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FIELD STUDIES ON INSECT AND ANIMAL PESTS ATTACKING ALFALFA (*MEDICAGO SATIVA* L.) AND THEIR NATURAL ENEMIES IN FIVE GOVERNORATES IN EGYPT

BY

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ABSTRACT

Results indicated that alfalfa plants harbored 22, 27 and 9 species, of destructive, beneficial and visitor insects respectively, belonging to13, 15 and 9 families and 6, 8 and 5 orders respectively. The population densities of species in crop had an effective insect pests, (Homoptera : Aphididae) represented as Aphids (different species) 26.3 %, leaf hopper (Jassid's) (Homoptera : Cicadilidae) 26.2 %and clover leaf miner fly (Diptera : Agromyzidae) 24.6 %, beneficial animal and insects represented as aphid lion (Neuroptera : Chrysopidae) 19.3%, true spider (different species) (Araneida : Non-identified) 15.6 % and, lady bird beetles, (Coleoptera : Coccinellidae) by *Coccinellae spp.* 15.3 % and visitor insects (Diptera : Culicidae) represented as *Culex spp.* 57.8 %.Each Insect population was represented by percentage of total numbers of insect pests, beneficial and visitor species, respectively.It could be stated that crop has dominant and subdominant species. The most harmful insects; beneficial animal and insects and visitor denisities concentrated in Siwa & Paris Oasis and in Ismailia Agriculture Experimental Research stations.

INTRODUCTION

Alfalfa (*Medicago sativa* L.) is cultivated in Egypt, as green forage crop, for feeding farm animals and provide hay and silage as well as grazing pasture in many temperate and tropical countries in Africa and Asia.

Alfalfa plants are characterized by affording a good habitat for arthropod fauna. The alfalfa weevil is the most important species consuming foliage. Several species of caterpillars; grass and plant hoppers are sometimes important consumers of foliage. The potato leafhopper is the most serious pest that sucks sap from plants and causes yellowing to the foliage and stunting of stem. Several species of aphids cause serious damage by sucking sap from plant (Reinhold, 1970). The damage results in significant losses in yield and forage quality, especially losses in ca.otene (Barnes, 1974, Cherry *et al.*, 1977). Insect can adversely affect seed production by feeding on and damaging flowers (i.e., Lygus bugs) or by feeding directly on the developing seed i.e., Alfalfa seed chalcids (Nielson, 1976).

The total number of pest species, predators and parasitoids differ among crops and proportion of species also vary (El- Hawary *et al.*, 1995). Survey of insect pests, beneficial and visitor insects associated with clover and alfalfa were reported (Howelt and Pienkowski, 1971, Mohamed and Ismail, 1974, Abdel-Fattah and El-Saadany, 1978, El-Dakhakhni *et al.*, 1995, El-Hawary *et al.*, and 1995 El-Mezayyen, 1998).

The objective of the present investigation was to survey and evaluate the variation and the densities of insect and animal pests, natural enemies and visitor insects associated with alfalfa crop system at the New valley, Matrouh (Siwa Oasis), Alexandria (Nubaria), Ismailia and Giza during two successive years 2004 and 2005.

MATERIALS AND METHODS

The study was carried out at five governorates, the New vally, Matrouh (Siwa Oasis), Alexandria (Nubaria Exp. Res. St.), Ismailia (Ismailia Exp. Res. St.) and Giza (El-Baharia Oasis) during two successive seasons 2004 and 2005. Recommended agricultural practices were applied with no pesticidal treatments throughout the growing seasons at the sites of study. Samples were collected randomly at 9 a.m., Each sample was taken from the survey experiment using sweep net technique for collecting insect and animal pests; beneficial and visitor insects inhabiting alfalfa plant. The utilized sweeping net had an opening 30 cm diameter, conical muslin bag 30 cm deep and a wooden handle of about 90 cm long. At every sampling date, samples consisted of 50 double strokes taken at diagonal direction of the field. An alfalfa field of one feddan was chosen in each village. Every sample was killed in a cyanide jar and emptied in a plastic jar. The captured true spiders were killed in 50% alcohol and then transferred to tubes filled with 70% alcohol and closed with cotton-wool, then inverted in wide-necked glass stoppard bottles filled with alcohol. In the laboratory, species were isolated, counted and identified by the staff of classification in the Insect Identification Research Department in the Plant Protection Research Institute, A.R.C. in Egypt.

RESULTS AND DISCUSSION

A -1.Survey insect species in alfalfa crop : -

1. Destructive insect pests :

Results (Table 1& Fig.1) revealed the presence of 22 species of insect pests belong to 13 families and 6 orders from alfalfa in the New valley; Matrouh (Siwa oasis); Alexandria (Nubaria), Ismailia and Giza. Homoptera was the most dominant order included Aphididae and Cicadelidae. Aphididae was represented by aphids (different species) showing 26.26% as Total. Cicadelidae represented by leafhoppers (different species) was the second one 26.19 % as Total. This result agree with Mohamed and Ismail (1974) who found aphids the most destructive insects feeding on certain parts of alfalfa with 1890 individuals belonging to 33 species, representing 27 families and related nine orders.

Diptera was the second order represented by the clover Leaf miner family (Agromyzidae) which was represented by (*Phytomyza nana* (Mg.)), and the broad bean leaf miner (*Liriomyza trifolii* (Burgess)), showing 24.56 and 8.57 % as Total, respectively.

Table (1): General mean numbers of swept insect pests on alfalfa plants during 2004 and 2005 years at the five governorates

Order	Family	%	Insect pests	Total No.	%
Coleoptera	Curculionidae	5.58	*Hypera berunipennis (Both.)*	50	3.4
			Sitona lividipes (Fab.)	32	2.18
	Scarabidae	0.2	*Tropinta squalida (Scop.)*	3	0.2
Diptera	Agromyzidae	33.13	*Phytomyza nana (MG.)*	361	24.56
			Liriomyza trifolii Burgess	126	8.57
Hemiptera	Miridae	2.04	*Lugus hesperus Knight*	30	2.04
	Pentatomidae	0.34	*Nezara viridula L.*	5	0.34
Homoptera	Aphididae	26.26	*Aphis (different species)*	386	26.26
	Cicadellidae	26.2	*Empoasca spp.*	385	26.19
Lepidoptera	Lycaenidae	1.63	*Gosmlyce boeticus (L.)*	24	1.63
	Noctuidae	1.98	*Caenurgina erechtea (Gra.)*	22	1.5
			Autograph spp.	5	0.34
			Spodoptera littoralis (Boisd.)	1	0.07
			Spodoptera exigua (Hb.)	1	0.07
	Nymphalidae	0.14	*Vanessa cardui L.*	2	0.14
	Pieridae	0.2	*Artogeia rapae L.*	3	0.2
Orthoptera	Acrididae	1.9	*Schistocerca gregaria (Forsk.)*	4	0.27
			Acrotylus insbricus (Scop.)	9	0.61
			Aiolopus strepins (Latr.)	3	0.2
			Eyprepocnemis plorans (Charp.)	6	0.41
			Chrotogonus homotodenus (b.)	6	0.41
	Tettigonidae	0.41	*Phaneroptera roseata (Scop.)*	6	0.41
Total pests				1470	

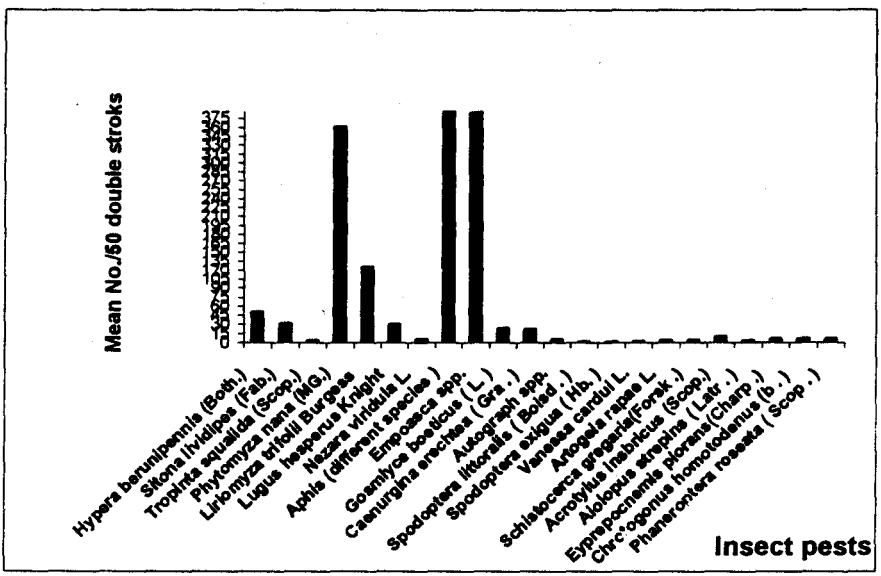

Fig. (1): General mean numbers of swept insect pests on alfalfa plants during 2004 and 2005 years at the five governorates

Coleoptera was registrated as third class represented by the family Curculionidae which included two species of weevils; the alfalfa weevil (*Hypera brunneippenis* (Boh.)) and the clover root weevil (*Sitona lividipes* (Fab.)) showing 3.40 and 2.18% as total, respectively. The least recorded Coleopteran family was Scarabaeidae represented by only the flower rose beetle (*Tropinta squalida* (Scop.)) and comprised 0.20 % as total.

Order Lepidopera ranked fourth degree including four families Lycaenidae; Noctuidae; Pieridae and Nymphalidae. Lycaenidae was represented by the long tailed butter fly (*Gosmlyce boeticus* L.) reaching 1.63% and semi lopper moth, family Noctuidae (*Autographa spp.*) 0.34%. The forage lopper (*Caenurgina erechtea* (Gra.)) 1.50%. The two army worms; the cotton leaf worm (*Spodoptera littorlis* (Boisd.)) 0.07% and the lesser cotton leaf worm, (*S. exiqua* (Hb.)) 0.07% as total. Pieridae represented by the small white butterfly (*Artogeia rapae L.*) recording 0.20% as total. Nymphalidae was represented by the painted lady (*Vanessa cardui* L.) showing 0.14% as total.

Hemiptera occupied the fifth order which including two families; Pentatomidae and Miridae. Pentatomidae included the green stink bug; (*Nezara viridula* (L.)) composing 0.34% of the total insect pests and Miridae the capsid bug (*Lygus hesperus* (Knight) reaching 2.04%]

Order Orthoptera was the least abundant including two families, Acrididae and Tettigonidae. Acrididae was represented by the red winged hopper (*Acrotylus insbricus* (Scop.)), the desert locust (*Schistocerca gregaria* (Forsk.)), the clover hoppers (*Eyprepocnemis plorans* (Charp.)), the frog hopper (*Chrotogonus homotodenus* (b.)) and the rice hopper (*Aiolopus strepins* (Latr.)), showing 0.61, 0.27, 0.41, 0.41and 0.20% as total, respectively. Tettigonidae was represented only by the forage grass hopper, (*Phaneroptera roseate* (Scop.)) 0.41% as total.

Several investigators recorded many insect pests associated with clover and alfalfa plants, Mohamed and Ismail (1974) recorded thirteen insect pest species at Giza Governorate. Abdel-Fattah and El-Saadany (1978) recorded twenty one insect pests at Shebin El-Kom, Menoufia Governorate. Borael *et al.* (1993) recorded 28 insect pests in clover fields at four locations; Sakha, Sidi-Salem, Disouk and Biala at Kafr El-Sheikh, El-Hawary *et al.* (1995) recorded 24 insect pest species on clover plants at the same Governorate, while El-Mezayyen, (2001) recorded 14 insect pests in alfalfa plant at Sebha, Libya. Variation in the recorded insect pests among investigators may be due to locations differences and annual weather fluctuations and probably some unknown factors.

Beneficial insects and animals:

Data (Table 2 & Fig. 2) Show the presence of 27 species of beneficial insects and animals in 15 families and 8 orders; Coleoptera was the first dominated, included two families; Coccinellidae and Stephlinidae, Coccinellidae is represented by the lady bird beetles, *Coccinella undecimpunctata (L.), Coccinella-7-punctata (L.); Scymnus interruptes* (Weise.) and *Scymnus seriacus* (Mars.) recording 23.06 of % total. Staphlinidae was represented by the rove-beetle *Paederus alferii* (Koch.) recording 1.86 % of the total beneficial.

Table (2): General mean numbers of swept beneficial insects on alfalfa plants during 2004 and 2005 years at the five governorates

Order	Family	%	Species	Total No.	%
Coleoptera	Coccinelidae	23.06	*Scymnus seriacus (Mars.)*	18	6.69
			Scymnus interruptes (Weise.)	3	1.12
			Coccinella undecimpunctata (L.)	26	9.67
			Coccinella -7- punctata (L.)	15	5.58
	Stephylinidae	1.86	*Paederus alferii (Koch)*	5	1.86
Dictyoptera	Mantidae	2.23	*Mantis religiosa L.*	6	2.23
Diptera	Syrphidae	4.83	*Metasyrphus corollae (F.)*	8	2.97
			Syrphus rapalus (WLK.)	5	1.86
Hemiptera	Anthocoridae	6.32	*Orius spp.*	17	6.32
	Miridae	3.35	*Campylomma nicolasi Put.*	6	2.23
			Deraecoris punctulatus F.	3	1.12
	Nabidae	4.83	*Nabis copsiformis Germar*	13	4.83
Hymenoptera	Aphididae	2.6	*Aphidius sohchi Morsh*	7	2.6
	Braconidae	3.72	*Halobracon sp.*	2	0.74
			Microbracon rufiventris Kok.	3	1.12
			Microbropletis sp.	2	0.74
			Opius nigricornis Walker	3	1.12
	Ischneumonidae	4.84	*Diplazon tetragonus (Thb.)*	3	1.12
			Pimpila raborator (Fabr.)	9	3.35
			Sinophorus xanthostoma (Grav.)	1	0.37
	Pteromalidae	1.86	*Burnchobius spp.*	3	1.12
			Nasonia vitripennis Walker	2	0.74
	Vespoidae	2.60	*Polistes gallica L.*	7	2.6
Neuroptera	Chrysopidae	19.33	*Chrysoperla carnaea (Steph.)*	52	19.33
Odonata	Aeschnidae	2.98	*Heminex ephippiger (Selys.)*	5	1.86
	Agrionidae		*Ischnura senegalensis (Ramb.)*	3	1.12
Araneidae	Non-identified	15.61	*True Spider*	42	15.61
Total beneficials				269	

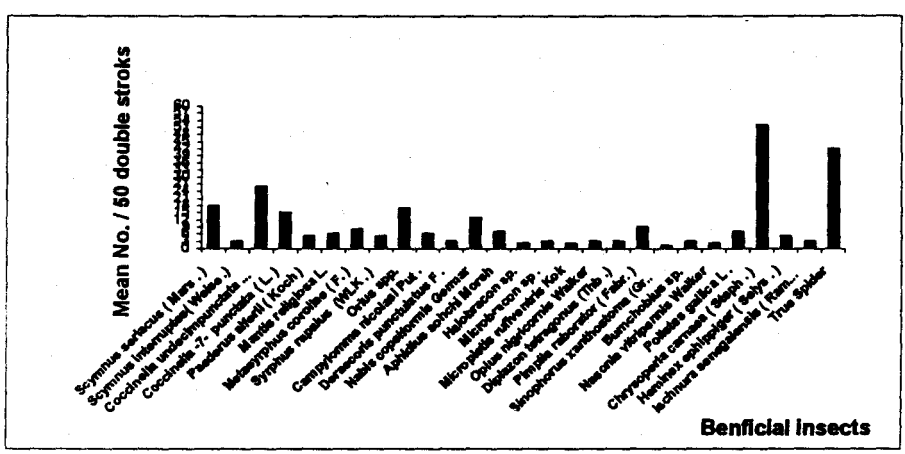

Fig. (2): General mean numbers of swept beneficial insects on alfalfa plants during 2004 and 2005 years at the five governorates

Neuroptera was the second largest group and contained only one family, being Chrysopidae, represented by the aphid lion *Chrysoperla carnaea* (Steph.) (19.33 % of the total) at Matrouh " Siwa Oasis"; New valley " Paris Oasis" and Alexandria" Nubaria Agriculture Experimental Station".

True spiders Order " Aranidae " rank the third degree " different species comprised 15.61% in alfalfa at New valley; Giza "El-Baharia Oasis" and Matrouh "Siwa Oasis"..

Order Hemiptera occupied the fourth degree and contained three families; Anthocoridae represented by *Orius spp.*; Nabidae recorded by *Nabis copsiformis* Germar; Miridae recorded by *Campylomma nicolasi* Put. And finally *Deraecoris punctulatus* F. reaching 6.32; 4.83; 2.23; and1.12 %, respectively of the total beneficial insects in the same order.

Order Hymenoptera ranked the fifth with five families; i.e. Aphididae, Braconidae, Ischneumonidae, Pteromalidae and Vespoidae and Four species belonging to Braconidae were recorded; *Halobracon sp.*, *Microbracon sp.*, *Micropletis rufiventris* Kok. and *Opius nigricornis* (Walker) were registrated 0.74, 0.74, 1.12 and 1.12 % of the total, respectively. Three species of Ischneumonidae were recorded; *Diplazon tetragonus* (Thb.) 1.12 %; *Pimpila raborator* (Fabr.) 3.35% and *Sinophorus xanthostoma* (Grav.) 0.37 %. Two species of Pteromalidae were recorded; *Burnchobius spp.*1.12% and *Nasonia vitripennis* (Walker) took 0.74 %. Each of the other two families were represented by one species, being Aphididae, *Aphididus sohchi* (Morsk) and Vespoidae, the yellow wasp *Polistes gallica* L. registering 2.6 % each, of the total beneficial insects.

Order Diptera harboured only one, family being Syrphidae represented by the hover flies *Metasyrphus corollae* (F.) and *Syrphus rapalus* (WIK.); 2.97 and 1.86% of the total respectively.

Order Odonata was represented by two families. Aeschnidae as Dragon flies *Heminax ephippiger* (Selys.) (1.86%) and Agrionidae as Damsel flies *Ischnura senegalensis* (Ramb.) (1.12%).

Order Dictyoptera was the least counted order with only one family being Mantidae, represented the praying Mantid *Mantis religiosa* L. (2.23%).

Several investigators recorded many beneficial species associated with clover and alfalfa plants (Mohamed and Ismail (1974), Abdel-Fattah and El-saadany (1978), Moursi and Youssef (1986), Borael *et al.* (1993) and El-Dakhakhni *et al.* (1995)). In the current study, the number of beneficial insects from the alfalfa plant was 26 species at New valley; Siwa Oasis and Experimental Stations. The results are in agreement with these obtained by Hafez *et al.* (1975) through monitoring many predators associated with clover fields at Assuit locality.

3. Visitor insects:

Data (Table 3 & Fig. 3) revealed the presence of 9 species of visitor insects belong to 9 families and 5 orders at locations under study during two successive years 2004 & 2005. Diptera was the major represented by two families, Culicidae as the

mosquitoes *Culex spp.* (57.75% as total). Muscaidae included the house fly *Musca spp.* with (28.34 %).Hymenoptera ranked second represented by three families and each family was represented by one species (the solitary bee *Andrina spp.*, the honey bee *Apis mellifera* (L.) and the wood bee *Xylocopa aestuans* (L.), respectively. They accounted for 2.14; 5.88 and 0.53 % of the total visitor insects, respectively.

Table (3): General mean numbers of swept visitor insects on alfalfa plants during 2004 and 2005 years at the five governorates.

Order	Family	%	Species	Total No.	%
Coleoptera	Carabidae	1.07	*Epilachna chrysomllina F.*	2	1.07
	Coccinellidae	2.67	*Blaps polychresta Forsk*	5	2.67
Diptera	Culicidae	57.75	*Culex spp.*	108	57.75
	Muscaidae	28.34	*Musca spp.*	53	28.34
Hemiptera	Pentatomidae	1.07	*Aspongopus viduatus var.niger* (Fied.)	2	1.07
Hymenoptera	Andrenidae	2.14	*Andrina spp.*	4	2.14
	Apidae	5.88	*Apis mellifera (L.)*	11	5.88
	Xylocopidae	0.53	*Xylocopa aestuans (L.)*	1	0.53
Lepidoptera	Lycaenidae	0.53	*Virachola livia (Klug.)*	1	0.53
Total visitors				187	

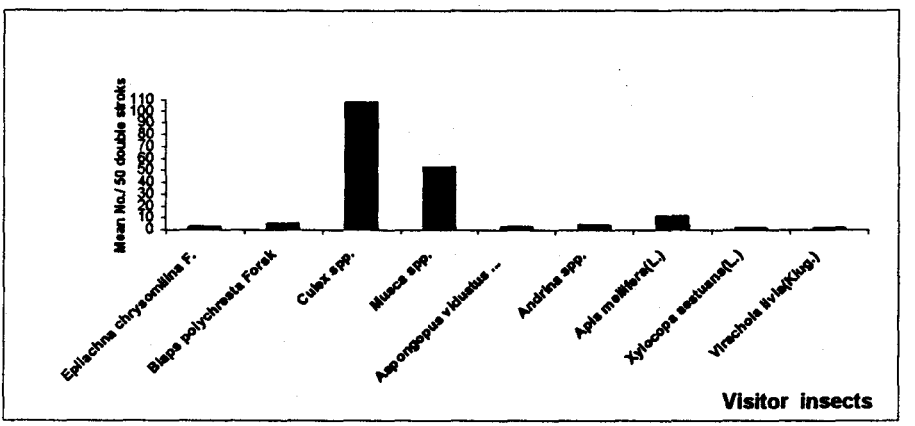

Fig. (3): General mean numbers of visitor insects on alfalfa plants during 2004 and 2005 years at the five governorates

Coleoptera ranked the third including two families; Carabidae and Coccinellidae. Each family was represented by only one species, the Cucrbitae beetle *Epilachna chrysomllina* F. and the ground beetle *Blaps polychresta* Forsk composing 1.07 and 2.67 % of the total visitor insects respectively.

Order Hemiptera came next including only one family being Pentatomidae which was represented by the black bug *Aspongopus viduatus var. niger* (Fied.) composing (1.07 %).

Lepidoptera was the least recorded order represented by one family being Lycaenidae which was represented by the pomegnate butter fly *Virachola*

livia (Klug.) (0.53 %as total). Mohamed and Ismail (1974) recorded 4 species of true insect pollinators in alfalfa and clover field at Giza region, Egypt., Moreover, Abdel- Fattah and El-Saadany (1978) recorded 18 species of true insect pollinators in clover fields at Shebin El- Kom distrect, Egypt.

B – 1. Population density of insect species: -

1.1- Destructive insect pests:

Data presented in Table 4 & Fig. 4 showed that the highest mean number of insects population densities was Homoptera. The aphid "different species" registered three peaks, first in Alexandria governorate "Agriculture Experimental Station at Nubaria ".The second peak was Matrouh governorate "Siwa Oasis"and third peak was The New valley "Paris Oasis" which recorded number were 125, 107 and 59 Nymph's and adult's, respectively. The second insect included this was the Leaf hoppers "Jassids" which recorded three peaks; the first one was The New valley "Paris Oasis", the second was Matrouh governorate "Siwa Oasis" and the third was the Ismailia governorate "Ismailia Agriculture Experimental Station" recording 168; 140 and 33 nymph's and adults, respectively.The third destructive insect was the clover leaf miner" *Phytomyza nana* (MG), order : Diptera wich registrated three peaks the first one was at Ismailia governorate "Ismailia Agriculture Experimental Station"; second at The New vally governorate " El kharga Oasis" and Matrouh governorate "Siwa Oasis" recording numbers of 85, 80 and 74 adults, respectively.

1.2-Benificial insects and animals:

Data (Table 5 & Fig. 5) showed that the highest peak was collected for order Coleoptera, the lady beetle rank the first degree registering three peaks, the first one at Giza governorate "El-Bharia Oasis"; Aexandria governorate "Nubaria Agriculture Experimental Station" and Matrouh governorate "Siwa Oasis" recording 14, 8 and 6, respectively. Morever The aphid lion *"Chrysoperla carnaea"* (Steph.) registrated three peaks at Matrouh governorate "Siwa Oasis", The New valley "Paris Oasis" and Aexandria governorate "Nubaria Agriculture Experimental Station" with recorded numbers of 18; 8 and 5 adults respectively. Araneidae (Tree spider) different species registered three peaks at Ismailia governorate "Ismailia Agriculture Experimental Station"; The New valley governorate "Paris oasis" and Matrouh governorate "Siwa oasis" with recorded numbers of 14, 10 and 5 individuals, respectively.

1.3-Visitor insects:

Data in Table 6 & Fig. 6 indicate that the highest mean number was the Mosquito (different species) registrated at The New valley governorate "Paris Oasis", The New valley governorate "New valley Agriculture Experimental Station" and Ismailia governorate "Ismailia Agriculture Experimental Station" where recorded numbers were 36, 35 and18 adults, respectively.The hous fly occupied the second degree at Giza governorate "El- Bharia Oasis"; Matrouh governorate "Siwa Oasis" and Ismailia governorate "Ismailia Agriculture Experimental Station" where recorded numbers were 16, 9 and 8 adults, respectively.The third was the true pollinator (*Apis mellifera* (L.)) which registrated two peaks at Giza governorate "El-Baharia Oasis"; and the New valley governorate "Paris Oasis" where recorded numbers were 8 and 3 adults, respectively. These results are in agreement with Sabry, (1976).

Table (4) : Population densities of the insect pests during 2004 - 2005

Insect species		%	Governorates											Governorates					
			The New Valley oasis							Giza		Matrouh		Agricultur Experimental Research Station					
					El - Dakhla			El Farafra						Ismailia		Alexandria		The New valley	
Species	Family		Paris	El-Khrga	Balat	Mout	El - Kasr		%	El -Baharia Oasis	%	Siwa Oasis	%	Ismailia Exp. Res. St.	%	Nubaria Exp. Res. St.	%	New valley Exp. Res. St.	%
Hypera berunipennis (Both.)	Curculionidae	5.58	0	0	2	4	2	1	0.61	1	0.07	8	0.54	4	0.27	11	0.75	17	1.16
Sitona linidipes (Fab.)			28	0	0	0	0	0	1.9	0	0	0	0	2	0.14	1	0.07	1	0.07
Tropinta squalida (Scop.)	Scarabidae	0.2	1	0	0	0	0	0	0.07	0	0	0	0	1	0.07	0	0	1	0.07
Phytomyza nana (MG.)	Agromyzidae	33.1	18	80	0	0	0	23	8.23	0	0	74	5.03	85	5.78	53	3.61	28	1.9
Liriomyza trifolii Burgess			52	0	0	0	0	0	3.54	0	0	8	0.54	41	2.79	25	1.7	0	0
Lugus hesperus Knight	Miridae	2.04	0	0	0	0	0	25	1.7	0	0	1	0.07	1	0.07	2	0.13	1	0.07
Nezara viridula L.	Pentatomidae	0.34	0	0	0	0	0	4	0.27	0	0	0	0	0	0	0	0	1	0.07
Aphis (different species)	Aphididae	26.26	59	0	0	5	3	16	5.65	26	1.77	107	7.28	45	3.06	125	8.5	0	0
Empoasca spp.	Cicadellidae	26.2	168	0	0	0	0	0	11.4	3	0.2	140	9.52	33	2.24	29	1.97	12	0.82
Gosmlyce boeticus (L.)	Lycaenidae	1.63	0	0	0	0	0	13	0.88	0	0	3	0.2	5	0.34	1	0.07	2	0.14
Caenurgina erechtea (Gra.)	Noctuidae	1.98	0	3	1	0	0	0	0.27	0	0	1	0.07	2	0.14	15	1.02	0	0
Autograph spp.			0	0	0	0	0	0	0	0	0	0	0	1	0.07	3	0.2	1	0.07
Spodoptera littoralis (Boisd.)			0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.07	0	0
Spodoptera exigua (Hb.)			0	0	0	0	0	0	0	0	0	0	0	1	0.07	0	0	0	0
Vanessa cardui L.	Nymphalidae	0.14	0	0	0	1	0	0	0.07	0	0	0	0	0	0	1	0.07	0	0
Artogeia (Pieris)rapae L.	Pieridae	0.2	2	0	0	0	0	0	0.14	1	0.07	0	0	0	0	0	0	0	0
Schistocerca gregaria (Forsk.)	Acrididae	1.9	0	0	0	1	0	0	0.07	1	0.07	2	0.14	0	0	0	0	0	0
Acrotylus insbricus (Scop.)			1	0	0	0	0	0	0.07	1	0.07	4	0.27	2	0.14	1	0.07	0	0
Aiolopus strepins (Latr.)			0	0	0	0	0	0	0	0	0	3	0.2	0	0	0	0	0	0
Eyprepocnemis plorans (Charp.)			4	0	0	0	0	0	0.27	0	0	2	0.14	0	0	0	0	0	0
Chrotogonus homotodenus (b.)			0	0	0	0	0	0	0	3	0.2	2	0.14	0	0	1	0.07	0	0
Phaneroptera roseata (Scop.)	Tettigonidae	0.41	2	0	0	0	0	0	0.14	1	0.06	2	0.14	1	0.07	0	0	0	0
Total			335	83	3	11	5	82	35.3	37	2.51	357	24.3	224	15.2	269	18.3	64	4.37

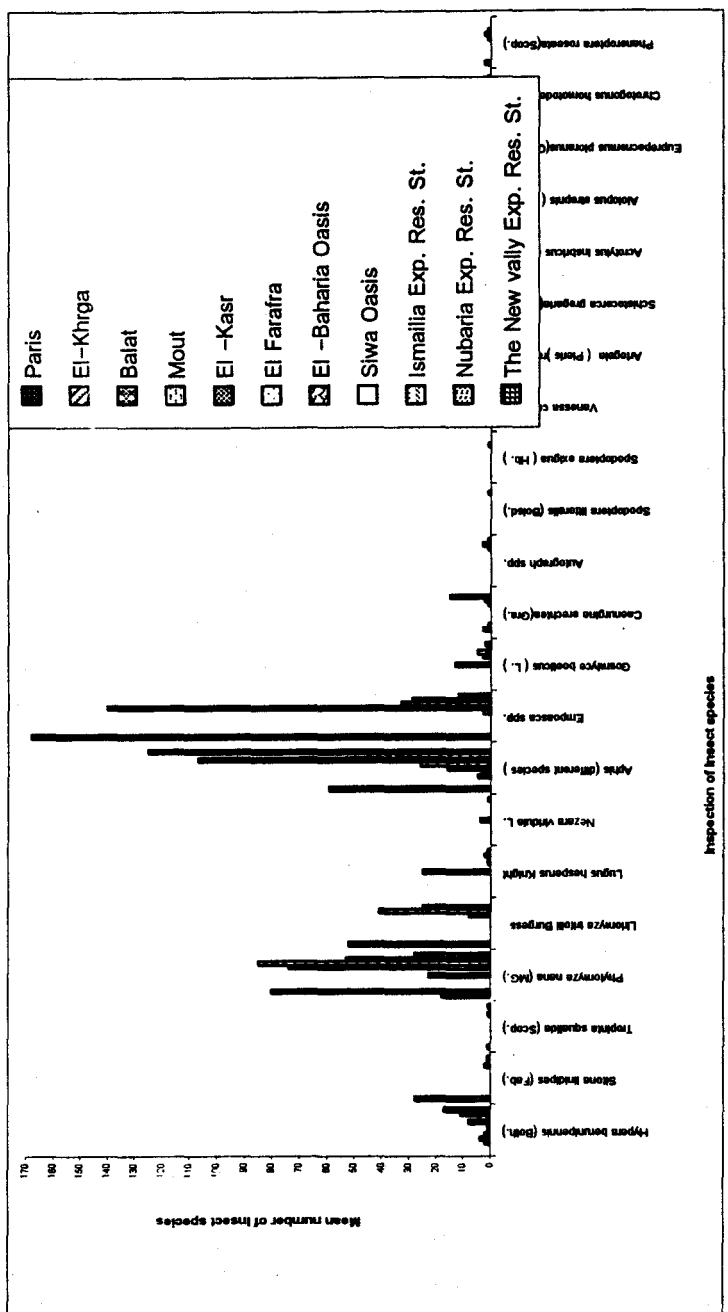

Fig. (4): Population densities of insect pests represented as mean number

Table (5): Population densities of beneficial animals and insects during 2004 - 2005

Insect species		%	Governorates											Governorates					
			New valley oasis							Giza		Matrouh		Agricultur Experimental Research Station					
					El - Dakhla			El Farafra	%					Ismailia		Alexandria		The New valley	
Species	Family		Paris	El-Khrga	Balat	Mout	El - Kasr			El -Baharia Oasis	%	Siwa Oasis	%	Ismailia Exp. Res. St.	%	Nubaria Exp. Res. St.	%	The New valley Exp. Res. St.	%
Scymnus seriacus (Mars.)	Coccinelidae	23.06	0	0	4	2	1	0	2.6	0	0	7	2.6	1	0.37	1	0.37	2	0.74
Scymnus interruptes (Weise.)			0	0	0	0	0	0	0	0	0	3	1.12	0	0	0	0	0	0
Coccinella undecimpunctata (L.)			2	0	0	0	0	0	0.74	6	2.23	4	1.49	5	1.86	4	1.49	5	1.86
Coccinella -7- punctata (L.)			1	1	0	0	0	0	0.74	8	2.97	2	0.74	0	0	0	0	3	1.12
Paederus alferii (Koch)	Stephylinidae	1.86	0	0	0	1	0	1	0.74	0	0	0	0	2	0.74	1	0.37	0	0
Mantis religiosa L.	Mantidae	2.23	0	0	0	0	0	0	0	2	0.74	3	1.12	0	0	0	0	1	0.37
Metasyrphus corollae (F.)	Syrphidae	4.83	2	0	0	0	0	0	0.7	1	0.37	0	0	1	0.37	2	0.74	2	0.74
Syrphus rapalus (WLK.)			0	0	0	0	0	0	0	0	0	1	0.37	3	1.12	1	0.37	0	0
Orius spp.	Anthocoridae	6.32	0	4	0	0	0	0	1.5	10	3.72	0	0	1	0.37	2	0.74	0	0
Campylomma nicolasi Put.	Miridae	3.35	0	2	0	0	0	0	0.7	3	1.12	0	0	0	0	1	0.37	0	0
Deraecoris punctulatus F.			0	1	0	0	0	0	0.4	2	0.74	0	0	0	0	0	0	0	0
Nabis copsiformis Germar	Nabidae	4.84	0	0	3	0	2	0	1.9	0	0	3	1.12	1	0.37	2	0.74	2	0.74
Aphidius sohchi Morsh	Aphididae	2.6	3	0	0	0	0	0	1.1	0	0	2	0.74	0	0	2	0.74	0	0
Halobracon sp.	Braconidae	3.72	0	0	0	0	0	0	0	0	0	0	0	1	0.37	1	0.37	0	0
Microbracon sp.			0	3	0	0	0	0	1.1	0	0	0	0	0	0	0	0	0	0
Micropletis rufiventris Kok.			1	1	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0
Opius nigricornis Walker			0	1	0	0	0	0	0.4	0	0	1	0.37	1	0.37	0	0	0	0
Diplazon tetragonus (Thb.)	Ischneumonidae	4.83	0	1	0	0	0	0	0.4	1	0.37	0	0	0	0	0	0	1	0.37
Pimpila raborator (Fabr.)			2	0	0	0	0	0	0.7	0	0	1	0.37	2	0.74	3	1.12	1	0.37
Sinophorus xanthostoma (Grav.)			0	1	0	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0
Bathyplectes curculionis.	Pteromalidae	1.86	0	0	0	0	0	0	0	0	0	1	0.37	0	0	0	0	2	0.74
Nasonia vitripennis Walker			0	0	0	0	0	0	0	1	0.37	1	0.37	0	0	0	0	0	0
Polistes gallica L.	Vespoidae	2.6	0	2	2	1	2	0	2.6	0	0	0	0	0	0	0	0	0	0
Chrysoperla carnaea (Steph.)	Chrysopidae	19.33	8	0	4	5	3	4	8.9	0	0	18	6.69	3	1.12	5	1.86	2	0.74
Heminex ephippiger (Selys.)	Aeschnidae	2.98	0	0	2	0	0	0	0.7	0	0	3	1.12	0	0	0	0	0	0
Ischnura senegalensis (Ramb.)			0	1	0	0	0	0	0.4	1	0.37	1	0.37	0	0	0	0	0	0
True Spider	Non-identified	15.61	10	0	2	0	0	2	5.2	2	0.74	5	1.86	14	5.2	4	1.49	3	1.12
Total			29	18	17	9	8	7	33	37	13.8	56	20.8	35	13	29	10.8	24	8.92

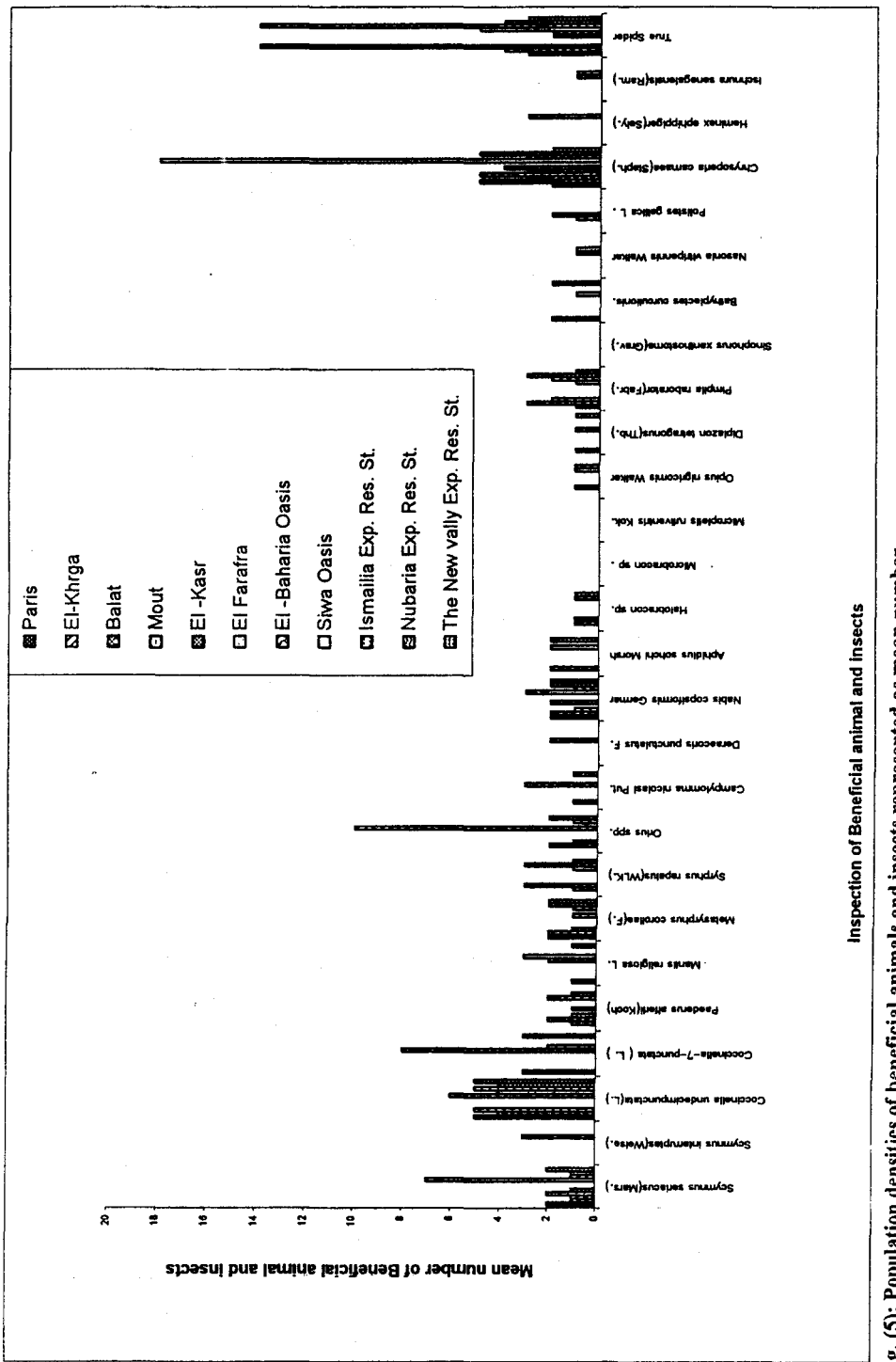

Fig. (5): Population densities of beneficial animals and insects represented as mean number.

Table (6) : Population densities of visitor insects during 2004- 2005

Insect species		%	Governorates											Agricultur Experimental Research Station					
			The New valley oasis							Giza		Matrouh		Ismailia		Alexandria		New Valley	
Species	Family		Paris	El-Khrga	El - Dakhla			El Farafra	%	El -Baharia Oasis	%	Siwa Oasis	%	Ismailia Exp. Res. St.	%	Nubaria Exp. Res. St.	%	The New valley Exp. Res. St.	%
					Balat	Mout	El - Kasr												
Epilachna chrysomllina F.	Carabidae	1.07	2	0	0	0	0	0	1.07	0	0	0	0	0	0	0	0	0	0
Blaps polychresta Forsk	Coccinellidae	2.67	0	0	0	0	0	0	0	0	0	0	0	3	1.6	2	1.07	0	0
Culex spp.	Culicidae	57.75	36	0	1	0	0	0	19.78	0	0	16	8.56	18	9.63	2	1.07	35	18.71
Musca spp.	Muscaidae	28.3	4	4	2	3	0	4	9.09	16	8.56	9	4.81	8	4.28	3	1.6	0	0
Aspongopus viduatus var.niger (Fied.)	Pentatomidae	1.07	0	1	0	0	0	0	0.53	1	0.53	0	0	0	0	0	0	0	0
Andrina spp.	Andrenidae	2.14	0	2	0	0	1	0	1.61	0	0	0	0	1	0.53	0	0	0	0
Apis mellifera (L.)	Apidae	5.88	3	0	0	0	0	0	1.60	8	4.28	0	0	0	0	0	0	0	0
Xylocopa aestuans (L.)	Xylocopidae	0.53	0	1	0	0	0	0	0.53	0	0	0	0	0	0	0	0	0	0
Virachola livia (Klug.)	Lycaenidae	0.53	0	0	0	0	0	0	0	0	0	1	0.53	0	0	0	0	0	0
Total			45	8	3	3	1	4	34.22	25	13.4	26	13.9	30	16	7	3.74	35	18.71

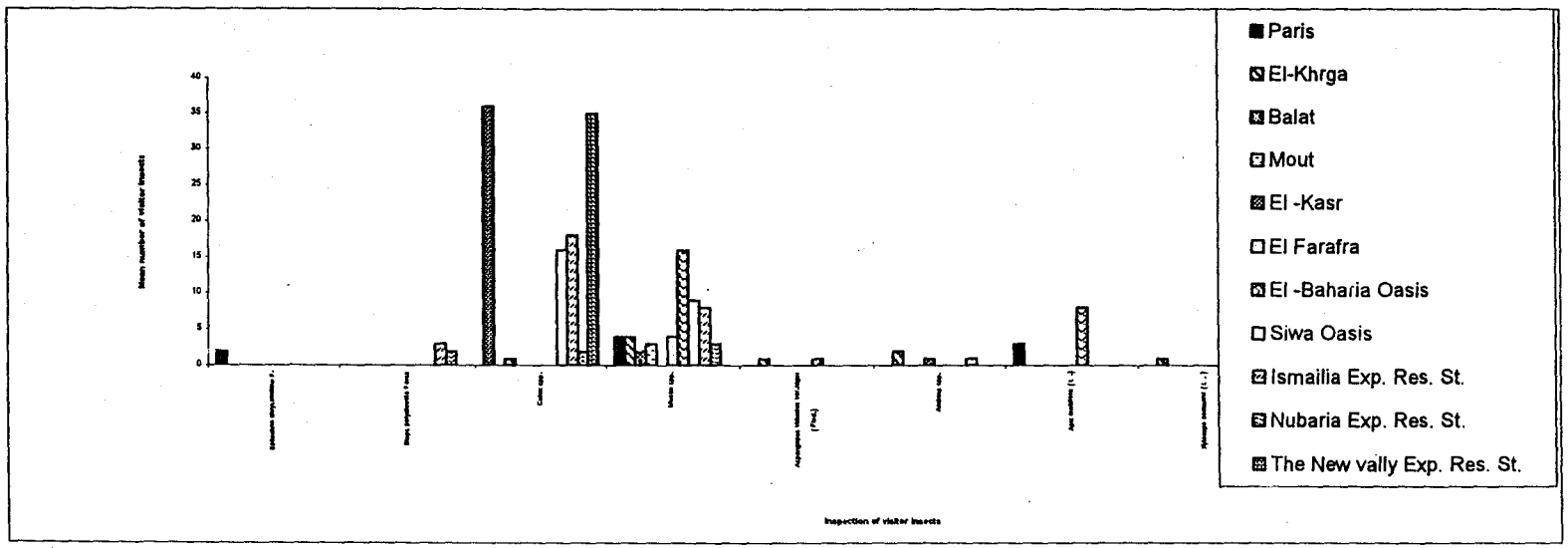

Fig. (6) : Population densities of visitor insects represented as mean numbers.

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دراسات حقلية على الآفات الحشرية والحيوانية التي تهاجم البرسيم الحجازي والأعداء الطبيعية المصاحبة لها في خمس محافظات فى جمهورية مصر العربية

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أجريت هذه الدراسة لمدة عامين متتاليتين في ٥ محافظا ت وهي الوادي الجديد والجيزة ومرسى مطروح (سبوه) والإسماعيلية والإسكندرية (النوبارية) بهدف حصر الحشرات الضارة والنافعة والزائرة ودراسة كثافتها العددية حيث أستخدمت شبكة جمع الحشرات لحصر هذه الحشرات وبعض مفصليات الأرجل على نبات البرسيم الحجازي (ALFALFA (*MEDICAGO SATIVA* L. في الحقل وذلك بأخذ ٥٠ ضربة مزدوجة في اتجاه قطرين مختلفي الاتجاه والعد المباشر للعينات في المعمل خلال موسم الدراسة ٢٠٠٤ / ٢٠٠٥.

ودلت الدراسة على أنه يوجد ٢٢ آفة حشرية تتبع ١٣ عائله و٦ رتب وهي:-

غمدية الأجنحة، ثنائية الأجنحة، نصفيه الأجنحة، متشابهة الأجنحة، حرشفية الأجنحة ومستقيمة الأجنحة • وكان أعلى تعداد للحشرات الكاملة والحوريات للمن (أنواع مختلفة) حيث كانت النسبة المئوية للتعداد ٢٦,٢٦ % من جملة التعداد الكلى للحشرات الضارةوكان أعلى متوسط للكثافة العددية في المحطة التجريبية بالنوبارية (الإسكندرية) تلته واحة سيوة (محافظة مطروح) ثم واحة باريس (محافظة الوادى الجديد) وكانت كالتالي ١٢٥، ١٠٧، ٥٩ حورية وحشرات كاملة مجنحة واحتل نطاط الأوراق (الجاسيدز أنواع مختلفة) المرتبة الثانية حيث كانت النسبة المئوية للتعداد ٢٦,١٩% من التعداد الكلي للحشرات الضارة وسجلت الكثافة العددية ٣ قمم في واحة باريس (محافظة الوادى الجديد) ثم واحة سيوة (محافظة مطروح) فالمحطة التجريبية بالإسماعيلية (محافظة الإسماعيلية) وكانت على التوالي ١٦٨، ١٤٠، ٣٠ (حورية وحشرة كاملة) وسجلت ذبابة أوراق البرسيم المرتبة الثالثة للحشرات الضارة حيث كانت ٢٤,٢٦% من جملة الحشرات الضارة وكانت أعلى كثافة عددية لها في المحطة التجريبية بالإسماعيلية (محافظة الإسماعيلية) ثم الخارجة (محافظة الوادى الجديد) فواحة سيرة (محافظة مطروح) (حيث كان متوسط الكثافة العددية ٨٥، ٨٠، ٧٤ حشرة كاملة على التوالي.

كما دلت الدراسة على الحشرات النافعة (متطفلات ومفترسات) وعناكب حقيقية على وجود ٢٧ حشرة نافعة تابعة ل ١٥ عائلة تتبع ٨ رتب وهي : - العناكب الحقيقية، غمدية الأجنحة، رتبة الصراصير وفرس النبي، ثنائية الأجنحة، نصفية الأجنحة، غشائية الأجنحة، شبكية الأجنحة، رتبة الرعاشات وكان أعلى تعداد لرتبة

غمدية الأجنحة بنسبة ٢٣,٠٦ حيث سجل أبوالعيد (أنواع مختلفة) ١٥,٢٥ % من جملة الحشرات النافعة حيث بلغ متوسط الكثافة العددية أعلاه في الواحة البحرية (الجيزة) ثم المحطة التجريبية بالوادي الجديد ثم واحة سيوة حيث سجل التعداد ١٤، ٨، ٦ حشرة كاملة على التوالي. ثم جاء أسد المن في الدرجة الثانية حيث كانت نسبة التعداد ١٩,٣٣% من اجمالي الحشرات النافعة حيث بلغ متوسط الكثافة العددية أعلاه في واحة سيوة ثم واحة باريس ثم المحطة التجريبية بالنوبارية (محافظة الاسكندرية) حيث سجل التعداد ١٨، ٨، ٥ حشرة كاملة على التوالي. ثم جائت رتبة العناكب الحقيقية (Araneidae) بنسبة ١٥,٦١% من جملة الحشرات النافعة وكان أعلى متوسط للتعداد بالمحطة التجريبية بالاسماعيلية ثم واحة باريس فواحة سيوة بمتوسط تعداد ١٤، ١٠، ٥ حيوان كامل وحورية على التوالي.

أما الحشرات الزائرة فقد شملت ٩ أنواع تتبع ٩ عائلات و٥ رتب حشرية هي : - غمدية، ثنائية، نصفية، غشائية، حرشفية الأجنحة وكان أعلى نسبة مئوية للباعوض (أنواع مختلفة) حيث بلغت ٥٧,٧٥ % من إجمالي الحشرات الزائرة وكان أعلى متوسط للكثافة العددية في واحة باريس (محافظة مطروح) ثم المحطة التجريبية بالوادي الجديد (محافظة الوادى الجديد) ثم المحطة التجريبية بالاسماعيلية (محافظة الإسماعيلية) بمتوسط تعداد ٣٦، ٣٥، ١٨ حشرة كاملة على التوالي. تلى الباعوض الذباب المنزلي بنسبة ٢٨,٣٤ % من جملة التعداد وكان أعلى ٣ قمم لمتوسط التعداد في الواحة البحرية ثم واحة سيوة والمحطة التجريبية بالاسماعيلية بمتوسط تعداد ١٦، ٩، ٨ حشرة كاملة على التوالي. وجاء في المرتبة الثالثة نحل العسل حيث سجل ٥,٨٨ % من جملة تعداد الحشرات الزائرة كان أعلاها في الواحة البحرية ثم واحة باريس حيث كانت بمتوسط تعداد ٨، ٣ حشرة كاملة على التوالي.