



POPULATION FLUCTUATIONS OF *Aphis craccivora* and *Liriomyza trifolii* AND THEIR ENDOPARASITIDS ON CERTAIN FABA BEAN VARIETIES

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ABSTRACT

Infestation by the aphid, *Aphis craccivora* and leafminer, *Liriomyza trifolii* (Burg) and its associated parasitoids on four faba bean *Vicia faba* varieties; Misr1, Misr2, Giza 40 and Giza 429 were studied at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons. February and March were found to be the most important months for the rate of infestation by both pests. Susceptibility of faba bean varieties could be arranged (in both months) ascendingly according to the mean of infestation by aphids per plant as follows: Misr1 (40.6) and Misr2 (42.6) Giza40 (54.2) and Giza429 (58.7). Also, for leafminer the arrangement was Misr2 (18.2%), Giza429 (19.8%), Misr1 (23.9%) and Giza 40 (26.1%). The following three species of hymenopterus parasitoids attacking *A. craccivora* were found: *Lysiphlebus fabarum*, *Aphidius matricariae* and *Trioxys* sp.. Moreover three species of parasitoids associated *Liriomyza trifolii* also were found. They were *Diglyphus isaea* Walker, *Pnigalio* sp. (Eulophidae) and *Opius* sp. (Braconidae). These parasitoids reached its maximum during Feb., and Mar., which recorded 21.1 % during Feb., and 17.2 % during Mar., for aphids and 12.8 % during Feb., and 13.1 % during Mar., for leafminer.

INTRODUCTION

Faba bean, *Vicia faba* is considered as one of the most important crops in Egypt, being used for human food as fresh vegetable or dry seeds. It is attacked by several pests either in the field, such as *Aphis craccivora* (koch), which is considered one of the most important insect pest attacking faba bean (Abdel-Samad, 1996) or in the store. The injurious of aphids have been studied by several authors under different subjects i.e. planting date (El-Heneidy *et al* 1998); sowing rate (Loss *et al* 1998); population dynamics and weather conditions (Sharma and Yadav, 1994); susceptibility and resistance of broad bean varieties (Mohammad and Mahmoud, 1988; Bohnke *et al* 1992; Zotkowski and Piekarczyk, 1995; Powell and Hardie, 2000 and Mohamed and Slman, 2001). Since it isn't admissible to use chemical materials to control such insect pest on faba bean plants, the biological control especially parasitoids take place by the entomologists (Abdel-Samad, 1996; Awmack *et al* 1997; Volkl and Stechmann, 1998; Glinwood *et al* 1999 and Guerrieri *et al* 1999). Nowadays the leafminer, *Liriomyza trifolii* (Burg) appears as a serious insect pest, which widespread on faba bean plants throughout the growing season, either in Delta (Shahein and El-Maghraby, 1993) or in Middle Egypt (EL-Serwy, 2003). The mine infestation as well as its abundance, biology, ecology and natural control was attend attention by several Egyptian authors

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such as EL-Serwy,(1993); Sharaf El-Din *et al* (1997) and Salem *et al* (1998).

The present study aimed to through more light on the infestation rates of *Aphis craccivora* and *Liriomyza trifolii* and the associated endoparasitoids in faba bean fields of certain cultivars at Shandawel, Sohag Governorate.

MATERIALS AND METHODS

Susceptibility of faba bean varieties to *Aphis craccivora* and *Liriomyza trifolii*, both are considered as the most important insect pests attacking broad bean plants in upper Egypt, Rates of infestation by both insect were studied during two successive seasons of 2004/2005 and 2005/2006 at Shandawel Research Station, Sohag Governorate.

Four faba bean varieties; Misr1, Misr2, Giza 40 and Giza 429 were chosen for this study. Seeds were sown in plots sized 10.5 m² and replicated 3 times on November 10th and 15th for both experimental seasons, respectively. Plots received all regular cultural practices throughout the growing season, except chemical application to evaluate the role of natural enemies especially parasitoids without any insecticidal disruption.

Samples of hundred broad bean plants of the four varieties were weakly examined carefully by means of the cross-side method under field conditions starting from mid December to the 1st week of April. Number of aphids per plant for each variety was counted directly in the field. Infestation by leafminer was determined by collecting 100 random leaflets from each variety, examined and the infestation rates were recorded.

Samples of highly infested broad bean plants with aphids were collected weekly and transferred in paper bags to the laboratory for estimating the rate of parasitism by dissecting 100 randomized living aphids and identifying the emerged parasitoid species.

Random samples of infested leaflets were collected weekly and transferred in paper bags to the laboratory for further examination of living leafminer larvae using Stereo-microscope. The infested leaflets with larvae were kept in vials until emerging the parasitoid adults, which were counted and identified.

RESULTS AND DISCUSSION

Infestation rate by the aphid, *Aphis craccivora* on faba bean varieties.

In the two successive seasons of 2004/05 and 2005/06 the winged aphids began to appear on the

faba bean plants in December but with low numbers where the weekly averages recorded were 0.6, 1.1, 0.5 and 1.8 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively, **Table (1) and Fig. (1)**. The infestation rates began to increase gradually but without any visible differences among faba bean varieties in the last week of January, being 20.4, 15.4, 21.4 and 21.3 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively. The variance among varieties started to appear in the 1st week of February (30.1, 27.3, 34.2 and 40.5 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively), and reached its maximum during the period from the 3rd week of February (47.1, 51.7, 75.4 and 80.2 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively) till the 1st week of March (50.5, 54.8, 69 and 76.3 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively). Then, the peak of infestation rate began to decrease from the 2nd week of March (10.3, 9.1, 17.4 and 15.2 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively) till the end of the season.

The average monthly record for the rate of infestation by aphids in the two successive seasons showed no apparent differences between varieties in December (2.7±1.1, 3.9± 1.5, 3.5± 1.5 and 4.3± 1.3 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively) and January (12±3.3, 10.2±1.8, 13.7±3 and 14.3±3.1 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively), **Table (1)**. The infestation rates reached the maximum in February as 43.4±5.1, 46.1±6.5, 56.5±9.9 and 62.8±9.9 aphids / plant for Misr 1, Misr 2, Giza 40 and Giza 429, respectively were recorded (F= 3.892 & LSD= 7.301). In March; the infestation rates still higher but some what slightly decreased than that of February which recorded 37.8±5.8 for Misr1, 39.1±6.4 for Misr2, 53.2±7.9 for Giza 40 and 54.5±9.6 for Giza 429 (F= 4.123 & LSD = 9.403).

The highest rate of infestation by aphids was recorded during February and March in both seasons. The averages of both months showed virtual significant differences (F= 3.784 & LSD = 5.072) among different faba bean varieties. The experimental varieties could be divided the following two descending groups according to the rate of aphid infestation: the first is considered less tolerant which included Giza 429 (58.7) and Giza 40 (54.2), the second is considered more tolerant and comprised Misr1 (40.6) and Misr 2 (42.6), **Table (1)**.

Table 1. Infestation rates of *A. craccivora* on faba bean plants of different varieties at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons

Inspection Date *	Faba bean varieties											
	Misr 1			Misr 2			Giza 40			Giza 429		
	2004/05	2005/06	Average	2004/05	2005/06	Average	2004/05	2005/06	Average	2004/05	2005/06	Average
Dec.16(14)	0.5	0.7	0.6	0.5	1.7	1.1	0.5	0.5	0.5	1.2	2.4	1.8
23(21)	2.2	4.2	3.2	3.2	5.4	4.3	4.1	5.1	4.6	4.1	6.3	5.2
30(28)	2.2	6.4	4.3	5.2	7.2	6.2	4.2	6.6	5.4	4.3	7.5	5.9
Mean± S.D.	1.6±0.6	3.8±1.6	2.7±1.1	3±1.4	4.8±1.6	3.9±1.5	2.9±1.2	4.1±1.8	3.5±1.5	3.2±1	5.4±1.5	4.3±1.3
Jan. 6(4)	3.0	7.2	5.1	5	9.2	7.1	6	10	8	6.1	7.7	6.9
13(11)	8.2	10.0	9.1	6.2	11.4	8.8	8	12	10	9.3	15.5	12.4
20(18)	9.2	17.4	13.3	7.2	11.6	9.4	8.2	22.6	15.4	13.2	20.4	16.8
27(25)	15.2	25.6	20.4	13.3	17.5	15.4	14.3	28.5	21.4	15.1	27.5	21.3
Mean± S.D.	8.9±2.5	15.1±4.1	12±3.3	7.9±1.8	12.4±1.8	10.2±1.8	9.1±1.8	18.3±4.4	13.7±3	10.9±2	17.8±4.2	14.3±3.1
Feb. 3(7)	25.1	35.1	30.1	25.3	29.3	27.3	30.2	38.2	34.2	30	51	40.5
10(14)	34.4	50.2	42.3	31.2	65	48.1	41.6	49.2	45.4	39.4	64.2	51.8
17(21)	35.1	59.1	47.1	34.2	67.2	51.7	64.6	86.2	75.4	75.1	85.3	80.2
24(28)	40.2	68.2	54.2	45.1	69.1	57.2	49.8	92.2	71	65.2	92.2	78.7
Mean± S.D.	33.6±3.1	53.1±7.1	43.4±5.1	34.5±4.2	57.6±9.5	46.1±6.5	46.5±7.2	66.2±13.3	56.5±9.9	52.4±10.6	73.2±9.5	62.8±9.9
F value	3.892*											
LSD	7.301											
Mar. 6(7)	35.4	65.2	50.5	45.1	64.5	54.8	36	102	69	52.3	100.3	76.3
13(14)	30.2	52.4	41.3	38.2	49.2	43.7	30.1	90.5	60.3	35.2	85.4	60.4
20(21)	28.2	64.2	37.2	31.2	38.5	32.3	29.5	73.3	51.4	31.2	71.2	51.2
27(28)	14.3	30.5	22.4	21.3	30.1	25.7	24.1	40.1	32.1	19.5	41.3	30.4
Mean± S.D.	27.0±4.5	48.7±7.2	37.8±5.8	31.7±5.2	46.6±7.6	39.1±6.4	29.9±2.4	76.5±13.5	53.2±7.9	34.5±6.8	74.5±12.6	54.5±9.6
F value	4.123*											
LSD	9.403											
Feb.&March	30.4 ±2.8	50.9±4.7	40.6±3.7	33.1±3.1	52.1±6.1	42.6±4.4	38.2±4.7	71.3±8.9	54.2±5.9	43.5±6.7	73.9±7.3	58.7±6.6
F value	3.784*											
LSD	5.072											
Apr. 3(4)	7.2	13.4	10.3	7	11.2	9.1	12.6	22.2	17.4	9.1	21.3	15.2

* Figures between brackets represent the dates of the second season

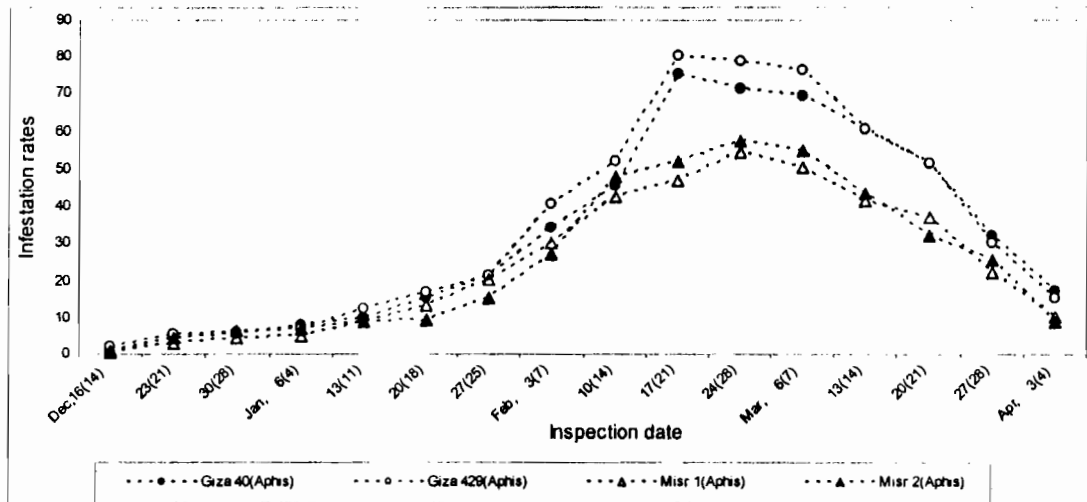


Fig. 1. Mean infestation rates of *A. craccivora* on faba bean plants at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons.

(* Figures between brackets represent the dates of the second season)

Infestation percentage by the leafminer *Liriomyza trifolii* on faba bean varieties

During the two successive seasons of 2004/05 and 2005/06, the weekly percentages of infestation by *L. trifolii* on faba bean varieties are tabulated in Table (2). Infestation started in December with low percentages (1.7, 1.6, 1.6 and 1.6 % for Misr 1, Misr 2, Giza 40 and Giza 429, respectively), then slightly increased but fluctuated without variance among varieties. The visible variances were found in the 1st week of March as 25.4, 17.8, 27.2 and 19.6 % for Misr 1, Misr 2, Giza 40 and Giza 429, respectively, were recorded and still at the relatively same level till the end of the experiment in April, 2nd, Fig. (2).

The monthly infestation percentages of leafminer on faba bean varieties through the two successive seasons were recorded in Table (2). The averages were low during December (2.5% for Misr1, 2.2% for Misr2, 3.1 %for Giza 40 and 2.5% for Giza 429) and January (7.2% for Misr1, 5.1% for Misr 2, 8.1% for Giza 40 and 5.9 % for Giza 429). In February, the percentages of infestation increased and reached 14, 10.9, 15.7, and 12.3% for Misr1, Misr 2, Giza 40 and Giza 429, respectively but without significant differences among varieties ($F = 1.712$). In March, the percentage of infestation reached its maximum where the varieties appeared virtual significant differences among each others ($F = 3.613$ and $LSD =$

4.097), so the varieties could be arranged ascendingly according to the percentages of infestation as follow: Misr 2 (25.5%), Giza 429 (27.3 %), Misr1 (33.73 %) and Giza 40 (36.4 %).

February and March together are considered the most important months for the growth stages of faba bean plants. The mean average of each varieties showed significant differences among the varieties ($F = 3.532$, $LSD = 3.921$). The varieties could be divided into the following two ascending groups: the first included Misr 2 (18.2%) and Giza 429 (19.8%), and the second include Misr1 (23.9%) and Giza 40 (26.1%). In the 1st week of April and in spite of the end of the season, the percentage of infestation still high this recorded 26.1, 28.5, 30.9 and 31.8 % for Misr2, Giza 429, Misr1 and Giza 40, respectively, Table (2).

From the previous data, it's noticeable that the faba bean varieties Misr1 and Misr 2 seemed to be more tolerance for the infestation rate by aphids than that of Giza 40 and Giza 429. On the other hand, Misr2 and Giza 429 showed more tolerance for the percentage of infestation by leafminer than that of Misr1 and Giza 40. So, Misr 2 seemed to be the best variety for tolerant the infestation rates by pests (aphids and leafminer) followed by Misr1, Giza 429 and finally Giza 40, Fig. (3).

The variance among varieties may be due to the preferences to host selection (Zotkowski and Piekarczyk, 1995 and Powell & Hardie, 2000) or the tendency of varieties to tolerant effect of

Table 2. Infestation percentages of *L. trifolii* on faba bean plants of different varieties at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons

Inspection Date *	Faba bean varieties											
	Misr 1			Misr 2			Giza 40			Giza 429		
	2004/05	2005/06	Average	2004/05	2005/06	Average	2004/05	2005/06	Average	2004/05	2005/06	Average
Dec, 16(14)	1.3	2.2	1.7	1.7	1.5	1.6	1.1	2.1	1.6	1.7	1.5	1.6
23(21)	2.3	4.1	3.2	2.3	2.3	2.3	3	4.2	3.6	2.3	3.5	2.9
30(28)	1.2	4.2	2.7	2.0	3.4	2.7	3.2	5.2	4.2	2.2	3.6	2.9
Mean± S.D.	1.6±0.3	3.5±0.6	2.5±0.4	2±0.2	2.4±0.5	2.2±0.3	2.4±0.7	3.8±0.9	3.1±0.9	2.1±0.2	2.9±0.7	2.5±0.4
Jan, 6(4)	4.1	6.3	5.2	3.1	5.1	4.1	4.1	6.1	5.1	3.4	6.2	4.8
13(11)	4.2	7.4	5.8	3.4	6.2	4.8	5.3	8.5	6.9	3.9	6.5	5.2
20(18)	8.2	10.4	9.3	3.9	7.3	5.6	7.1	14.1	10.6	4.6	7.8	6.2
27(25)	6.0	11.0	8.5	5.1	7.1	6.1	6.2	13.4	9.8	5.3	9.9	7.6
Mean± S.D.	5.6±0.9	8.8±1.1	7.2±1	3.9±0.4	6.4±0.5	5.1±0.4	5.7±0.6	10.5±1.9	8.1±1.3	4.3±0.4	7.6±0.8	5.9±0.6
Feb, 3(7)	6.3	12.1	9.2	6.0	9.2	7.6	7.0	16.2	11.6	7.2	10.2	8.7
10(14)	8.0	16.2	12.1	7.2	13.0	10.1	8.4	18.2	13.3	7.8	13.8	10.9
17(21)	10.2	20.4	15.3	7.4	14.2	10.8	13	20.4	16.7	9.2	16.4	12.8
24(28)	15.6	23.2	19.4	10.1	20.1	15.1	16	26.4	21.2	12.3	21.5	16.9
Mean± S.D.	10±2	18.0±2.4	14±2.2	7.7±0.9	14.1±2.3	10.9±1.5	11.1±2.1	20.3±2.2	15.7±2.1	9.1±1.1	15.5±2.4	12.3±1.7
F value	1.712											
LSD												
Mar, 6(7)	20.1	30.7	25.4	10.2	25.4	17.8	20.3	34.1	27.2	13.0	26.2	19.6
13(14)	29.2	41.4	35.3	20	31.2	25.6	30.2	44.2	37.2	21.2	34.0	27.6
20(21)	32.1	46.1	39.1	21.3	39.1	30.2	33.8	49.2	41.5	23.1	41.1	32.1
27(28)	21.0	49.2	35.1	19	38.2	28.6	36.2	43.2	39.7	22.2	38	30.1
Mean± S.D.	25.6±3	41.9±4.1	33.7±2.9	17.6±2.5	33.5±3.2	25.5±2.7	30.1±3.5	42.7±3.1	36.4±3.2	19.9±2.3	34.8±3.2	27.3±2.7
F value	3.613*											
LSD	4.097											
Feb.&March	17.8±3.4	29.9±5.0	22.3.9*±4.1	12.6±2.2	23.8±4.1	18.2 ^b ±3.1	20.6±4.1	31.5±4.6	26.1 ^a ±4.3	14.5±2.4	25.1±4.1	19.8 ^b ±3.2
F value	3.532*											
LSD	3.921											
Apr. 3(4)	21.3	40.5	30.9	20.2	32	26.1	24.1	39.5	31.8	20.0	37	28.5

* Figures between brackets represent the dates of the second season

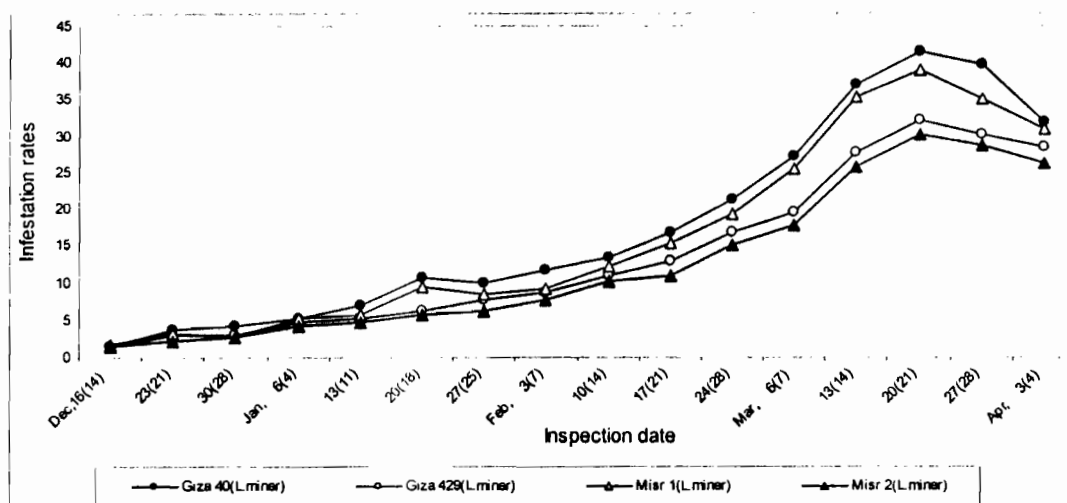


Fig. 2. Mean infestation percentages of *L. trifolii* on faba bean plants at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons.

(* Figures between brackets represent the dates of the second season)

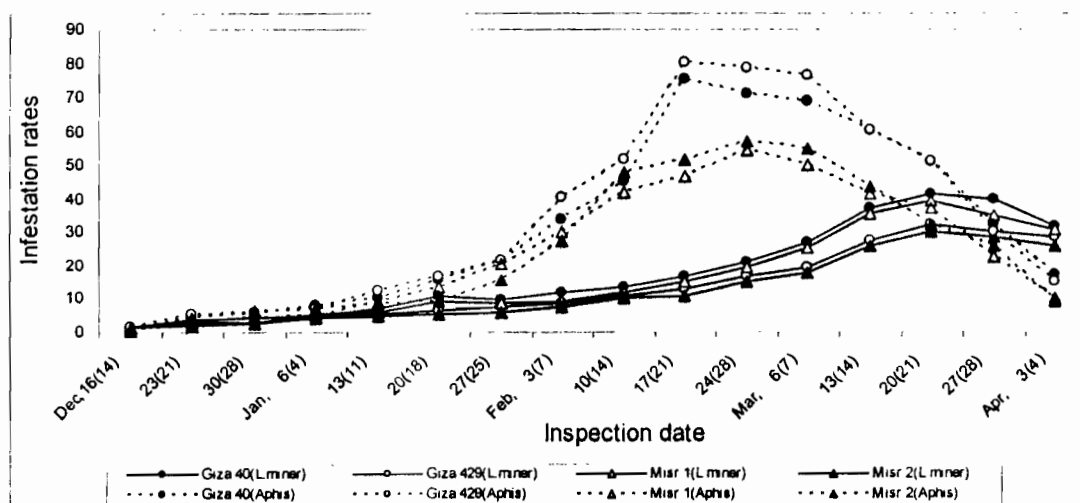


Fig. 3. Mean infestation rates of *A. cruccivora* and *L. trifolii* on faba bean plants at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons.

(* Figures between brackets represent the dates of the second season)

weather conditions (Mohammad & Mahmoud, 1988; EL-Serwy, 1993 and Sharma & Yadav, 1994), moreover the present results somewhat coincide with the findings of EL-Serwy, (1993); Abdel-Samad, (1996) and Mohamed & Slman, (2001).

Rate of parasitism on *A. craccivora*

Parasitoid adults recorded from *A. craccivora* were identified as *Lysiphlebus fabarum* March., *Aphidius matricariae* Hali. and *Trioxys* sp. (Braconidae). The rates of parasitism are recorded in Table (3) and Fig. (4). No significant difference was noticed between the two successive seasons ($t = 0.302$) as the rate of parasitism, was 11.7 and 10.7 % for the 1st and 2nd seasons, respectively. The average mean of the two successive seasons (Table 3 & Fig. 4), showed that the parasitoids started to attack the aphids actually in January but in low percentage of parasitism (5.1%). As the time progress, the percentage of parasitism began to increase to reach its maximum (25%) during the last week of February. February and March were found to be the active period of parasitism, parallel with the built up the population densities of aphids which were recorded as 21.1% in Feb., and 17.2% in March. The previous mentioned results coincide with those of Ibrahim and Fayad (1989); Abdel-Samad, (1996); Volkl and Stechmann, (1998); Glinwood *et al* (1999) and Guerrieri *et al* (1999).

Rate of parasitism on *L. trifolii*

Three species of parasitoids; namely *Diglyphus isaea* Walker, *Pnigalio* sp. (Eulophidae) and *Opius* sp. (Braconidae) were found associated with *L. trifolii*. The percentages of parasitism in the two successive seasons of 2004/05 and 2005/06 are given in Table (4) and Fig. (4). The data showed that the parasitoids started to appear during January (2.9%). February and March are considered the most important period for the percentage of parasitism, as 12.8 % in February and 13.1% in March were recorded. It is important to notice that the peak of parasitism reached its maximum during the last week of Feb., (17.5%) and the 1st week of Mar., (17.8%). The present results coincide with those of EL-Serwy, (1993).

Generally, it is noticeable that the peak of infestation rate by aphids reached the maximum earlier during the period from the 3rd week of February till the 1st week of March, then when it was

downward, the peak of infestation by the leaf-miner began to increase to reach its maximum during the period from the 2nd week of March till the end of the season. So, Feb. and Mar., seemed to be the most important period for the rate of infestation by the most important insect pests attacking faba bean plants. On the other hand, the peak of parasitism either on aphids or on the leafminer started to appear for on the 1st week of Feb. till the 3rd week of March reaching its maximum during the end of Feb. therefore, the application by biological control especially parasitoids must be conducted in this period.

Table 3. Rates of parasitism on *A. craccivora* in faba bean field at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons.

2004/05		2005/06		Average of the two seasons
Inspec. Date	Parasitism (%)	Inspec. Date	Parasitism (%)	
Dec, 16	0	Dec, 14	0	0
23	0	21	0	0
30	0	28	2	1
Mean ± S.D	0	Mean ± S.D	0.7±0.9	0.3±0.5
Jan, 6	1	Jan, 4	1	1
13	4	11	3	3.5
20	7	18	5	6
27	9	25	11	10
Mean ± S.D	5.2±3.0	Mean ± S.D	5.0±3.7	5.1±3.3
Feb, 3	19	Feb, 7	16	17.5
10	18	14	20	19
17	21	21	25	23
24	29	28	21	25
Mean ± S.D	21.7±4.3	Mean ± S.D	20.5±3.2	21.1±3.0
Mar, 6	26	Mar, 7	19	22.5
13	23	14	20	21.5
20	17	21	15	16
27	10	28	8	9
Mean ± S.D	19.0±6.1	Mean ± S.D	15.5±4.7	17.2±5.4
Apr, 3	4	Apr, 4	6	5
Gen. mean ± S.D.	11.7±9.7	Gen. mean ± S.D.	10.7±8.4	11.2±8.9
<i>t</i> values			0.302	

Table 4. Rates of parasitism on *L. trifolii* in faba bean field at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons

2004/05				2005/06				Average % of the two seasons
Inspec. Date	No. of Insects	Hatching Parasites	% of Parasitism	Inspec. Date	No. of Insects	Hatching Parasites	% of Parasitism	
Dec, 16	0	0	0	Dec, 14	0	0	0	0
23	0	0	0	21	0	0	0	0
30	0	0	0	28	0	0	0	0
Jan, 6	89	2	2.2	Jan, 4	0	0	0	1.1
13	76	1	1.3	11	93	2	2.1	1.7
20	94	2	2.1	18	77	3	3.9	3.0
27	91	5	5.5	25	91	6	6.6	6.1
Mean±S.D.			2.8±1.6	Mean±S.D.			3.1±2.4	2.9±1.9
Feb, 3	92	8	8.7	Feb, 7	84	8	9.5	9.1
10	89	9	10.1	14	86	9	10.5	10.3
17	83	11	13.2	21	85	13	15.3	14.2
24	85	14	16.5	28	81	15	18.5	17.5
Mean±S.D.			12.1±3	Mean±S.D.			13.4±3.6	12.8±3.3
Mar, 6	81	14	17.3	Mar, 7	77	14	18.2	17.8
13	86	13	15.1	14	79	13	16.4	15.7
20	81	8	9.9	21	84	11	13.1	11.5
27	93	6	6.4	28	90	8	8.9	7.6
Mean±S.D.			12.2±4.3	Mean±S.D.			14.1±3.5	13.1±3.9
Apr, 3	82	3	3.6	Apr, 3	85	4	4.7	4.1
Gen. mean ± S.D			7.0± 5.9	Gen. mean ± S.D			8.0± 6.6	7.5± 6.2
t values				0.502				

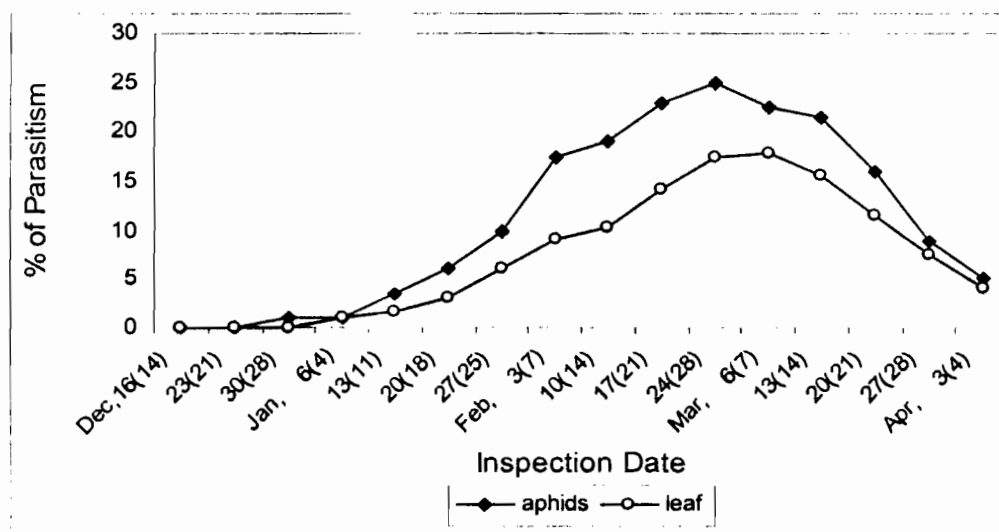


Fig. 4. Mean of rates of parasitism on *A. craccivora* and *L. trifolii* in faba bean field at Shandawel, Sohag Governorate during 2004/05 and 2005/06 seasons. (* Figures between brackets represent the dates of the second season)

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حوليات العلوم الزراعية
جامعة عين شمس، القاهرة
مجلد (٥١)، عدد (٢)، ٥٣١-٥٤٠، ٢٠٠٦

تذبذب تعداد من الفول وصناعة أنفاق الأوراق وطفيلياتهما الداخلية على أصناف فول محددة

[٣٨]

سلوى سيد محمد عبد الصمد^١ - مجدى عبد العظيم احمد^١
١- معهد بحوث وقاية النبات- مركز البحوث الزراعية - جيزة - مصر

(١٨,٢%) ، جيزة ٤٢٩ (١٩,٨%) ، مصر ١
(٢٣,٩%) ، جيزة ٤٠ (٢٦,١%).
ايضا اظهرت الدراسة تواجد ثلاثة طفيليات داخلية
مصاحبه للمن هي *Lysiphlebus fabarum*,
Aphidius matricariae and *Trioxys sp*
بالاضافه الى
ثلاثة طفيليات داخلية مصاحبه لصانعات الانفاق
هي *Diglyphus isaea*, *Prigalio sp.*, *Opius sp*
وتتواكب نسب تواجد الطفيليات طرديا مع زياده نسب
الاصابه بالافات خلال شهرى فبراير ومارس، حيث
وصلت اعلى نسبة تطفل على حشرات المن ٢١,١%
(فى فبراير) و ١٧,٢% (فى مارس) وعلى صانعات
الانفاق ١٢,٨% (فى فبراير) و ١٣,١% (فى مارس).

درس تأثيرنسب الاصابه بالمن و صانعات الانفاق
والاعداء الحيويه المصاحبه لهما على أصناف الفول
مصر ١؛ مصر ٢ ؛ جيزة ٤٠ ؛ جيزة ٤٢٩ خلال
موسمى ٢٠٠٤ / ٢٠٠٥ و ٢٠٠٥ / ٢٠٠٦ فى منطقه
شندويل بمحافظه سوهاج .
وقد اظهرت الدراسة ان شهرى فبراير ومارس
من اهم الشهور فى معدلات الاصابه بكلا الأفتنين،
حيث وجد ان حساسيه أصناف الفول يمكن ترتيبها
تصاعديا (طبقا لمتوسط نسبه الاصابه فى الشهرين)
بالنسبه لعدد المن/ النبات الى مصر ١ (٤٠,٦) ،
مصر ٢ (٤٢,٦) ، جيزة ٤٠ (٥٤,٢) ، جيزة ٤٢٩
(٥٨,٧). وبالنسبه لصانعات الانفاق مصر ٢

تحكيم: أ.د أحمد على جمعه
أ.د محمد سمير توفيق عباس