sakha3), low resistance (Sakha4 and Giza843) and moderate resistance (Noubaria1). Susceptible group with high infestation level of *Aphis craccivora*, *Bemisia tabaci*, *Nezara viridula*, *Empoasca spp.* and *Liriomyza congesta*, exhibited the highest content of N, P, K, Zn, Fe, carbohydrates, protein and chlorophyll while received the lowest content of Mn, lipids, acidity, phenol, silica, catalase and peroxidase. Isoenzymes, protein electrophoresis and SRAP-PCR exposed a wide difference between susceptible and resistant varieties. Encapsulation of four essential oils *Basilicum ocimum*, *Cuminum cyminum*, *Origanum marjorana* and *Matricaria chamomilla*, compared with selective insecticides were evaluated as anti-insect against *A. craccivora*. Oils and their nanoemulsions showed considerable toxic activities against cowpea aphid. Detoxification enzymes were found to be significantly fluctuated as compared with control.