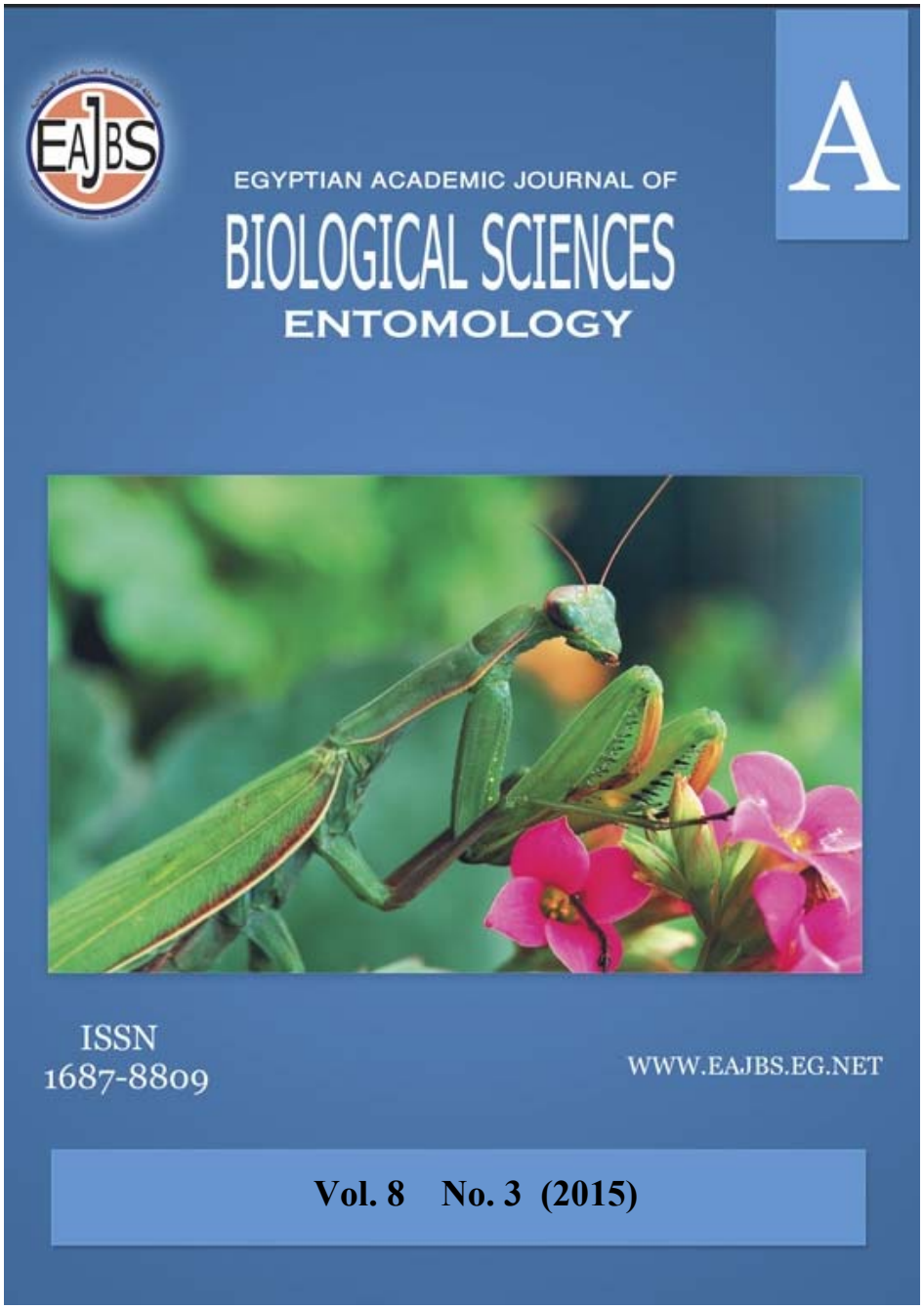

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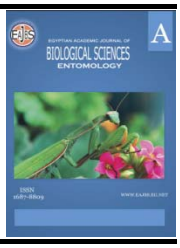

The Impact of Biological and Chemical Control on Certain Piercing Sucking Pests Infesting Cucumber Plants in Qalyiobia Governorate

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ABSTRACT

Field studies were carried out to evaluate the efficacy of two predacious mites, released, *Phytoseiulus persimilis* (Athias–Henriot) and *Esieus scutalis* (A.- H.). Also, different four acaricides, ortus, arrow, killmite and vertimec were evaluated against phytophagous mites, *Tetranychus urticae* Koch, and *T. cucurbitacearum* (Sayed) and insect pest *Thrips tabaci* (lindquist) which attack zena hybrid, variety of cucumber plants in plant protection research institute station, Quaha, Qalyiobia Governorate throughout summer season 2014. The predators were released by bean leaflet harboured the predator individuals. Phytoseiid mite, *P. Persimilis* had a higher influence than *Esieus scutalis* (A.- H.) on the previous mentioned pests. It is revealed reduction percent with mean 90.75 and 73.76% to *Tetranychus urticae,* eggs and mobile stages resp. and 66.62 and 94.76% reduction to *T. cucurbitacearum* at the same stages resp. this is reversed on the yield by occurrence cucumber fruit yields higher for *P. persimilis* treatment than the other treatment, *E. scutalis* which recorded significantly fruit yields with mean count 238.20 kg/fad. The release of predacious mites, *Phytoseiulus persimilis* and *Esieus scutalis* revealed better influence than check to phytophagous mites, *Tetranychus urticae,* and *T. cucurbitacearum* and insect pest *Thrips tabaci.* The application of the different four acaricides revealed similar effectiveness and high influence on two spider mites, *Tetranychus urticae and T. cucurbitacearum*, eggs and mobiles, while these compounds were less effect on the insect pest, *Thrips tabaci.* Treatment, arrow revealed the best for having the highest cucumber fruit yields compared with others which recorded mean counts 353.69 kg/fad. The application of the different four acaricides, ortus, arrow, killmite and vertimec were better than check to control the three mentioned previous pests.

INTRODUCTION

Cucumber is one of the most important cucurbitaceous plants and cultivated in Egypt in open field and under greenhouse. It is infested with many piercing sap sucking pests. So, prevent this problem we applied pesticides but this is led to problems in the world as a result of extensive use of chemical pesticides. Acaricides is one of the most important pesticides problems, as a result to high infestation caused by two-spotted spider mite, *Tetranychus urticae* koch which considered a highly phytophagous pest on many crops. Unfortunatly, spider mite, have developed

resistance to most available pesticides and the loss acaricidal efficacy (Saied & Soultan 2008). *T. urticae,* causes its damage from, sucking plant juices with its piercing – sucking mouth parts causes plants to have small red or bronzed leaves that may dry fall off due to heavy infestations. It effects on the quality of fruits and quantity of the yield7. While *Thrips tabaci*, the infested plant leaves take silver appearance with small size and deformed fruits (Kawai, 1986; Sahimura *et al*., 1986 and Gallo *et al*., 2002). The Integrated Pest Management (IPM) which is based on selective toxicity of pesticides to phytophagous mites and harmless to predatory mite, become the most relevant strategy of plant protection (Leake, 2000; Linquist, 2000). Combining tactics involving reduced-risk pest pesticides and selective release of predatory mites may yield more acceptable control of two spotted spider mite while maintaining predatory mite populations in the field (Rhodes *et al.,* 2006). The predatory *Phytoseiulus persimilis* (Athias–Henriot) is an economically important species in integrated pest management and biological control of spider mites in many countries throughout the world, so it's important to know if acaricides have adverse undesirable effects on the predatory mite (Nadimi *et al.,* 2008). The present study was conducted the effectiveness of releasing two predator mites, *Phytoseiulus persimilis* and *Amblyseius gossypiias* as biological control and different four acaricides, ortus, arrow, killmite and vertimec as chemical control to suppress the populations of two spotted spider mites, *Tetranychus urticae ,T. cucurbitacearum* and insect pest *Thrips tabaci* on cucumber plants under field condition.

MATERIAL AND METHODS

Seed of "zena hybrid" variety of cu*cumber* (C*ucumis sativus* L.) were planted on March, 15th in summer season 2014, in plant protection research institute station, Quaha, Qalyiobia Governorate. The experimental area was about 125.28 m^2 divided into 21 equal plots of about 3.6m^2 each and having six different treatments and control. Each plot with two ridges of 3 meters long and 60 cm. apart. Plots were distributed in randomized complete block design with three replicate for each treatment. The tested treatments were used follow:

Biological control treatments:

obtained from their mass rearing on spider mites *T. urticae* Koch on bean plants *Phaseolus vulgari*s (L.) in a laboratory of the Plant Protection Research Institute. Individuals of the two predators were released on May 6th for this season, when each plant host of 5-7 true leaves. The predator release was carried out with bean leaflet harbouring the predator 10-12 individuals per leaflet. Randomized samples of 10 of two inches square of leaves per replicate were investigated just before the predator release to record the number of eggs and movable stages of *T. urticae, T. cucurbitacearum* and *T. tabaci*, nymphs and adults as pretreatment count, while posttreatment counts were undertaken weekly until the harvest.

Chemical control treatments:

1) Ortus super (fenpyroximate) applied at rate 50 cm^3 / 100L.water
2) Arrow (abamectin) applied at rate 40 cm^3 / 100L.water
3) Killmite (abamectin) applied at rate 40 cm^3 / 100L.water
4) vertimec (abamectin) applied at rate 40 cm^3 / 100L.water

All tested compounds were applied at low volume sprays compounds were applied at low volume sprays at the rate of 100 L. of spray solution per fadden and done once on May 6th.

For examination the spider mites eggs, mobile stages and *T. tabaci,* nymphs

and adults. Randomly samples of 10 of two inches square of leaves were taken just before acaricide application and after one, three, five, seven, ten and fourteen days from application. Each 2 inches^2 of leaf was inspected on their upper and lower surface.

Percentage of reduction in mite and insect populations for each acaricides and predators were calculated according to Henderson and Tilton equation (1955).

Statistical analysis:

Statistical analysis for ANOVA was carried out by using SAS 9.3.1 portable. Whereas the means were compared through LSD tests, least significant differences at p: 0.05 level.

RESULT AND DISCUSSION

The impact of biological and chemical control:

Data presented in Table (1): Show the *reduction* percent in *the popu*lation densities of spider mites, *Tetranychus urticae* Koch eggs and mobile stages which infested cucumber plants (*Cucumis sativus* L) induced by release of predacious mites, *phytoseiulus persimilis (*Athias–Henriot) and *Esieus scutalis (A.- H.)* in summer season, 2014. Phytoseiid mite, *P. persimilis* appeared more efficient than *Esieus scutalis* to reduce *T. urticae* eggs and mobile stages *by* means 90.75 and 73.76% *reduction* to eggs and mobile stages, respectively, compared with control.

Table 1: The effect of predacious mites, *Phytoseiulus persimilis* and *Esieus scutalis* on the population density of the two spotted spider mites, *Tetranychus urticae* Koch infesting cucumber plants throughout summer season, 2014.

inspections	*P. persimilis*				*E. scutalis*				Control	
	T. urticae				*T. urticae*				*T. urticae*	
	Egg	reduction %	Individual	reduction %	Egg	reduction %	Individual	reduction %	Egg	Individual
03/05/2014	11.03		6.50		4.43		4.00		0.40	1.17
06-مايو	8.87	69.94	5.03	28.71	2.70	77.22	3.03	30.21	1.07	1.27
13-مايو	3.17	92.68	1.87	76.46	2.60	85.05	2.23	54.39	1.57	1.43
20-مايو	2.75	97.88	1.21	95.46	1.94	96.27	1.77	89.21	4.70	4.80
27-مايو	12.87	96.65	8.03	84.57	9.77	93.67	4.17	86.98	13.93	9.37
03-يونيو	29.54	96.61	23.94	83.62	24.40	93.04	17.30	80.76	31.64	26.30
mean	**11.37**	**90.75**	**7.76**	**73.76**	**7.64**	**89.05**	**5.42**	**68.31**	**8.88**	**7.39**

L. S. D., Egg 4.79
Individual 2.88
L. S. D., reduction %
Egg 14.6
Individual 37.57

While *E. scutalis* shown less reduction by means 89.05 and 68.31% reduction to the same previous mentioned stages resp. This data agree with Rasmy & Ellaithy (1988), They recorded that the Phytoseiid mite, *P. persimilis* were more effective than *P. finitimus* Ribaga and *A. gossypii* Elbadry when released on cucumber plants in green house, infested by *T. urticae* Koch. Also Oatman *et al.,* (1977). They recorded, when released each of *Phytoseiulus persimilis (*Athias–Henriot) and *Amblyseius californicus* (Me Greger) and *Typhlodromus occidentalis* (Nesbitt) on strawberry plants, infested with *T. urticae* Kochin southern California, *P. persimilis* demonstrated the most effectiveness compared with other predators to suppressing *T. urticae* populations. Data in this Table, also, refer to the reduction percent of *P. Persimilis & E. scutalis* were higher on *T. urticae* eggs than moving stages. Md. Fazlulhoque *et al.,* (2010). They recorded that the consumption of *T. urticae*, eggs

and larvae by *P. persimilis* were more than other stages of prey. The highest number of eggs, larvae and nymphs consumed by predator in 24 hours was 16.3±0.42, 9.9 ± 0.59 and 9.5 ±.40 ,respectively. Whereas, the highest number for them in 48 hour was 19.5± 1.15, 18.6± 0.62 and 13.3± 0.65 resp.

Statistical analysis of data show significant differences between inspections in *T. urticae*, eggs and mobile stages throughout the season.

Data in Table (2): Summarizes the reduction percent in the population density of the mites, *T. cucurbitacearum*, eggs and mobile stages induced by release of the predacious mites, *P. persimilis* and *E. scutalis*. The acheived reduction were 66.62 and 94.76% to *T. cucurbitacearum,* eggs and mobile stages, resp. compared with control, due to the prediction by *Phytoseii dmite,* and *P. persimilis*. While, the reduction achieved by *E. scutalis* were 64.14 and 94.00% at the same previous mentioned stages resp.

Table 2: The effect of predacious phytoseiid mites, *P. persimilis* and *Esieus scutalis* on the population density of spider mites, *T. cucurbitacearum* (sayed) infesting cucumber plants throughout summer season, 2014.

inspections	*P. persimilis*				*E. scutalis*				*Control*	
	T. cucurbitacearum				*T. cucurbitacearum*				*T. cucurbitacearum*	
	Egg	reduction %	Individual	reduction %	Egg	reduction %	Individual	reduction %	Egg	Individual
03/05/2014	1.53	_	0.20	_	1.47	_	0.23	_	0.63	0.01
06-مايو	0.83	57.28	0.13	78.33	0.93	50.18	0.13	81.16	0.80	0.03
13-مايو	0.70	71.18	0.03	98.50	0.87	62.71	0.07	96.96	1.00	0.10
20-مايو	0.00	100.00	0.00	100.00	0.30	92.11	0.03	99.23	1.63	0.17
27-مايو	2.13	66.27	0.23	99.62	2.17	64.23	0.27	96.44	2.60	0.33
03-يونيو	2.13	38.35	0.30	97.37	3.77	51.48	0.50	96.19	3.33	0.57
mean	**1.22**	**66.62**	**0.15**	**94.76**	**1.58**	**64.14**	**0.21**	**94.00**	**1.67**	**0.20**

L. S. D., Egg 0.87
Individual 0.1
L. S. D., reduction %
Egg 28.9
Individual 12.13

Statistical analysis of data show significant differences between inspections in *T. cucurbitacearum,* eggs and mobile stages throughout the season.

Data in Table (3) showed the application of acaricides, ortus, arrow, killmite and vertimec to phytophagous mites*, T. urticae, T. cucurbitacearum and insect pest, Thrips tabaci*. These compounds were highly influence on different stages of two spider mite, *T. urticae* and *T. cucurbitacearum than insect pest, Thrips tabaci.* The reduction percent of ortus, arrow, killmite and vertimec to *T. urtica,* eggs were with means 99.94, 99.97, 99.97 and 99.84% reduction, respectively. Statistical analysis of data show significant differences between inspections in treatments, ortus, Arrow, and vertimec while, Killmite treatment was insignificant difference between inspection*s.*

T. urtica, mobiles related with mean reductions 99.94, 99.78, 99.89 and 99.89% for the same acaricides, resp. Statistical analysis of data show significant differences between inspect*ions* in acaricide treatments, except for ortus treatment*.* *T. cucurbitacearum*, eggs were connected with mean reductions 99.60, 99.66, 99.52 and 99.65% for the same acaricides, resp. Statistical analysis of data show significant differences between inspections in all treatments of acaricides. *T. cucurbitacearum,* mobiles were contributed with means 97.81, 95.21, 99.68 and 96.54% reductions for the same previous mentioned compounds, resp. Statistical

analysis of data show significant differences between inspections in acaricide treatments, except for killmite treatment. These compounds revealed less reductions to *T. Tabaci (*nymphs & adults) compared with their influences on two spider mites *T. Urticae* and *T. cucurbitacearum* and related with means 69.53, 74.18, 62.05 and 80.48% reductions for the same previous mentioned compounds, respectively. Statistical analysis of data show significant differences between inspect*ions* in acaricide treatments, except for killmite treatment.

Table 3: The impact of four acaricides on phytophagous mites, *T. urticae*, *T. cucurbitacearum* and insect pest, *T. tabaci* infesting cucumber plants, during summer season, 2014

Inspection	Acaricide	*T. urticae*				*T. cucurbitacearum*				*T. tabaci*	
		Egg	Reduction %	Mobile	Reduction %	Egg	Reduction %	Mobile	Reduction %	Nymph & Adult	Reduction %
Before spray	**Ortus**	4.70	_	5.43	_	1.13	_	0.23	_	9.23	_
After 1 day		0.03	99.98	0.00	100.00	0.00	100.00	0.00	100.00	4.53	74.06
After 3 day		0.07	99.98	0.10	99.95	0.17	99.62	0.02	98.26	5.45	72.79
After 5 day		0.18	99.95	0.15	99.94	0.32	99.60	0.03	98.14	5.95	70.91
After7 day		0.67	99.94	0.20	99.93	0.41	99.56	0.08	97.32	7.01	69.82
After10 day		1.02	99.90	0.54	99.91	0.71	99.41	0.11	96.81	10.51	65.47
After14 day		1.63	99.87	0.90	99.89	1.47	99.39	0.17	96.30	12.77	64.13
Mean		**1.19**	**99.94**	**1.05**	**99.94**	**0.60**	**99.60**	**0.09**	**97.81**	**7.92**	**69.53**
Before spray	**Arrow**	5.43	_	5.77	_	1.00	_	0.13	_	10.40	_
After 1 day		0.00	100.00	0.03	99.97	0.00	100.00	0.00	100.00	4.02	79.57
After 3 day		0.01	100.00	0.10	99.93	0.03	99.93	0.03	95.38	5.38	76.16
After 5 day		0.03	99.99	0.14	99.91	0.07	99.90	0.05	94.51	5.90	74.40
After7 day		0.23	99.98	0.74	99.64	0.30	99.64	0.10	94.08	6.78	74.09
After10 day		0.80	99.94	1.62	99.62	0.80	99.25	0.12	93.85	8.92	73.99
After14 day		1.40	99.90	2.43	99.58	1.63	99.23	0.17	93.46	13.30	66.84
Mean		**1.13**	**99.97**	**1.55**	**99.78**	**0.55**	**99.66**	**0.09**	**95.21**	**7.81**	**74.18**
Before spray	**Killmite**	11.07	_	13.1	_	1.13	_	0.33	_	8.50	_
After 1 day		0.00	100.00	0.03	99.99	0.00	100.00	0.00	100.00	5.64	64.93
After 3 day		0.10	99.99	0.17	99.94	0.17	99.62	0.00	100.00	6.53	64.60
After 5 day		0.27	99.97	0.26	99.93	0.34	99.57	0.00	100.00	6.82	63.80
After7 day		1.02	99.96	0.80	99.83	0.57	99.39	0.01	99.77	8.52	60.16
After10 day		1.64	99.94	1.71	99.82	0.86	99.29	0.03	99.39	11.23	59.93
After14 day		2.07	99.93	2.51	99.81	1.78	99.26	0.07	98.94	13.49	58.85
Mean		**2.31**	**99.97**	**2.65**	**99.89**	**0.69**	**99.52**	**0.06**	**99.68**	**8.68**	**62.05**
Before spray	**Vertimec**	2.67	_	2.40	_	1.40	_	0.13	_	8.43	_
After 1 day		0.00	100.00	0.07	99.99	0.00	100.00	0.00	100.00	3.20	97.94
After 3 day		0.13	99.92	0.20	99.94	0.05	99.91	0.01	98.46	3.70	79.78
After 5 day		0.23	99.89	0.28	99.93	0.33	99.66	0.03	96.70	3.80	79.66
After7 day		1.40	99.78	0.47	99.83	0.56	99.52	0.06	95.38	4.69	77.89
After10 day		1.83	99.74	1.50	99.82	0.82	99.45	0.10	94.87	6.76	75.68
After14 day		2.30	99.68	2.24	99.81	1.85	99.38	0.16	93.85	9.13	71.92
Mean		**1.22**	**99.84**	**1.02**	**99.89**	**0.72**	**99.65**	**0.07**	**96.54**	**5.67**	**80.48**
Before spray	**Control**	0.01	_	0.03	_	0.01	_	0.01	_	3.70	_
After 1 day		0.53	_	0.47	_	0.03	_	0.03	_	7.00	_
After 3 day		0.63	_	0.77	_	0.40	_	0.05	_	8.03	_
After 5 day		0.80	_	0.87	_	0.70	_	0.07	_	8.20	_
After7 day		2.37	_	1.07	_	0.83	_	0.13	_	9.31	_
After10 day		2.60	_	2.23	_	1.07	_	0.15	_	12.20	_
After14 day		2.70	_	3.03	_	2.13	_	0.20	_	14.27	_
Mean		**1.38**	_	**1.21**	_	**0.74**	_	**0.09**	_	**8.96**	_
LSD		**2.42**	0.08	2.77	0.13	0.7	0.33	0.09	2.19	3.28	6.66

This data agree with Reddy *et al*. (2014), they recorded that the bio-efficacy, abamectin and acaricide, fenpyroximate showed 100% mortality to *T. urticae* which infested chrysanthemum on days 5,10 and 15 in first season. In second trial, abamectin reported 100% mortality to on day 7, 10 and 15. Also, Aly *et al*. (2013), they applied two acaricides (fenpyroximate and cyhalothrin) and two plant extract (black cumin and worm seed) on *Tetranychu surticae Koch* eggs and adults. The result indicated that cyhalothrin and fenpyroximate showed the highest toxicity, while worm seed extract was the least toxic on them.

Effect of yields:

Data presented in Table (4), show relationship between phytoseiid predacious mites, *P. persimilis* and *E. scutalis* and the resultant yields. Treatment with *P. persimilis* revealed significantly higher cucumber fruit yields than the treatment, *E. scutalis* by mean 238.20 kg/fad., compared with control. This is due to their higher reduction to phytophagous mites, *T. urticae* and *T. cucurbitacearum* than the other predator, *E. scutalis.*

Data in Table (5), demonstrated the effect of different four acaricides on the cucumber yield crops throughout the summer season 2014. Treatment, arrow carried out significantly the highest yield of cucumber fruits with mean 353.69 kg/fed compared with control. While, treatment, vertimec revealed insignificantly the least yields of cucumber fruits with mean 238.00 kg/fad. On the other hand, treatments, ortus and killmite shown significantly intermediate of cucumber fruit yields with means, 330.40 and 294.19 kg/fad., respectively compared with control.

Table 4: The mean count of cucumber fruit yields (kg/fad) for predacious mite treatments in summer season, 2014.

Treatment	*E. scutalis*	*P. persimilis*	Control
1st replicate	186.67	204.17	61.25
2nd replicate	233.33	272.22	81.67
3rd replicate	175	217.78	65.34
Mean	198.33	238.20	69.42
LSD	56.11		

Table 5: The mean count of cucumber fruit yields (kg/fad) for Acaricides compounds in summer season, 2014.

Treatment	Ortus	Arrow	Killmite	Vertimec	Control
1st replicate	310.63	332.89	259.58	224	61.25
2nd replicate	388.89	416.11	346.11	280	81.67
3rd replicate	291.67	312.08	276.89	210	65.34
Mean	330.4	353.69	294.19	238	69.42
LSD	78.34				

CONCLUSION

The present study aimed to reach suitable control programs to control the important piercing sap sucking pests {*Tetranychus urticae Koch, T. cucurbitacearum* (Sayed) and *Thrips tabaci* (lind.)} infested cucumber plants by using biological control *(P. persimilis* and *E. scutalis*) and chemical control (ortus, arrow, killmite and vertimec). *C*ucumber plants were planted on March, 15th throughout summer season 2014 in plant protection research institute station, Quaha, Qalyiobia Governorate. Phytoseiid mite, *P. persimilis* revealed higher influence than *E. scutalis* on the populations of the pests and give higher cucumber fruits than it. Also, acaricide, arrow resultant the best treatment to reduce the population density of the pests and give the highest yield of cucumber fruits as compared to the other treatments.

REFERENCES

Aly S. Derbalah, Attiah Y. Keratrum; Madeha E. El-Dewy; Elhussein H. El-Shamy (2013). efficacy of some insecticides and plant extracts against *tetranychus urticae* under laboratory conditions Egy. J. Plant Pro. Res. 1(3) 2013.

Gallo, D.; Nakano, O.; Silveira Neto, S.; Carvalho, R. P. L.; Batista, G. C.; Berti Filho, E.; Parra, J. R. P.; Zucchi, R. A.; Alves, S. B.; Vendramim, J. D.; Marchini, L. C.; Lopes, J. R. S. and Omoto, C. (2002). Manual de.entomologia agrícola. Piracicaba: FEALQ. 920 pp.

Hinderson, C. F. and Tilton, E. W. (1955). Test with acaricides against the wheat mite. J. Econ. Entomol., 49: 157-161.

Kawai, A. (1986). Studies on population ecology of *Thrips palmi* Karny. XII. Analyses of damage to eggplant and sweet pepper. J. Appl. Entomol. Zoo., 30:179-187

Leake, A. (2000). The development of integrated crop management in agricultural crops: Comparisons with conventional methods. Pest Manage. Sci., 56: 950-953.

Linquist, D. A. (2000). Pest Management Strategies: Area-Wide and Conventional. In: Area-Wide Control of Fruit Flies and Other Insect Pests, Tan, K.H. (Ed.). Penerbit University Sains Malaysia, Penang, Malaysia, pp: 13-20

Md. FazlulHoque, Md. Wahedul Islam and M. Khalequzzaman (2010). Functional response of *Phytoseiulus persimilis* Athias-Henriot to *Tetranychus urticae* Koch: effects of prey life stages and temperature Univ. j. zool. Rajshahi. Univ., 29:1-8.

Nadimi, A., K. Kamali, M. Arbabi and F. Abdoli (2008). Side-effects of three acaricides on the predatory mite, *Phytoseiulus persimilis* Athias-Henriot under laboratory conditions. Munis with special emphasis on insects. Oxford University Entomology and Zool., 3(2): 556-567.

Oatman E. R., McMutry, j. A.; Gils trap, F. E. and Voth, V. (1977). Effect of releases of *Amblyseius californicus*, *Phytoseiulus persimilis*, and *Typhlodromus occidentalis* on the two spotted spider mite on strawberry in Southem California Journal of Economic Entomology, 70(1):45-47.

Rasmy A. H. and. Ellaithy A.Y. M. (1988). Introduction of *Phytoseiulus persimilis* for two spotted spider mite control in greenhouses in Egypt [*Acari: Phytoseiidae, tetranychidae*] Entomophaga, 33(4):435-438.

Reddy S.G. E., Chauhan Urvashi, Kumari Sapana, Nadda Gireesh and Singh M.K. (2014). Comparative Bio-efficacy of Acaricides against Two Spotted Spider Mite, *Tetranychus urticae* (Koch) on Chrysanthemum in PolyhouseInt. J. Res. Chem. Environ., 4(4): 15-19.

Rhodes E. M., Liburd O. E., Kelts C. and Rondon S. I., (2006). Comparison of single and combination treatments of *Phytoseiulus persimilis, Neoseiulus californicus* and acramite (bifenazate) for control of two-spotted spider mites in strawberries, *Exp. Appl. Acarol.,* 39:213–225.

Saied Alzoubi and Sultan Cobanoglu (2008). Toxicity of Some Pesticides Against *Tetranychus urticae* and its Predatory Mites Under Laboratory conditions. American-Eurasian J. Agric. & Environ. Sci., 3(1): 30-37.

Sakimura, K.; Nakahara, L. M. and Denmark, H. A. (1986). A thrips: *Thrips palmi* Karny (Thysanoptera: Thripidae). Entomol. Circ. Fl. Dept. Agric. Consum Serv. Div. Pl. Indus., 280, 4 pp..

SAS Institute Inc. (1992). SAS/STAT users guide. Version 6.Fourth Edition. Volume I, Cary. NC: SAS Institute Inc., 943 pp.

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ثاثير المكافحة الحيوية والكيماوية على الافات الثاقبة الماصة التى تصيب نباتات الخيار فى محافظة القليوبية

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أظهرت الدراسات الحقلية لتقييم نوعين من المفترسات الاكاروسية. ***Phytoseiulus persimilis*** ***(H. A)***، ***Esieus scutalis (A.- H.)*** ايضا تقييم كفاءة اربع مبيدات اكاروسية مختلفة هى **ortus** ، **arrow**، **killmite**، **vertimec** على الاكاروسات النباتية ***Tetranychus urticae*** ***Koch***، ***T. cucurbitacearum (sayed)*** والافة الحشرية ***Thrips tabaci (lindquist)*** التى تصيب نباتات الخيار، صنف زينا هجين، بمحطة معهد بحوث وقاية النباتات – قها - بمحافظة القليوبية، خلال الموسم الصيفى ، 2014.

تم اطلاق المفترسات الاكاروسية بواسطة وريقات الفاصوليا وتشير النتائج الى ان المفترس ال، ***P. persimilis*** على كفاءة بمقارنته بالمفترس الأخر ***E. scutalis*** ، فقد حقق معدل أختزال قدرة 76,75، 73,90 لكل من البيض والاطوار المتحركة للعنكبوت على الترتيب ، 66,62، 94,76% نسبة خفض لل ***T. cucrbitacearum*** لنفس الاطوار على الترتيب. بينما اظهر المفترس الاكاروسى ***E. scutalis*** اختزالات فى تعداد الافات السابقة الذكر كالاتى: 89,05، 68,31% اختزالا للعنكبوت الاحمر ***T. urticae*** بيض والاطوار المتحركة على الترتيب ، 94,00، 64,14% اختزالا للـ ***T. cucrbitacearum*** لنفس الاطوار على الترتيب. انعكس ذلك على المحصول الناتج بزيادة ثمار محصول الخيار بمعاملة ***P. persimilis*** عن معاملة ***E. scutalis*** بمتوسط قدرة 238,20 كم/ للفدان بينما المعاملة الاخرى سجلت زيادة قدرها 198,33 كم/ للفدان. أظهر أطلاق المفترسات الاكاروسية السابقة الذكر تاثير افضل من الكنترول (**check**) على كل من العنكبوت الاحمر بنوعية.

أظهر تقييم كفاءة اربع مبيدات اكاروسية تاثيرات مشابهة وذات تاثير مرتفع على نوعى العنكبوت الاحمر ***Tetranychusurticae Koch***، ***T. cucurbitacearum (sayed)*** لطورى البيض و الاطوار المتحركة بينما تاثيراتها على الافة الحشرية ***T. tabaci*** **(lind.)** كانت أقل تاثيرا. أظهرت المعاملة **arrow** الافضل لارتباطها معنويا باعلى محصول من ثمار الخيار بالمقارنة بباقى المعاملات الاخرى وذلك بتسجيلها بمتوسط عددى 353,69كم/فدان. كما ارتبط معاملات المبيدات الاكاروسية بتاثير افضل من الكنترول فى نقص اعداد الافة وزيادة المحصول.