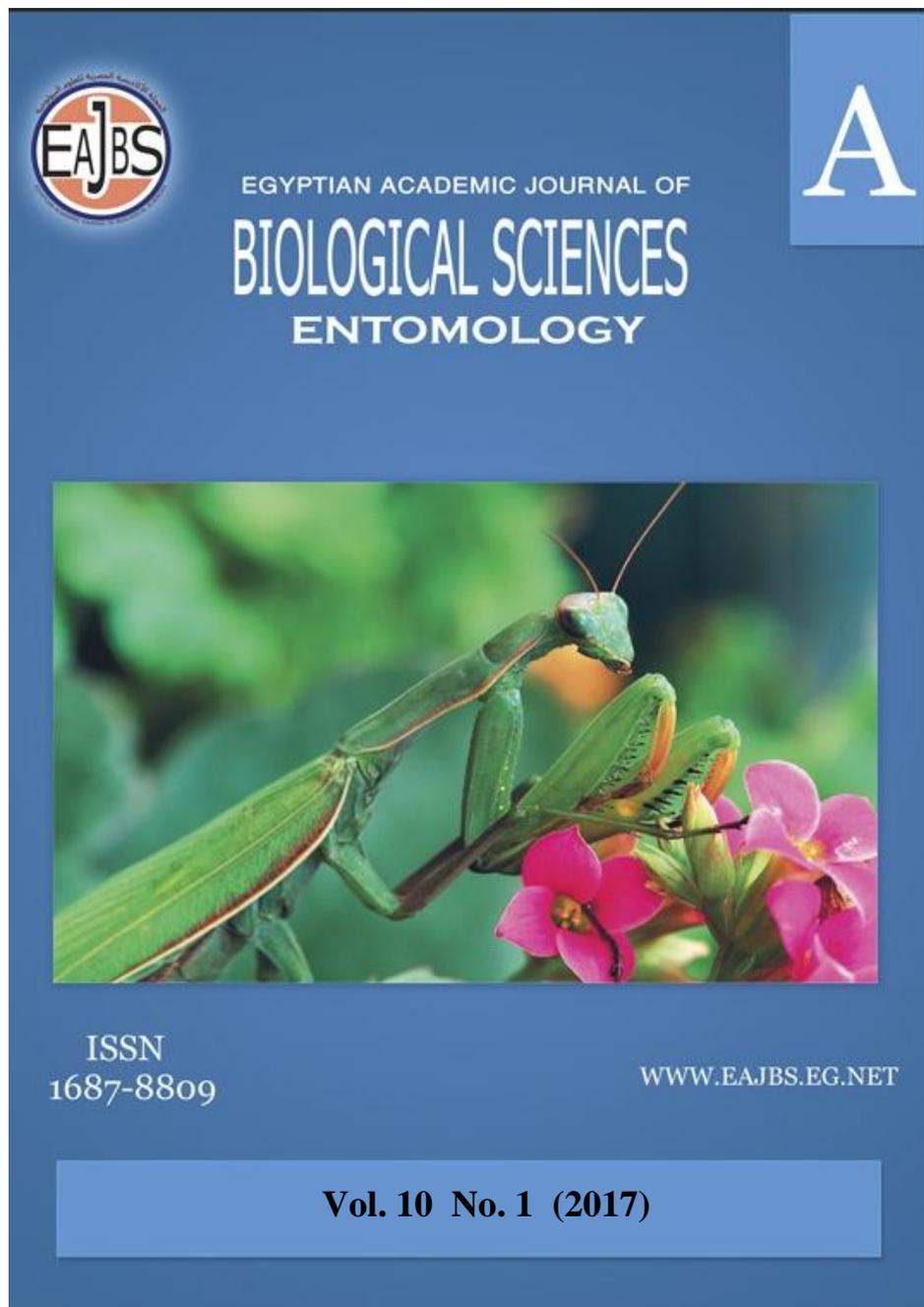


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Susceptibility of Some Legume Plants to Some Leaf Miners

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ARTICLE INFO

Article History

Received: 5/1/2017

Accepted: 9/2/2017

Keywords: susceptibility ,
legume plants , leaf miners

ABSTRACT

The susceptibility of some legume plants to some leaf miners infestation *Liriomyza pisi* (Winnertz); *Liriomyza trifolii* (Burgess) and *Liriomyza congest* (Becker) during two successive seasons Nili 2014/2015 and 2015/2016. The obtained results revealed significant differences between broad peas green and the two others, while there were no significant differences of *L. trifolii* between broad bean, *Vicia faba* L. and peas green *Pisum sativum* L. during two seasons. Also significant differences between broad bean and peas green on and the two legume plants, while there were no significant differences in between broad bean and peas green on the difference between means number of *Liriomyza pisi* (Winnertz); *Liriomyza trifolii* (Burgess) and *Liriomyza congest* (Becker) were significant between broad bean and peas green, while there were no significant differences in population between broad bean and common bean *Phaseolus vulgaris* L.. In addition, the results revealed that, there are insignificant between three tested.

INTRODUCTION

The legume plants as infested with different leaf miners which cause considerable damage in both quantity and quality of the leaves. Some of the species are known to be of great economic importance as *Liriomyza pisi* (Winnertz); *Liriomyza trifolii* (Burgess) and *Liriomyza congest* (Becker). Burgio, *et al.* (2005) and El-Sayed *et al.* (2007). They cause any indirect damages by transmitting several microorganisms are of economic importance on many crops. Considered main insect pests infesting legume plants, cause serious damage to the plant, and yield (Shalaby, 2004 and Shaalan 2005). This study aim susceptibility of some legume plants to some leaf miners infestation *Liriomyza pisi* (Winnertz); *Liriomyza trifolii* (Burgess) and *Liriomyza congest* (Becker) during two successive seasons.

MATERIAL AND METHODS

This experiment was carried out in an area of about 200m² that was cultivated with three legume plants 'broad bean, *Vicia faba* L.; peas green *Pisum sativum* L. and Common bean *L. Phaseolus vulgaris* L. Seeds were sowing on September 21th for 2014/2015 and 2015/2016 for nili plantation. The whole area divided into 9 replicates (of about 20m²). Seeds of each variety were sown in three replicates.

Normal Agricultural practices followed except for keeping, the whole area free

from any pesticides treatment. Sampling started after about one month from planting, prolonged to the harvesting time, 30 leaves/replicate of legume plants, and continued weekly until the end of season. The leaves picked, put in paper bags and transferred for examining in the laboratory under a stereomicroscope to determine the studied some leaf miners infestation.

Statistical analysis:

The statistical analysis (ANOVA and Simple correlation) of the obtained data were performed by using SAS program (SAS Institute, 1988) which run under WIN. Also the difference between means was conducted by using Duncan's multiple range tests in this program.

RESULTS AND DISCUSSION

Data in Table (1) show the infestation level of *Lirimyza trifolli* (Burgess) to three legume plants The recorded mean numbers all over the two seasons were (9.38; 11.6 & 10.75) and (2.5, ;5.4 & 3.6) imm./leaf Broad bean; Peas green and Common bean respectively.

Table 1: Susceptibility of some legume plants to *Lirimyza trifolli*. (Burgess) infestation during nili seasons at Qalybiya Governorate.

Sampling date	1 st Season:2014/2015			2 nd Season:2015/2016		
	Broad bean	Peas green	Common bean Bronco	Broad bean	Peas green	Common bean Bronco
	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf
Oct3 rd week	9.3	13.8	7.5	1.49	5	3.6
Oct. 4 rd week	10.3	19.7	17.1	1.7	4.6	5.1
Nov.1 th week	17.7	31.8	26.4	1.2	7.1	6.1
Nov. 2 st week	3	11.7	4.2	2.3	6.5	2.2
Nov.3 rd week	3.7	7.1	9	3.2	2.7	3.6
Nov.4 rd week	4.3	4.6	12	3.06	2.5	5.5
Dec.1 th week	6.9	13.2	12	3.2	9.3	4.2
Dec. 2 st week	12.4	13.7	4.8	3.7	3	3.2
Dec.3 rd week	9.6	3.7	7.2	4.2	15.5	2.1
Dec. 4 rd week	6	7.2	10.1	2.7	3.2	4.1
Dec.5 th week	13.2	6.1	12.2	2.2	3.3	2.4
Jan 1 st week	16.21	7.6	6.6	1.5	2.3	2
Total	112.61	140.2	129.1	30.45	65	44.1
Mean	9.38	11.66	10.75	2.53	5.4	3.67

L.S.D=3.90

L.S.D.=2.20

Statistical analysis of the obtained data revealed significant differences between the population on Broad bean and the two others, while there were no significant differences in the population between Peas green and common bean.

The differences in population mean number of *Liriomza pisi* (Winnertz) significantly higher on peas green as harbored the highest mean number (83.3imm./leaf), being significantly differ from common bean which showed moderate infestation (57.9 imm./leaf). On the other hand the lowest mean number was recorded 36.89 imm./leaf on Broad bean during 2014/2015The recorded mean numbers were 25.70, 28.34 and 34.60 imm./leaf for Broad bean; Peas green and common bean during 2015/2016, respectively.

The relative population mean infesting Common bean leaves was also affected, significantly with Common bean during the two seasons Table (2).

Table 2: Susceptibility of some legume plants to *Liriomyza pisi* (Winnertz) infestation during nili seasons at Qalybiya Governorate:

Sampling date	1 st Season:2014/2015			2 nd Season:2015/2016		
	Broad bean	Peas green	Common bean Bronco	Broad bean	Peas green	Common bean Bronco
	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf	Mean no. of Imm. / leaf
Oct3 rd week	20.1	30.8	23.1	3.0	13.0	14.0
Oct. 4 rd week	52.9	138.6	64.3	4.0	7.6	12.0
Nov.1 th week	137.7	519	123.9	6.0	18	13.0
Nov. 2 st week	61.2	165	239	5.0	8.0	12.0
Nov.3 rd week	28.2	38.5	71.3	3.9	13.2	12.5
Nov.4 rd week	36.0	35.1	24	11.3	13.0	18.0
Dec.1 th week	22.6	19.2	55	9.0	12.0	17.0
Dec. 2 st week	17.6	7.4	33	17.0	12.2	10.5
Dec.3 rd week	34.4	21.2	23.1	18	8.7	7.0
Dec. 4 rd week	8.0	9.4	14	9.0	16.0	8.5
Dec.5 th week	13.8	12.4	13	8.0	5.0	8.2
Jan 1 st week	10.2	3.2	11	9.0	5.3	9.0
Total	442.7	999.8	694.7	132.2	132	141.7
Mean	36.89	83.3	57.9	11	11.02	11.8

L.S.D. =5.6

L.S.D. =2.5

Data in Table (3) showed the variation of the mean numbers of *Lirimyza congest* (Becker) between the three legume plants. The mean number was recorded 38.30 individual/ leaf for Broad bean, while the Peas green and common bean were recorded 39.30 and 41.20 imm./leaf during 2014/2015 respectively.

Table 3: Susceptibility of some legume plants to *Lirimyza congest* (Becker) infestation during nili seasons at Qalybiya Governorate

Sampling date	1 st Season:2014/2015			2 nd Season:2015/2016		
	Broad bean	Peas green	Common bean Bronco	Broad bean	Peas green	Common bean Bronco
	Mean No. Imm / leaf	Mean No. Imm / leaf	Mean No. Imm / leaf	Mean No. Imm / leaf	Mean No. Imm / leaf	Mean No. Imm / leaf
Oct3 rd week	6.0	15.0	7.5	5.0	12.0	4.0
Oct. 4 rd week	20.0	25.0	18.0	1.5	6.0	5.5
Nov.1 th week	22.0	20.0	30.4	6.3	19.5	5.0
Nov. 2 st week	31.0	17.0	25.0	8.5	7.0	10.5
Nov.3 rd week	5.0	24.0	10.0	8.1	4.0	11.0
Nov.4 rd week	17.0	11.5	15.0	11.0	6.5	15.0
Dec.1 th week	15.0	12.0	16.0	8.0	5.0	10.9
Dec. 2 st week	3.5	3.0	10.0	9.0	4.0	5.2
Dec.3 rd week	23.0	14.0	20.0	6.0	3.1	6.0
Dec. 4 rd week	11.0	14.0	6.5	7.0	5.5	5.2
Dec.5 th week	7.0	8.0	7.5	4.0	1.0	3.8
Jan 1 st week	3.5	2.0	3.0	3.1	2.0	2.4
Total	146	165.5	168.9	77.5	75.6	84.5
Mean	12.2*	13.8	14.1	6.5*	6.3	7.1

LSD= 1.5

LSD=1.1

The highest mean number of *Lirimyza congest* (Becker) was 19.90 individual/ leaf on common bean, while the mean number of infestation on Broad bean; Peas green were 18.11 and 17.0 imm. /leaf, during 2015/2016 respectively.

In this respect, Farrag *et al.* (1980) studied the relative susceptibility of five bean varieties to the spider mite, *Tetranychus arabicus* Attiah infestation. Tested

varieties were divided into two groups, the first which was the most resistant including Seminole and three groups her poured the highest population and generally more susceptible to spider mite infestation, including Processor, Harvester and Contender varieties. Sharif (1986) investigated the susceptibility of Common beans (*Phaseolus vulgaris*) broad bean (*Vicia faba*) and red clover for rearing and maintaining large numbers of *T. urticae* on *P. vulgaris*, *V. faba* and red clover were 60.5, 51.3 and 25.5, respectively. The 3 host plants varied in their susceptibility to *T. urticae* infestations, with *P. vulgaris* being the most susceptible and red clover least susceptible. susceptibility of 24 bean cultivars to whitefly *Bemisia tabaci* (Genn.), the spider mite *T. urticae* and rust diseases with special reference to yield and pod characteristics was studied by Faris *et al.* (1991). They reviewed that, Morgan, Atlantic and Bronco cultivars were tolerant to mite infestation, while, Labrado and Demeter cultivars were more susceptible ones to the infestation with movable stages. On the other hand, Bronco and Morgan cultivars gave the highest yields beside its tolerance to rust. Regarding the width and thickness of green pods data showed that the Morgan and Bronco cultivars exhibited low value with extra fine of Morgan cultivar and narrow Bronco cultivar pods Aydemir and Toros (1992) in Turkey ,studied the effects of 8 varieties of beans (*Phaseolus vulgaris*) on the survival and fecundity of *Tetranychus urticae* in the field .Survival and fecundity were found greatest on "Narman " and least on "Horoz"and "Sennilak". Megali *et al.* (1992) conducted field experiment to evaluate susceptibility of 16 pea cultivars to infestation by two-spotted spider mites, leafminers during winter seasons 1990 and 1991 in Qalybia Governorate and observed that, Danue, Norvist and Helka were the most tolerant to mite infestation than the other cultivars. Habashy (2000) carried out a field experiment to evaluate nine bean and twenty cowpea against two phytophagous mites *T. urticae* and *T. cucurbitacearum* at Qalyubiya Governorate. For the nine bean cultivars, she observed that the highest population of *T. urticae* occurred on Kentucky, Blue cultivar and Branco cultivar while the lowest number occurred on Monunert (Navy) cultivar In case of *T. cucurbitacearum* the highest population was recorded on Kentucky and Blue cultivar but the lowest one was reported on Sontae cultivar On the other hand, for the twenty-cowpea cultivars, the highest infestation of *T. urticae* occurred on IT8ID-994 cultivar and lowest one was found on H6-16 cultivar For *T. cucurbitacearum*, the highest occurrence was observed on IT8ID-994 cultivar Nevertheless the lowest was found on IT86D-1010 and H6-16 cultivars.

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حساسيه بعض البقوليات لبعض صانعات الانفاق

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أجريت التجربه بمحطة بحوث قها - محافظة القليوبية خلال الموسمين ٢٠١٤ / ٢٠١٥ ، ٢٠١٥ / ٢٠١٦ في العروة النيلى دراسة قابلية الحساسيه لبعض البقوليات (الفول - الفاصوليا- البسلة) للإصابة ببعض صانعات الانفاق.

وأوضحت النتائج الاتى صانعة أنفاق أوراق الفول *Liriomyza trifoli* خلال الموسمين ٢٠١٤ / ٢٠١٥ و ٢٠١٥ / ٢٠١٦ أن نبات البسلة أعلى أصابه يليه - الفاصوليا ثم الفول لتعداد صانعة أنفاق أوراق الفول بدون فرق معنوي بينهما. خلال الموسم ٢٠١٤ / ٢٠١٥ أيضا سجلت اعلى متوسط من الإصابة على البسلة ثم الفاصوليا- ثم الفول خلال السننتين على التوالي.

وكانت النتائج للحشرة *Liriomza pisi* أعلى أصابة على نبات البسلة يليه الفاصوليا ثم الفول فى السنة الاولى بينما فى السنة الثانية كانت نبات الفاصوليا أعلى أصابة ثم البسلة ثم الفول على التوالي.

بينما كان نبات الفاصوليا أعلى أصابة بال *Lirimyza congest* فى السننتين على التوالي وأقلهم اصابة نبات الفول خلال السننتين على التوالي.