ECOLOGICAL STUDIES ON SOME PESTS (COTTON LEAF WORM, APHIS AND SPIDER MITE) AND THEIR ASSOCIATION WITH PREDATORY SPIDERS

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ABSTRACT

The population density of three pests and associated spider were surveyed at Kaha station, Qalubiya Governorate and Seds Station at Beni Sueif Governorate during two successive years (2003-2004) and (2004-2005), on two host plants (Cotton and Broad Bean). The results revealed that the occurrence of 12 families including 20 species, these families are Lycosidae, Philodromidae, Linyphiidae, Theridiidae, Miturgidae, Ulobroridae, Oonopidae, Dictynidae, Gnaphosidae, Pholocidae, Araneidae, Thonisidae and Salticidae. The results showed that some of these families presents in two seasons (summer and winter) as Lycosidae, Philodromidae, Linyphiidae, Theridiidae, Miturgidae, Uloboridae, Dictynidae, Thonisidae, and Salticidae. The increasing of spider population is due to the abundance of their preys. It is interesting to note that families are Lycosidae, Philodromidae, Theridiidae, Uloboridae, Dictynidae, Thonisidae, and Salticidae collected with relatively high population density on Cotton and Broad Bean plants during two successive years (2004-2005) greatly varied according to the increase in population density of preys *Spodoptera littoralis, Aphis craccivora, Aphis gossypii* and *Tetranychus urticae.*

INTRODUCTION

Spiders are considered an important natural control agent in a wide range around the world. The presences of spider with associated pest observed by Bishara (1934) and (1936), he gave notes on the occurrence of some cotton pests occurred in March till May and disappeared from late-May, June and July and increased in August and September. Hassanein *et al.* (1971) founded that the cotton crops in Upper Egypt are usually attractive to many insect species such as aphid insects especially, *Aphis gossypii* Glover and *Aphis craccivora* Koch. Also, in Egypt Hussein (1999) studied the

seasonal abundance and activity patterns of spider fauna in some vegetable fields in Menoufyia and Nile Delta regions. Mohafez (2000) studied the population dynamics of spider belonging to eleven Families at Sohag and El-Behira Governorates and found that the most Families in allover of the two year months. Laterally El-Hennawy (2002) and Soliman (2003) also found that the presences of true spider in 46 locations when survey Sinai and El-Gharbia Governorates.

MATERIALS AND METHODS

1. Estimation of spider population

The collection of individuals take placed by 100 plant shaking and receiving the fall spiders on silky trap, each spider was put individually in empty glasses and plucked carefully. The spider supplies daily with preys.

1.1. Estimation of the cotton leaf worm, *Spodoptera littoralis* population

The abundance of *S. littoralis* was carried out at two weeks intervals during the successive years (2004-2005) in the two locations. Egg mass and different stage of larvae of *S. littoralis* were collected from 50 cotton plants, no insecticides were used at Qaha and Seds Stations. *S. littoralis* was reared using a method according to **Mostafa (1988).**

1.2. Estimation of aphid population (*A. craccivora* and *A. gossypii*)

A. craccivora was collected from broad bean crops and *A. gossypii* was collected from 50 cotton plants. Samples of 100 leaves were randomly collected twice monthly from three levels of the crops (upper, middle and lower parts). Each group of leaves were kept in a paper bag and transferred to the laboratory for investigation.

2. Estimation of phytophagous mite population

Mite population was estimated as number of (adult and immature stages); leaf samples periodically picked at random from experimental locations, each sample contained 100 leaves from every host. Samples were taken twice a month, after picking, the sample of host crop leaves were placed in paper bag and tightly closed then transferred to the laboratory. The selected adults were reared on sweet potato tubers (20 cm long), which the leaves and stems were partially inserted in bottles filled with water and kept under laboratory conditions.

RESULTS AND DISCUSSION

1. Percentage of spider families and species and their preys during (2003-2004) and (2004-2005) at two Stations (Qaha and Seds)

In this study data presented in Table (1-4) recorded that 20 species belong to 18 genera belong to families found in tow location Qaha and Seds during 2003 to 2005seasons.

1.1. At Qaha Station on broad bean crop during (2003-2004)

Data in Table (1) cleared that the percentage of Family Lycosidae *Lycorma ferox* started reduction gradually in broad bean year. They were 66.0, 30.0, 21.0 and 17.5% from total families recorded in December to March, respectively, but the average percentage spider of Family: Philodromidae, Thomatus albini started to increase during this year to reach 40% in April. Both Families: Theridiidae (4 species) and Ulobroridae *Hyptiotes cavatus* had high percentage in April and December (27.5 and 20 %) from total families recorded, respectively. While, the other Families were high reduction in percentage considerably at the end of the year.

The average population of *S. littoralis* and *A. craccivora* decreased rapidly to reach 8 and 18%, respectively but the population of *T. urticae* increased rapidly to reach 50% at the end of the year.

1.2. At Qaha Station on cotton crop during (2003-2004):

Data presented in Table (1) recorded that the respective values of increased percentage of family spider: Philodromidae, *Thomatus albini* had high two peaks, this peaks occurred in August and October with 41.1 and 57.6% from total families recorded, respectively, and then decreased in September reached 50%. The values of percentage of Family: Theridiidae, (4 species) gradually increased to reach 20% from total families recorded in August, after that redaction slowly in September and October, with 18.7 and 18.8% from total families recorded. Also, Table (1) recorded that the highest species estimated by 57% for *Thomatus albini* .While the population density of *S. littoralis* had two peaks, the highest peaks were occurred in July and October which gave (30.9 and 36.3%). In case of *A. gossypii* they were 30.4 and 43.4% in September and October, respectively. The population density of *T. urticae* gradually increased to reach 21.4% in August and decreased gradually to reach 14.2% at the end of the season Table (1).

1.3. At Qaha station on broad bean during (2004-2005)

Data in Table (2) show that the respective value of percentage of Families: Philodromidae and Theridiidae started to increase gradually to reach the high

percentage in April with percent 45.9 and 25.0% from total families recorded, respectively, while the population of Families : Ulobrodidae and Dictynidae reached 20.8 in March and February, respectively. On the other hand, the population density of *S. littoralis* and *T. urticae* considerably increased with 34.8 and 76.2%, respectively at the end of the season, while the population density of *A. craccivora* gradually decreased from 26.8 to reach 5.9% from December to April, Table (2).

1.4. At Qaha station on cotton crop during (2004-2005)

As shown as Table (2), the data showed that the high percentage of family lycosidae *Lycorma ferox* estimated by 35.1% from total families recorded, also, Families; Philodromidae *Thomatus albini* and Theridiidae had high percentage at September, October and August estimated by (40.0, 40.5) and (29.7, 33.3) from total families recorded on cotton, respectively. On the other hand, the population density of Family: Ulobroridae slightly increased at the end of the season, while the population density of *A. gossypii* decreased from 34 .0 to reach 18.6% at the end of the year, but the population density of *T. urticae* was 28.2% at the end of the season,Table, 2. Generally, these results closely agree with those obtained by El-Erksousy (2000).

2. Percentage of spiders Families and preys on broad bean and cotton crops during (2004-2005) at Seds Station

2.1. At Sads station on broad bean during (2003-2004)

Data in Table (3) show that the high percentage of Family Lyosidae (*Lycorma ferox*) was 56% from total families recorded, while, the family Philodromidae, *Thomalus albini* increased gradually to reach the highest percentage at the end of the season, this percentage estimated by 45% from total families recorded, while Family: Theridiidae had three high percentage, the highest two equal were in February and March estimated by 20.0%, while the redaction in percentage occurred in January with 9.5% from total families recorded. Also, the population density of Family: Salticidae increased during February to reach 12.0%, and then decreased in January and April months. Also, in the same Table, recorded that the population density of the three preys was gradually increased to reach 27.0, 37.5 and 89.4%, for *Spodoptera*, *Aphis* and *Tetranychus*, respectively at the end of the season.

2.2. At Seds Station on cotton crop during (2003-2004)

Data in Table (4) show that the percentage of density of Family: Philodronidae, (*Thomalus albini*) gradually increased to reach the highest percentage in August and October, they were reached 54.3 and 54.2% from total families recorded, but it decreased

in September with 52%. In case of Family: Theridiidae the population density had four peaks occurred in September and October, while the population of *S. littoralis* had one highest peak in July and two lowest peaks in May and October.

a) At Seds Station On broad bean during (2004-2005)

Data in Table (4) show that the percentage of Family , Lycosidae (*Lycorma ferox*) redaction from 76.95% in December to 16% from total families recorded in March , while, Philodromidae, *Thomalus albini* gradually increased to reach the highest percentage at the end of the year, with 40.0%, while of Family: Theridiidae had the highest percentage in March and reach 20.0% from total families recorded, but it disappeared in December until January, while both Families: Ulobroridae and Dictynidae had four peaks, the highest percentage were occurred in December and January with 15.4 and 15.8% from the total families recorded, respectively. The population density of the Families: Thomisidae and Salticidae were found during March and April in relatively high numbers.

The average number of *S. littoralis* gradually decreased by the end of the year, but it slowly increased in case of *T. urticae*, while the population density of *A. craccivora* had three peaks, the highest peak occurred in June, February, February and March.

b) At Seds Station On cotton during (2004-2005)::

Data in the same table show that the respective values of percentage of spider Family: Philodromidae, Theridiidae, Ulobroridae, Dictynidae, Thomisidea and Salticidae had two peaks, the high increased were 56.0, 24.0, 12.0, 15.0, 10.0 and 12.5% from total families recorded in August, August, July, July, May and June, respectively.

The densities of preys *(S. littoralis* and *A. gossypii)* were relatively increased from May until October, respectively, while the population density of *T. urticae* had two peaks, the highest peak was occurred in August with 25.0% but the lowest peak was occurred in May with 9.0% Table 1-4.

Generally, the results of this study revealed that occurrences of 12 Families, Gnaphosidae and Ulobroridae, others are arboreal as generally, containing 229 genera. Some of these Families are ground ones like, Lycosidae, Philodromidae, Linyphiidea, Theridiidae , Miturgidae, Onopidae, Dictynidae, Pholocidae, Araneidae, Thonisidae and Salticidae were found on cotton and broad bean years in the two Governorates (Beni-Seuif and Qalubiya). The percentages of occurrences of Families and spider species were varied according to kind of plant and location. These results closely agree with those obtained by Gabboir *et al.* (2002), Metwally *et al.* (2002) and Soliman (2003).

TABLE (I)

Percentage of spider families and occurrence of their species on broad bean & cotton plants during (2003-2004) season at Qaha Station, Qalubiya Governorate.

Spider families	Species	Broad bean					Cotton plant					
		Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.
1. Lycosidae	*Lycorma ferox*	66	40.0	21.6	17.5	0.0	44	19.2	12	6.3	0.0	0.0
2. Philodromidae	*Thomatus albini*	0.0	0.0	30.4	35	40	20	35.1	42.6	56.3	50.0	57.6
3. Linyphiidae	*Helophora* sp.	14	0.0	0.0	0.0	0.0	4	5	0.0	0.0	0.0	0.0
4. Theridiidae	*Anelosimisus aulicus*		+		++		+	+	+			
	Theridion sp.				+			+	+		+	+
	Theridion egyptian		+		+	+					+	+
	Steatoda albomaculatus			+	++		+	+	+	+	+	+
Total		0.0	6	21.0	20	27.5	4	12.0	17.3	20	28.3	28.8
5. Miturgidae	*Chiracanthium isicum*		7		+	+					+	
	Clubiona riporia										+	
Total		0.0	0.0	0.0	5	2.5	0.0	0.0	0.0	0.0	3.6	0.0
6. Ulobroridae	*Hyptiotes cavatus*	20	0.0	8.1	7.5	12.5	12	5.7	5.4	6.1	0.0	0.0
7. Dictynidae	*Dictyna valucripes*		+			+			+		+	+
	Dictyna civica		+			+		+				+
	Callobius benretti							+				
Total		0.0	16.6	0.0	0.0	5	8	9.6	8	0.0	8.5	4.2
8. Gnaphosidae	*Gnaphosa muscorum*	0.0	0.0	0.0	2.5	0.0	8	0.0	0.0	0.0	0.0	0.0
9. Pholocidae	*Physocyclus californicus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. Araneidae	*Neoscona oaxacensis*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0
11. Thomisidae	*Misymenops asperatus*		+	+	+	+		+	+	+	+	+
	Thomisus onustus											
Total		0.0	16.7	10.8	5	7.5	0.0	5.8	6.6	5	7.3	1.8
12. Salticidae	*Harbronattus borealis*		+	+				+		+	+	+
	Eris marginata		+	+	+			+	+	+	+	+
Total		0.0	10.7	8.1	7.5	5	0.0	7.6	8.1	6.3	8.5	7.6
Average number of pests	*Spodoptera littoralis*	7.0	28.3	15.1	19.6	8.0	9.0	18.1	30.9	27.3	10.9	36.3
	Aphis *	13.1	19.3	20.1	28.2	18.0	0.0	13.0	13.0	0.0	30.4	43.4
	Tetranychus urticae	0.0	6.6	16.6	26.6	50.0	14.2	14.2	19.6	21.4	16.1	14.2

**Aphis craccivora* on broad bean * *Aphis gosypyii* on cotton plants

TABLE (II)

Percentage of spider families and occurrence of their species on broad bean & cotton plants during (2004-2005) season at Qaha Station, Qalubiya Governorate.

Spider families	Number of genus	Broad bean					Cotton plant					
		Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.
1. Lycosidae	*Lycorma ferox*	68	30.9	25.3	0.0	0.0	35.1	20.5	12.6	0.0	0.0	0.0
2. Philodromidae	*Thomatus albini*	25.3	26.2	33.3	42.4	45.9	14.3	35	28.6	35.5	40.0	40.5
3. Linyphiidae	*Helophora* sp.	0.0	7.6	9.8	6.6	0.0	0.0	0.0	4.7	0.0	0.0	0.0
4. Theridiidae	*Anelosimisus aulicus*		+		+	+	+	+	+			+
	Theridion sp.		+		+	+						
	Theridion egyptian							+			+	
	Steatoda albomaculatus		+		+	+	+	+	+	+	+	+
Total		0.0	21.4	0.0	24.4	25	3.6	25	20.6	29.7	33.3	25.3
5. Miturgidae	*Chiracanthium isicum*	0.0	0.0	0.0	0.0	6.3	3.6	5	0.0	0.0	0.0	0.0
6. Ulobroridae	*Hyptiotes cavatus*	0.0	0.0	10.7	20.7	6.3	7.4	5.5	9.5	10.5	10.6	12.7
Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0
7. Dictynidae	*Dictyna valucripes*	+	+					+				
	Dictyna civica											+
	Callobius benretti	+			+	+	+	+	+		+	+
Total		26.7	13.9	20.8	18.8	8.3	10.7	5.5	12.6	0.0	6.6	10.1
8. Gnaphosidae	*Gnaphosa muscorum*	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0
9. Pholocidae	*Physocyclus californicus*	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0	0.0	0.0	0.0
10. Araneidae	*Neoscona oaxacensis*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	5.3	0.0	0.0
11. Thomisidae	*Misymenops asperatus*					+		+				+
	Thomisus onustus					+	+	+		+	+	
Total		0.0	0.0	0.0	13.0	6.2	7.5	2.0	0.0	8.6	2.7	5.1
12. Salticidae	*Harbronattus borealis*							+				+
	Eris marginata					+		+	+	+	+	+
Total		0.0	0.0	0.0	12.0	2.0	0.0	1.5	5.7	10.2	4.2	6.3
Average number of pests	*Spodoptera littoralis*	0.0	11.6	25.6	27.9	34.8	8.3	15.0	18.3	21.6	25.0	11.6
	Aphis *	26.8	25.3	23.8	17.9	5.9	0.0	0.0	34.8	23.3	23.3	18.6
	Tetranychus urticae	0.0	0.0	9.5	14.3	76.2	5.6	11.2	15.0	15.0	24.0	28.2

*: *Aphis craccivora* on broad bean *: *Aphis gosypyii* on cotton plants

TABLE (III)

Percentage of spider families and occurrence of their species on broad bean & cotton plants during (2003-2004) season at Seds station, Beni-Sueif Governorate.

Spider families	Number of genus	Broad bean					Cotton plant					
		Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.
1. Lycosidae	*Lycorma ferox*	56.3	38.1	24	0.0	0.0	50	20	12.5	0.0	0.0	0.0
2. hilodromidae	*Thomatus albini*	0.0	23.8	32	42	45	30	36	46.9	54.3	52.5	54.2
3. Linyphiidae	*Helophora* sp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Theridiidae	*Anelosimisus aulicus*		+	+		+	+			+		+
	Theridion sp.	+										
	Theridion egyptian				+	+	+	+	+	+	+	+
	Steatoda albomaculatus		+		+	+		+	+	+	+	+
Total		12.5	9.5	20	20	17.3	10	16	18.7	17.1	20	20.8
5. Miturgidae	*Chiracanthium isicum*	0.0	0.0	0.0	0.0	8.9	0.0	0.0	9.6	0.0	0.0	0.0
6. Ulobroridae	*Hyptiotes cavatus*	12.5	9.2	12	17.3	11.4	0.0	8	0.0	8.6	5.0	0.0
7. Dictynidae	*Dictyna valucripes*					+	+			+	+	+
	Dictyna civica	+	+		+						+	
	Callobius benretti	+				+						
Total		18.7	9.8	0.0	13.7	8.6	10	0.0	0.0	11.7	7.5	12.5
8. Gnaphosidae	*Gnaphosa muscorum*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. Pholocidae	*Physocyclus californicus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. Araneidae	*Neoscona oaxacensis*	0.0	4.9	0.0	0.0	2.9	0.0	8	6.2	0.0	2.5	0.0
11. Thomisidae	*Misymenops asperatus*							+		+		+
	Thomisus onustus							+			+	+
Total		0.0	0.0	0.0	5.0	0.0	0.0	8.0	0.0	5.5	7.5	4.2
12. Salticidae	*Harbronattus borealis*		+	+		+		+		+	+	+
	Eris marginata			+		+		+	+	+		+
Total		0.0	4.8	12	5.0	5.9	0.0	4	6.5	2.8	5	8.3
Average number of pests	*Spodoptera littoralis*	10.1	12.1	23.6	27.0	27.0	8.7	23.5	26.1	21.7	14.8	5.2
	Aphis *	0.0	0.0	31.3	31.3	37.5	0.0	0.0	30.0	29.3	29.3	15.2
	Tetranychus urticae	0.0	10.5	0.0	0.0	89.4	0.0	16.7	18.7	18.7	21.6	24.3

* ***Aphis craccivora* on broad bean** * ***Aphis gosypyii* on cotton plants**

TABLE (IV)

Percentage of spider families and occurrence of their species on broad bean & cotton plants during (2004-2005) season at Seds station, Beni-Sueif Governorate.

Spider families	Number of genus	Broad bean					Cotton plant					
		Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.
1. Lycosidae	*Lycorma ferox*	76.9	47.4	30	16		62.5	31.3	15	0.0	0.0	0.0
2. hilodromidae	*Thomatus albini*	0.0	26.3	40	40	40	12.5	18.7	45	56	48.0	52.5
3. Linyphiidae	*Helophora* sp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Theridiidae	*Anelosimisus aulicus*							+	+	+	+	+
	Theridion sp.				+				+			+
	Theridion egyptian			+		+				+		
	Steatoda albomaculatus			+				+	+	+	+	+
Total		0.0	0.0	15	20	13.3	0.0	18.7	10	24	15.1	12.5
5. Miturgidae	*Chiracanthium isicum*	0.0	0.0	0.0	0.0	10.6	0.0	0.0	0.0	0.0	0.0	5.0
6. Ulobroridae	*Hyptiotes cavatus*	15.4	10.5	5	8	0.0	0.0	6.3	0.0	12	11.1	7.5
7. Dictynidae	*Dictyna valucripes*	+	+	+	+	+	+	+			+	+
	Dictyna civica		+				+		+		+	+
	Callobius benretti	+			+	+	+	+	+			
Total		7.7	15.8	10	4	13.9	12.5	6.3	15	0.0	5.5	12.5
8. Gnaphosidae	*Gnaphosa muscorum*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
9. Pholocidae	*Physocyclus californicus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0
10. Araneidae	*Neoscona oaxacensis*	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	3.7	5
11. Thomisidae	*Misymenops asperatus*				+	+			+		+	+
	Thomisus onustus					+		+	+		+	+
Total		0.0	0.0	0.0	4	10.6	0.0	6.3	10	0.0	16.6	5
12. Salticidae	*Harbronattus borealis*				+	+	+	+				
	Eris marginata				+	+	+					
Total		0.0	0.0	0.0	4	11.6	12.5	12.4	0.0	0.0	0.0	0.0
Average number of pests	*Spodoptera littoralis*	0.0	38.5	38.5	23.1	0.0	10.9	13.0	13.0	19.6	21.7	21.7
	Aphis *	9.5	23.8	27.0	22.2	17.4	0.0	0.0	6.2	15.6	23.4	39.1
	Tetranychus urticae	0.0	0.0	17.5	29.4	52.9	9.0	13.0	18.0	25.0	20.0	13.0

***: *Aphis craccivora* on broad bean** ***: *Aphis gosypyii* on cotton plants**

3. Seasonal abundance

3.1. Population density of predatory spider and their preys *(S. littoralis, A. craccivora and Tetranychus urticae),* which collected from broad bean and cotton plants at Qaha Station during the two successive years (2003-2004) and (2004-2005)

Data in Table (5) indicated that the population density of spiders on broad bean during two season, The spider species increased with the increasing of the population of *T. urticae* with average number of spiders were 35, 42, 77, 82 and 90 individuals from December to April in the 1st year, while in the 2nd year the population density of spiders increased than the 1st year in the same months. Also, with decreasing the population of *A. craccivora,* little increasing of the population of *S. littoralis* and *T. urticae.*

Data in Table (5) indicated that the population density of spiders increased from May to August with increasing the population of *T. urticae* and *S. littoralis* with the average 25, 52, 75 and 180 individuals, respectively and dropped in September to October to reach 89 and 55, respectively. Bu the population of *A. gossypii* was moderately increased during May to October. In the 2nd year (2004-2005), also increase the population of spiders with increasing the population of *T. urticae,* but the population of *S. littoralis* and *A. gossypii* decreased to 7 and 8 individuals during September and October, respectively.

3.2. Population density of predatory spider and their preys *(S. littoralis, A. craccivora and Tetranychus urticae),* which collected from broad bean and cotton plants at Seds Station during the two successive years (2003-2004) and (2004-2005)

Data in Table (6) clearly that the population density of spiders in the 1st year increased with the increasing of the population of *S. littoralis* , with the average number of spiders were 16, 41, 55, 60 and 72 individuals from December to April. In the 2nd year the population density of spiders increased with increasing of *T. urticae* and decreasing of *S. littoralis* from December to April.

Data in Table (6) indicated that the population density of spiders in 2004-2005 year increased with increasing the population of *T. urticae,* with the average 10, 25, 32, 35, 40 and 48 individuals, respectively. On the other hands, the population density of spiders increased during the 2nd year (2004-2005) with slightly increasing of the population of *A. gossypii* and *S. littoralis* with average numbers 8, 16, 26, 30 and 65 individuals , respectively, from May to August and dropped to reach 30 individuals in October.

TABLE (V)

Population density of predatory spider and their preys on broad bean and cotton plants during two successive years (2003-2004) and (2004-2005) at Qaha Station, Qalubiya Governorate.

Date of sampling	broad bean							
	2003-2004				2004-2005			
	Number of Spiders	Number of preys			Number of Spiders	Number of preys		
		Sl	*Ap*	*Tu*		*Sl*	*Ap*	*Tu*
Dec.	18	0	5	0	17	0	85	0
	17	4	8	0	13	0	65	0
Total	35	4	14	0	30	0	90	0
Jan.	16	9	12	1	37	0	40	0
	26	7	8	1	25	5	45	0
Total	42	16	20	2	62	5	85	0
Feb.	30	11	10	0	32	9	33	0
	47	9	12	5	38	2	47	2
Total	77	20	22	5	75	11	80	2
March	38	5	18	3	57	10	35	2
	34	6	12	5	28	2	25	1
Total	82	11	30	8	85	12	60	3
April	42	0	10	9	57	9	11	8
	48	5	9	6	48	6	9	8
Total	**90**	**5**	**19**	**15**	**105**	**15**	**20**	**16**
Date of sampling	**Cotton**							
	2004				**2005**			
	Number of Spiders	**Number of preys**			**Number of Spiders**	**Number of preys**		
		Sl	***Ac***	***Tu***		***Sl***	***AC***	***Tu***
May	11	2	0	20	11	0	0	3
	14	3	0	20	17	5	0	12
Total	25	5	0	40	28	5	0	15
June	21	3	3	22	22	3	0	17
	31	7	3	18	18	6	0	13
Total	52	10	6	40	40	9	0	30
July	32	13	2	32	23	5	9	25
	43	4	4	23	40	6	6	15
Total	75	17	6	55	63	11	15	40
August	85	7	0	37	35	6	7	25
	95	8	0	23	35	7	3	15
Total	180	15	0	60	70	13	10	40
Sept.	45	0	8	22	35	8	30	34
	44	6	6	23	40	7	42	32
Total	**89**	**6**	**14**	**45**	**75**	**15**	**10**	**66**
Oct.	32	2	12	13	34	2	3	45
	23	3	8	27	45	5	5	30
Total	**55**	**5**	**20**	**40**	**79**	**7**	**8**	**75**

SL : Spodoptera littoralis *Ap: Aphis craccivora*

Tu: Tetranychus urticae AC: *Aphis gosypyii* on cotton plants

TABLE (VI)

Population density of predatory spider and their preys on broad bean and cotton plants during two successive years (2003-2004) and (2004-2005) at Seds station. Beni-Sueif Governorate.

Date of sampling	broad bean							
	2003-2004				2004-2005			
	Number of Spiders	Number of preys			Number of Spiders	Number of preys		
		Sl	*Ap*	*Tu*		*Sl*	*Ap*	*Tu*
Dec.	5	0	0	0	7	0	15	0
	11	15	0	0	6	0	15	0
Total	16	15	0	0	13	0	30	0
Jan.	19	5	0	0	10	3	20	0
	22	13	0	2	15	2	55	0
Total	41	18	0	2	25	5	75	0
Feb.	35	12	3	0	26	5	55	3
	20	23	2	0	14	0	30	0
Total	55	35	5	0	40	5	85	3
March	27	18	5	0	19	2	55	0
	33	22	0	0	26	1	15	5
Total	60	40	5	0	45	3	70	5
April	29	12	3	7	28	0	32	10
	43	28	3	10	32	0	23	5
Total	**72**	**40**	**6**	**17**	**60**	**0**	**55**	**15**
Date of sampling	Cotton							
	2004				2005			
	Number of Spiders	Number of preys			Number of Spiders	Number of preys		
		Sl	*Ac*	*Tu*		*Sl*	*Ac*	*Tu*
May	6	3	0	0	3	0	0	3
	4	7	0	0	5	5	0	6
Total	10	10	0	0	8	5	0	9
June	11	13	0	20	16	6	0	9
	14	14	0	25	10	0	0	6
Total	25	37	0	45	26	6	0	15
July	17	12	5	27	19	2	2	15
	15	18	5	20	11	4	2	3
Total	32	30	10	47	30	6	4	18
August	22	12	3	25	31	0	2	10
	13	13	6	25	34	9	8	15
Total	35	25	9	50	65	9	10	25
Sept.	11	8	2	36	15	2	9	12
	19	9	7	16	20	8	6	8
Total	**40**	**17**	**9**	**52**	**35**	**10**	**15**	**20**
Oct.	15	3	2	23	20	6	12	9
	7	3	3	32	10	4	13	4
Total	**48**	**6**	**5**	**55**	**30**	**10**	**25**	**13**

SL : Spodoptera littoralis *Ap: Aphis craccivora*

Tu: Tetranychus urticae AC: *Aphis gosypyii* on cotton plants

In conclusion, the high population density of spider depended on the population density for preys. These results are agreement with those obtained by Qu *et al.* (1986) referred to population density of spider closely correlated with different crops, chemical application and climatic factors.

Generally, seven Families of spider (Lycosidae, Philodromidae, Theridiidae, Ulobroridae, Dictynidae, Thomisidae and Salticidae) occurred in high numbers on broad bean and cotton fields in Qaha and Seds Stations with association of decreasing and increasing of 3 pests *(S. littoralis, A. gossypii, A. craccivora* and *T. urticae)* than others Families.

These results are in agreement with the results which obtained from Hussein *et al.* (1998).

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