Population Fluctuation of Certain Insect Pests and Its Associated Predators on *Phaseolus Vulgaris* Plants in Giza Governorate, Egypt

H. M. Kamel

Plant Protection Department, Faculty of Agriculture, AL-Azhar University, Cairo, Egypt.

* Corresponding author E-mail: mohamedhamzah@azhar.edu.eg. (H. Kamel)

ABSTRACT

This study aimed to determine the impact of certain factors on population fluctuation of *Thrips tabaci & Bemisia tabaci* on common bean *Phaseolus vulgaris*, (polesta cultivar) in relation to certain weather factors with regard to their natural enemies. The results showed that during two seasons (2020/21 and 2021/22) 8 insect pests belonging to 5 families under 4 orders and 2predators were surveyed. They were; *Thrips tabaci*, Order: Thysanoptera: Thripidae, *Aphis craccivora*, Order:Hemiptera: Aphididae, *Bemisia tabaci,* Order:Diptera: Aleyrodidae, *Ophiomyia phaseoli, Melanogromyza phaseoli* and *Lirimyza trifolii*, Order:Diptera: Agromyzidae as insect pests and *Spodoptera litoralis, Spodoptera exigua* Order:Lepidoptera: Noctuidae, as insect visitors. However *Coccinella undecimpunctata* Order:Coleoptera: Coccinellidae and *Chrysoperla carnea* Order:Neuroptera:Chrysopidae predator. The effect of temperature, relative humidity and other ecological parameters on population fluctuation of *T.tabaci* and *B.tabaci* were tested. These two pests *T.tabaci* and *B.tabaci* had three peaks during 1st and 2nd seasons. The mean numbers of tested insect pests was higher during second season than the first season. The first appearance of *T. tabaci* and *B. tabaci* was at the 4th week of December, late January and 1st March in two successive years, these insects are dangerous insect pests in *P. vulgaris* plants fields. The combined impact of climate variables, natural enemies and plant age on *T.tabaci & B. tabaci* presented as an explained variance, population density was 67 & 90% of *T. tabaci* and 88 & 89% of *B.tabaci* in the 1st and 2nd seasons, respectively.

Keywords: *P. vulgaris*; pests; Population dynamics.

INTRODUCTION

Common bean *P. vulgaris* (L.). has a great nutritional value for humans. It's belonging to Family: Leguminosae *P. vulgaris* (L.). is considered as essential and most profitable crop for the Egyptian farmers. It's the second most important legume after *Cicer arietinum* crop (Anonymous (2018) and Abd-Allah *et al.* (2021). Common bean sometimes known as snap beans, dry beans seeds, or both, green beans are very rich in niacin, medium in vitamin A concentration and devoid of ascorbic acid. While dry bean seeds are rich in carbohydrate 61.3% and protein 22.3% as well as calcium, phosphorus, iron, thiamine, riboflavin, and niacin. Also it is, a good source of vitamins and minerals. Additionally, it includes some nutritional components like tannins, folic acid, and protease inhibitors by Filella and Penuelas (1994). Legume crops are valuable because they can fix nitrogen in soil and can be utilized to enhance soil conditions in crop rotation systems (Amannuel *et al.* (2000) and Brentrup *et al*. (2001). In Egypt *p. vulgaris* plants usually often receives a different types of insect pests which cause major harm in both quality and quantity such as *T. tabaci* and *B.tabaci* which causes serious demolish to the plants. The yield loss due to sucking sap insect pests is estimated to 37%. If infestations are more severe, growth rates and production are reduced by thrip and whiteflies, both nymphs and adults, suck plant sap, causing yellowing, withering leaves, fresh beans, fresh bean pods, and major damage from the seedling to pod bearing stage. Rasping-Sucking sap insect pests cause many damages to various vegetable crops; they also, play an important role as a vector of plant viruses (Oliveira *et al.* (2001).

The present study aimed to evaluate the impact of weather factors and predators on population dynamic densities of *T.tabaci* and *B.tabaci* on *P. Vulgaris* in El-Mansuria village, Giza Governorate, Egypt.

MATERIALS AND METHODS

Field studies:

Field experiments were planned and conducted to study the population fluctuation of *T. tabaci* and *B. tabaci* infesting common bean plants *P. vulgaris* plants (polesta cultivar)by Shehata 2015, at El-Mansuria village, Giza Governorate, throughout two successive seasons (2020-21and 2021-22).

Sampling techniques:

The Experiment area (1/2 feddan) (2100 m^2) was divided into four parts (each part 525 m^2); each part was divided into three replications (175 m^2) and cultivated with common bean *P. vulgaris*. Four plants were Chosen in Randomized Complete Block Design (CRCBD) in five positions (4 corners+ center) and inspected for the pests. The individuals of insect on the plant were directly counted under field conditions and their numbers were recorded. The most common insect pests were identified and directly counted under field conditions and their numbers were recorded. Data were recorded weekly from late December2020-21 until the end of April2021-22. Samples were taken at random in the early morning at weekly intervals.

Effect of weather factors on the population fluctuation of the *T. tabaci* and *B. tabaci*:

This experiment aimed to obtain accurate information about the effect of Temp., R.H% and predators on the population fluctuation of these pests. Meteorological records were obtained from Agriculture Climate (CLAC), Dokki, Giza,Egypt. The statistical analysis (Simple correlation and Partial regression of obtained data were performed by using SAS program (SAS, 2003) to test the effect of the weather factors on the population fluctuation of those insects.

RESULTS AND DISCUSSION.

Qualitative Survey of insects occurring on *P. vulgaris* plants.

A field survey of prevailing insects was conducted on common bean during the (2020/21and 2021/22) seasons. Data illustrated in table 1 show a list of insect species reordered on *P. vulgaris* plants. Data revealed 6 insect pests species and two predators belonging to seven families, 6 orders during the two successive seasons were surveyed. However, *T. tabaci*, *B. tabaci*, *A.craccivora, O.phaseoli, M.phaseoli* and *L.trifolii* are pests, while each of S.*littoralis* and *S.exigua* are visitors. The predators were represented by *C.undecimpunctata* and *C.carnia* as well as the prevailing climatic factors (daily maxi and mini Temp. and R.H %). The results observed are in line with those of Abrol *et al.* (2006) who stated that red kidney beans are a key the economy crop that are attacked by eight different types of insect pests in India. Caterpillar with hairs, *Spilosoma obliqua*, stem fly, *Ophiomyic phaseoli*, *Callosobruchus chinensis*, *Alcidode signatus*, and *Cyaneolylta coerculea* were among them. Thrips, *S.dorsalis, A. craccivora* and *Alcidode signatus* were the most harmful insect pests among all those discovered for the first time in the crop and the nation. Also, According to the findings of Emosairue *et al.* (2004) in Nigeria**,** gave a list consisted of 37pest species and 4natural enemies on cowpea. The insect species encountered on the yield were distributed as follows: order:Coleoptera,14 species constituting34.2% of all species identified; order:Heteroptera,10 species(24.4%);order:Homoptera 8 species (19.5%);order:Orthoptera, 4species (9.8%);order:Lepidoptera, 3species(7.3%); order:Thysanoptera, 1 species (2.4%) and order:Dictyoptera, 1 species (2.4%).

Population fluctuations of *T. tabaci* on *P. vulgaris* plants.

Data presented in Tables 2and 3 showed that infestation with *T. tabaci* on *P. vulgaris* plants was observed at the 4th of December. During two successive seasons, the weekly mean numbers of insect population were 9.73 and 10.20 insects during (2020/21) and (2021/22), respectively. The insect population increased to reach its maximum (1st peak) during the 4th week of December with weekly numbers of (17.42 and 18.72 *T.tabaci* individuals/sampling) during 1st and 2nd seasons, respectively. The 2nd peak was in the 4th week of January, with weekly numbers of 17.94 in 1st season and 23.98 insects in 2nd season. However, the 3rd peak was observed in the 1st week of March with weekly numbers of (16.09 and 32.72 insects) during 1st and 2nd seasons, respectively. The data contained in tables (2 &3) proved that second season harbored more numbers of *T. tabaci*(237.90) than that obtained on first season(177.74 individuals/sampling). The population density of *T. tabaci* reached its highest, according to Selem *et al.* (2016) and Zala *et al.* (2014), in the second week of April, with a mean number of 14.33 and 10.33 insects per 25 leaves, respectively, at mean temperatures of 19.4 and 17.3oC and relative humidity levels of 64.7% and 66.7%. 4.2.

Population fluctuation of *B. tabaci* on *P. vulgaris* plants.

Data summarized in Tables 2 and3 show that the first appearance of *B.tabaci* on common bean was in the 4th of December. The weekly number of insects was 8.92 and 7.99 insects during the 1st and 2nd seasons, respectively. The 1st peak was recorded in the 4th week of December with weekly numbers of 10.60 and 17.11insects during 1st and 2nd seasons, respectively. The 2nd peak was in 4th week of

January with weekly numbers of 10.99 & 19.80 insects during 1st and 2nd season, respectively. However, this insect was recorded at highest 3rd peak in the 1st week of March with weekly numbers of 14.04 & 23.22 insects, during the two seasons, respectively. Data presented in table 2 and 3 proved that second season harbored more numbers of *T.tabaci* (173.00) than that obtained in first season (139.57individuals). According to Hegab *et al.* (2005) *B.tabaci* population increased beginning in August and reached a peak in December. *B. tabaci* nymphs were found to be most active in the months of October and November, according to Safe, *et al.* (2018). Additionally, Oliveira *et al.* (2001) discovered that *B. tabaci* suckers sap from plants, producing wilting, leaf loss, yellowing, and, in cases of severe infestations a reduction in productivity and growth rates.

Population density of associated predators:

Predator population patterns on *P. vulgaris* plants are heavily affected by the populations of *T. tabaci, B. tabaci*, and other insect pests. The trend of the population density of the predators on *P. vulgaris* plants depends mainly on the densities of *T. tabaci*, *B. tabaci* and other insect pests. The mean number of predators; *C. undecimpunctata* and *C. carnea* fluctuated during February increased gradually to reach its peak during February and March (13.91 and13.10 larvae) during 1st season, as shown in Table 2 and (10.04 and12.54 larvae) during 2st season. *C. carnea* whereas, *C. undecimpunctata* recorded 13.91 and 13.01 insects in February during 1st seasons and 2nd seasons table (3), respectively. Similar findings were reported by Abdou, *et al.* (2019) they found that the mean number of predators fluctuated during March and April, climbed gradually to reach its maximum during May at summer seasons, and then fell towards the end of the season during the first June. The mean amount of predators fluctuated during the month of September rose progressively to its peak during the spring months of October and November, and then began to decrease in the first week of December.

The impact of abiotic and biotic parameters on the population fluctuations of *T. tabaci*, *B. tabaci* on *P. vulgaris*.

Generally, fluctuations in the weather factors, the amount of food supply and the number of natural enemies, or all three are what lead to population changes. These biotic and abiotic elements usually have an impact on an insect pest's capacity for reproduction and survival. The present work suggests that there are daily maxi, mini Temp., R.H%, plant age and two natural enemies, including: *C. undecimpunctata* and *C. carnea* were associated with the *T. tabaci*, *B. tabaci* samples on the *P. vulgaris* crop.

Thrips tabaci: Statistical analysis of data obtained in 2020/21 and 2021/22 which illustrated in (table 4) showed that simple correlation between mean numbers of *T. tabaci* and daily maxi, daily mini temperature, plant age and natural enemies had insignificant effect on the numbers of this insect during two seasons, respectively. Except natural enemies in the 2nd season had a significant correlation with mean number of *T. tabaci.* The impact of the combination of all studied factors on *T. tabaci* population was presented as explained variance (EV%.) which was 67 and 90% in 2020-21and 2021-22, respectively (table 4).

B. tabaci: Data tabulated in table (5) showed that simple correlation between mean numbers of *B. tabaci* and illustrated six abiotic and two biotic factors were insignificant during two seasons, except natural enemies; they had a significant effect on the numbers of this insect during the two seasons. The effect of the combination of all studied factors on *B. tabaci* population as explained variance (EV %) which was 88% during 1stseason and 89% during 2nd season. These findings were in line with those of Younes *et al.* (2001), who found that the relationships between the major meteorological parameters (Temperature and Relative Humidity) and sucking pests on soybean differed depending on the type of pest. Wains *et al*. (2010) showed that the aphid population density was positively associated with maxi as well as mini Temp., while it showed a negative correlation with R.H%. The environmental factors of Temp., and R.H% are thought to be limiting factors for the growth and fertility of *B. tabaci*, while on the other hand, the whitefly population decreased when the Temp., was below 15° C, according to research by Selem *et al.* (2016). A study by Zala *et al.* (2014) in Anand during the kharif of 2011–12 revealed a strongly negative correlation between the highest temperature and the number of thrips.

CONCLUSION

Statistical analysis demonstrated that the plant age and climate condition had a significant impact on the degree of infestation with these major pests. The findings showed a positive relationship between the population of two pests and the limits of maxi, mini, and

R.H%. The persistence of *T.tabaci* and *B.tabaci* all year is due to the presence of a wide host range and a high reproduction rate. As a result, they pose a serious danger to the economy of Egypt; there are losses in economic yield due to severe infestation.

REFERENCE

Abdou, A.E., Abdou Refaei, E.A., Taha, R.A 2019: Field evaluation of insect pests infesting *Phaseolus vulgaris* and their natural enemies in Beheira Governorate. Egypt. J. Plant Prot. Res. Inst. (2019), 2 (3): 514 - 525

Abrol, D.P., Ramamurthy, V.V., Srivastava, K. 2006: Bean Gall Weevil and Blister Beetle as New Pests on Red Kidney Bean (*Phaseolus vulgaris L.*) in India. J. Asia-Pacific Entomol. 9(4): 317-320.

Amannuel, G.S., Kiihne, R.F., Tanner, D.G., Vlek, P.L.G. 2000: Biological nitrogen fixation in faba bean (Vicia faba L.) in the Ethiopian high lands as affected by P fertilization and inoculation. Biol. Fertil. Soils, 32: 353-359

Anonymous, 2018: Bulletin of the Agricultural Statistics, Ministry of Agriculture and Land Reclamation, Economic Affair Sector, Egypt.11 pp. (in arabic).

Brentrup, F., Küsters, J., Kuhlmann, H., Lammel, J. 2001: Application of the life cycle assessment methodology to agricultural production: an example of sugar beet production with different forms of nitrogen fertilisers. European J. of Agronomy, 14 (3): 221-233.

Emosairue, S.O., Nwofia, G.E., Umuetok, S.B.A. 2004: Observation on the Insect complex associated with cowpea (*Vigna unguiculata* (L.) Walk in Umudike, South-eastern Nigeria. Journal of Sustainable Agriculture and the Environment 6(1):38-43.

Filella, I., Penuelas, J. 1994: The red edge position and shape as indicators of plant chlorophyll content, Bio-mass and Hydric Status. Int. J.ofRemoteSensing, 5, 1459-1470.

Hegab, A.M., El-Zohairy, M.M., Attia, A.A., Youssef, A.A.A. 2005: Survey and seasonal abundance of leafhoppers infesting some leguminous crops. Zagazig J. Agric. Res. 32 (5): 1649-1662.

Oliveira, M.R.V., Henneberry, T.J., Anderson, P. 2001 Host, current status, and collaborative research projects for Bemisia tabaci. Crop Protection (20): 709 723.

Safe, I.A., EL-Saied, A.N., Abdel-Whab, H.A., El-Gendy, K.M. 2018: Population Dynamics of the Whitefly, *Bemisia Tabaci* (Gennadius) (Homoptera: Aleyrodidae) on Common Bean, *Phaseolus vulgaris* in Relation to Cultivar, Temperature and Humidity Alexandria science exchange journal, vol. 39, no.2. April-June 2018 298

SAS Institute, 2003: SAS Version 9.1. SAS Institute Inc., Cary, North Carolina.

Selem, Sh.G., Ismail, H.A., Abd-Elsamad, A.A. 2016: Population fluctuations of the main pests infesting kidney beans and its relation with some weather factors Ann. of Agric. Sci., Moshtohor. 54(4): 969976.

Shehata, S.T. 2015: Induction of resistance against *Rhizoctonia* root rot of common bean. J. Plant Prot. and Path., Mansoura Univ.,6 (2): 407–430.

Wains, M.S., Ali, M.A., Hussain, M.; Anwar, J., Zulkiffal, M., Sabir, W. 2010: Aphid dynamics in relation to meteorological factors and various management practices in bread wheat. J. Plant Prot. Res.50:385-392.

Younes, A.A., Soliman, S.M., Saadoon, S.E. 2001: Ecological studies on some sucking insects and mite associated with certain soy green bean cultivars. J. Agric. Sci. Mansoura Univ.; 26: 4551-4558.

Zala, M.B., Patel, C.K., Bharpoda, T.M. 2014: Impact of sowing periods on incidence of sucking pests and their relation to weather parameters in Bt cotton. Ecocan. 6: 345-354.

Table 1: scientific name of insect pests and associated predators recorded on*P. vulgaris* plant during 2020/21 & 2021/22seasons.

Order	Family	Scientific name	Status
Thysanoptera	Thripidae	*Thrips tabaci*	Pest
Hemiptera	Aphididae	*Aphis craccivora*	Pest
	Aleyrodidae	*Bemisia tabaci*.	Pest
Diptera	Agromyzidae	*Ophiomyia phaseoli*	Pest
		Melanogromyza phaseoli	Pest
		Lirimyza trifolii	Pest
Lepidoptera	Noctuidae	*Spodoptera litoralis*	Visitor
		Spodoptera exigua	Visitor
Coleoptera	Coccinellidae	*Coccinella undecim punctate.*	Predator
Neuroptera:	Chrysopidae	*Chrysoperla carnea*.	Predator

Table 2: population fluctuation of *T. tabaci & B. tabaci* and associated predators on *P. vulgaris*:

Inspection date	Insects				climatic factors		
	T.tabaci	B.tabaci	C. carnea	C.undecim punctate	MAX	MIN	Rang R.H%
24/12/2020	9.73	8.92	6.50	5.57	20.35	10.16	54.66
31/12/2020	17.92	10.60	8.22	6.33	22.90	8.34	61.12
07/01/2021	8.96	8.21	6.00	6.60	19.61	8.56	59.19
14/01/2021	7.64	8.24	7.84	5.46	22.40	12.04	57.30
21/01/2021	9.32	7.52	7.13	7.60	20.13	9.59	57.81
28/01/2021	17.44	10.99	7.63	10.22	20.62	8.33	65.25
04/02/2021	11.84	8.07	9.41	13.91	20.07	9.48	62.51
11/02/2021	10.95	9.85	10.50	10.02	24.58	12.29	63.27
18/02/2021	12.51	9.38	11.41	9.30	18.38	7.79	65.63
25/02/2021	13.31	10.80	10.81	11.01	21.71	10.23	70.98
04/03/2021	16.09	14.04	12.42	10.04	25.16	10.71	57.29
11/03/2021	13.65	10.33	9.50	10.94	24.07	13.18	62.81
18/03/2021	11.45	8.87	8.61	6.08	24.09	14.84	48.52
25/03/2021	9.25	7.43	7.29	5.57	22.89	10.46	55.53
01/04/2021	7.68	6.32	6.60	5.58	28.33	13.71	51.17
Total	177.74	139.57	129.87	124.23			

Table 3: population fluctuation of *T. tabaci, B. tabaci* and associated predators on *P. vulgaris*:

Inspection date	Insects				climatic factors		
	T.tabaci	*B.tabaci*	*C.carnea*	*C.undecim punctate*	MAX	MIN	Rang R.H%
24/12/2021	10.20	7.99	7.70	6.17	23.02	10.00	36.34
31/12/2021	18.72	17.11	8.72	7.52	21.34	8.13	45.02
01/07/2022	13.68	8.48	7.20	7.90	23.95	10.66	45.14
14/01/2022	15.88	9.36	7.34	6.26	24.06	10.84	36.61
21/01/2022	13.68	10.12	8.84	9.70	18.22	6.14	40.77
28/01/2022	23.98	19.80	13.34	11.02	20.51	6.31	41.22
04/02/2022	16.08	10.92	10.91	13.10	23.02	9.00	34.84
11/02/2022	15.88	11.08	12.00	11.10	25.29	10.27	41.12
18/02/2022	17.44	11.60	12.31	10.10	18.96	6.47	43.11
25/02/2022	18.40	12.56	10.91	14.10	19.01	6.91	44.99
04/03/2022	32.72	23.22	22.92	12.54	21.34	8.13	45.02
11/03/2022	17.96	12.32	9.00	8.02	25.70	9.48	39.36
18/03/2022	10.60	8.48	7.11	7.00	23.16	8.74	45.95
25/03/2022	8.16	6.16	6.79	6.02	25.35	12.09	39.93
01/04/2022	4.52	3.80	2.10	6.61	26.53	9.48	39.40
Total	237.90	173.00	147.19	137.16			

Table 4: statistical analysis of the effect of certain ecological factors on the population of *T.tabaci* during seasons, (2020/2021) & (2021/2122) on *P.vulgaris*.

years	Source of variation		Simple correlation		Partial regulation				
			r	p	b	p	F	P	Ev %
2020/2021	Daily max. Temp.		-0.052	0.854	-0.065	0. 853	1.48	0.3268	67%
	Daily min. Temp.		-0.364	0.183	-0.563	0.182			
	Daily mean. R.H%		0.478	0.072	0.270	0.017			
	Plant age	Age 1	-0.080	0.769	-2.259	0.343			
		Age 2	-0.150	0.577	0.421	0.221			
		Age 3	0.221	0.425	-0.020	0.760			
		C. carnia	0.480	0.055	-1.120	0.419			
		C. undicium punctata	0.461	0.079	0.150	0.792			
2021/2022	Daily max. Temp.		-0.460	0.082	-1.170	0.082	7.14	0.0138	90%
	Daily min. Temp.		-0.451	0.085	-1.069	0.085			
	Daily mean. R.H%		0.320	0.242	0.601	0.242			
	Plant age	Age 1	-0.120	0.655	-2.970	0.495			
		Age 2	-0.250	0.362	0.800	0.229			
		Age 3	-0.0341	0.205	-0.040	0.120			
		C. carnia	-0.920	0.001	1.380	0.003			
		C. undicium punctata	0.630	0.010	-0.210	0.045			

Table 5: statistical analysis of the effect of certain ecological factors on the population of *B.tabaci* during seasons (2020/2021) and (2021/2122) on *P. vulgaris*.

years	Source of variation		Simple correlation		Partial regulation				
			r	p	b	p	F	P	Ev %
2020/2021	Daily max. Temp.		0.050	0.850	0.038	0.850	6.30	0.018	88%
	Daily min. Temp.		-0.180	0.520	-0.150	0.520			
	Daily mean. R.H%		0.410	0.119	0.135	0.119			
	Plant age	Age 1	-0.040	0.879	2.010	0.069			
		Age 2	0.131	0.626	0.380	0.027			
		Age 3	-0.220	0.411	-0.100	0.015			
		C. carnia	0.691	0.004	-0.550	0.232			
		C. undicium punctata	0.440	0.019	-0.140	0.463			
2021/2022	Daily max. Temp.		-0.480	0.066	-0.930	0.067	5.78	0.023	89%
	Daily min. Temp.		0.520	0.045	-1.470	0.046			
	Daily mean. R.H%		0.370	0.174	0.520	0.174			
	Plant age	Age 1	-0.160	0.568	2.600	0.486			
		Age 2	-0.251	0.352	0.590	0.292			
		Age 3	0.330	0.227	-0.030	0.190			
		C. carnia	0.860	0.001	1.100	0.004			
		C. undicium punctata	0.560	0.028	-0.010	0.979			

التذبذبات العدديه لبعض الآفات الحشريه والمفترسات المصاحبه لها على نباتات الفاصوليا بمحافظه الجيزة- مصر.

محمد كامل عبدالصمد حمزه عبيد

قسم وقاية النبات, كلية الزراعة, جامعة الازهر, القاهرة, مصر.

* البريد الالكتروني للباحث الرئيسي: mohamedhamzah@azhar.edu.eg.

الملخص العربي

أجريت هذة الدراسه بقسم وقاية النبات-كلية الزراعة بالقاهرة - جامعة الأزهر الشريف- مدينة نصر. لدراسة ديناميكيه المجموع الحشري لبعض الآفات الحشريه على نباتات الفاصوليا والاعداء الحيويه المصاحبه لها. الهدف من هذا العمل هو دراسة تأثير بعض العوامل المناخية على ديناميكيه المجموع الحشرى لآفتين حشريتين هما (التربس, والذبابه البيضاء)على محصول الفاصوليا بقرية المنصورية، محافظة الجيزة، مصر. تم عمل حصر للآفات الحشريه التى تصيب محصول الفاصوليا وأوضحت النتائج المتحصل عليها تسجيل ثمانيه أنواع حشريه تابعه لخمس عائلات تتبع أربع رتب حشريه على نباتات الفاصوليا (صنف بوليستا) منهم ثنتان مفترسات حشريه أبى العيد وأسد المن. من خلال النتائج التى تم الحصول عليها سجل كلاً من التربس والذبابه البيضاء ثلاث ذروات على نباتات الفاصوليا خلال العامين على التوالى. سجلت الآفتين الحشرتين أعلى تعداد فى العام الثانى عن العام الأول من حيث الكثافه العدديه على نباتات الفاصوليا.من خلال ربط العوامل المناخيه بالتذبذبات العدديه للآفتين والأعداء الحيويه المصاحبه لها أظهرت النتائج المتحصل عليها أنه, للعوامل المناخيه مشتركه تأثيرعلى التذبذب الحشرى للتعداد متأثر بالعوامل الجويه وخصوصاً درجات الحرارة العظمى ودرجات الحرارة الصغرى والنسبه المئويه للرطوبه وعمر النبات.

الكلمات الاسترشادية: