A TRIAL FOR RATIONAL CHEMICAL CONTROL OF RED SPIDER MITE AND BEANFLY ATTACKING THREE VARIETIES OF THE BEAN PLANTS

ATEF A. A. ABD –ALLAH

Plant Protection Research Institute , ARC, Dokki, Giza

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Abstract

The suitability feeding and tolerance of three varieties of Snap bean, (*Phaseolus vulgaris* L.) namely Giza 6, Paulista and Bronco to infestation with red spider mite, *Tetranychus urticae* (Koch) and beanfly, *Ophiomyia phaseoli* (Tryon) was studied. The efficacy of imidaclopride (Gaucho), and other three pesticides thiocyclam (Evisect), imidaclopride (pestidor) and bensultap (Bancol) against two previous pests were also investigated in Horticultural Research Station,El-Kassasein, Ismailia Governorate, during 2007 and 2008 seasons. The obtained results revealed that:

1. Giza 6 variety was the least feeding suitability leading to infestation with two pests where it was infested with the lowest populations of two pests and gave highest green pods yield, while Bronco was the least one.
2. Bensultap at recommended rate reduced the population of *T. urticae* and *O. phaseoli* on Giza 6 variety (treated and untreated with Gaucho) by (73.29 and 68.93) and (43.35 and 40.35) as general mean of % reduction (GR%) at 2007 season, respectively. Bensultap at 0.5 R,1 R and 1.5 R on Giza 6 variety induced good results at 2008 season also causing 51.73, 84.63 and 83.48 as (GR%) in population of mite and 59.3, 72.91 and 80.65 as (GR%) in mines of beanfly, respectively. Giza 6 variety treated with imidaclopride (Gaucho) and sprayed with bensultap produced the highest yield of green pods.
3. Thiocyclam and imidaclopride caused the lowest reduction in mite and beanfly populations attacking Bronco variety (untreated with Gaucho) which recording 24.67, 28.62(GR %) and 42.26, 30.73(GR %) in 2007 season, respectively.
4. Paulista variety came in the intermediate between Bronco and Giza 6 varieties to infestation with both *T. urticae* and O. *phaseoli* at two seasons.
5. Giza 6 variety harboured the highest populations of four natural enemies (*C.septempunctata*, *Stethorus sp., Scolothrips longicorus* and *Phytoseiulus sp.*) in both seasons which recorded total numbers 130 and 90 individuals for two seasons respectively, while Bronco variety harboured the lowest populations of four natural enemies for two seasons which recorded total numbers 92 and 58 individuals for two seasons, respectively. Therefore, Snap bean seeds treated with imidaclopride (Gaucho) and sprayed with the natural insecticide bensultap for producting succeed bean crop and reducing environmental pollution.

INTRODUCTION

The snap bean, *Phaseolus vulgaris*, is an important useful leguminous crop in Egypt as well as in many other countries.Unfortunately the production of Snap bean is affected by many factors including insects such as, beanfly (Karel and Maghogho, 1985). In Egypt, Snap bean is cultivated in a large scale areas at Ismailia Governorate either for export or local consumption (Omar and Faris 2000). The snap bean plants are liable to attack by many pests such as beanfly and mite, which caused direct injuries to plants and loss of yield whether quality or quantity (Voicun *et al*., 1994). The vegetable beanfly *O. phaseoli* (Tryon) is a serious pest of vegetable crops worldwide . Rational chemical control of this pest had limited success (Ibrahim and AbdEl-Moity, 1997).

Recently, an interesting demand for insect control was adopted using environment friendly chemicals with a low pest management rating as spray or seed treatment (Salem *et al*., 1998).

The present work was directed to evaluate the efficacy imidaclopride (Gaucho) as seed treatment tested singly and followed by other three pesticides used as thiocyclam, bensultap and imidaclopride (pestidor) against mite, *Tetranychus urticae* (Koch) and beanfly, *Ophiomyia phaseoli* (Tryon).

MATERIALS AND METHODS

Tested pesticides

1. Thiocyclam (Evisect 50 % SP, Novarts) (N, N- dimethyl- 1, 2, 3 – trithion – S-amine. A noval class of insecticides related to neurotoxin, a naturally occurring extract from marine annelids. It was applied at rate (125 gm/ 100 liter water).
2. Bensultap (Bancol 50% WP) natural insecticide, it was provided by Taked Chemical Industries, S,S-2- dimethyl amino tri methylene di (benzene thiosulfonate). It was applied at rate (150 gm/ 100 liter water).
3. Imidaclopride (Pestidor 25% WP, Syngenta) 1- (6 –chloro -3-pyridylmethyl)-N-nitroimidazolidin-2-ylideneamine. It was applied at rate (100 gm /100 liter water).
4. Imidaclopride (Gaucho 70 % WS, Syngenta) (1-{ (5-chloro-3-pyridinyl)}-N-nitro-1H- imidazole-2-amine . It was applied at rate (3 gm / 1 kg seeds).

Field experiments

Field trials were conducted at Horticultural Research Station, El-Kassasein, Ismailia Governorate during the winter plantation (under plastic tunnels) seasons2007 and 2008.

Seeds of three Snap bean varieties viz Giza 6, Paulista and Bronco were sown at 18th and 10th of January 2007 and 2008, respectively. The cover plastic sheet was removed daily in the morning and turn back again afternoon. The experimental area was divided into 72 and 117 plots of about 4 x 5 m each for the two tested seasons, respectively. The three tested insecticides were sprayed with a knapsack sprayer at the rate of 200 Liter/ feddan.

Insecticide treatments

- The 1st treatment (T1): The seeds of three bean varieties were treated with Gaucho immediately before sowing , the plants were sprayed with the other three tested pesticides separately.
- The 2nd treatment (T2): The seeds of three bean varieties were treated only with Gaucho and did not sprayed later.
- The 3rd treatment (T3): The seeds of three bean varieties did not treated with Gaucho but plants sprayed with three tested pesticides separately.
- The 4th treatment (T4): The seeds and plants of the three tested bean varieties were left to grow normally without any pesticidal treatments (Untreated check).

In the 1st season the agricultural practices were conducted normally. A complete randomized block design was used for the experimental field. Each treatment was replicated 3 times. Samples of 10 bean leaflets each were taken at random from plants of each plot, three from lower, four from middle and three from upper parts. The number of plant samples taken before spraying were 5 samples. Samples were taken immediately, before spraying and after 2, 5 and 7th days of insecticides application . The 2nd spray was applied after seven days of the first one and the samples were taken after2, 5, 7, 14 and 21 days of the second spray.

In the 2nd season the same protocol of inspection was done except the number of samples taken before spraying were increased to 7 samples and the used rates of Gaucho were the recommended rate (R) only (3 gm Gaucho / 1 kg bean seeds) as in the 1st season, the half recommended (0.5R) and (1.5 R). The plant samples were transferred to lap. and examined by binocular microscope to counting number of *O. phaseloi* larvae inside the mines between the upper and lower surface, also to record the moving stages of mite per leaflet on the lower surfaces of each and their associated natural enemies . The efficacy of Gaucho as a seed treatment without any compounds used was calculated according to Abbott's (1925), while the tested pesticides used later were calculated according to Henderson and Tilton (1955).

The green pods yield was also calculated for each treatment and the results were statistically analyzed according to the analysis of variance methods (Snedecor and Cochran, 1971).

RESULTS AND DISCUSSION

The efficiency of Gaucho and other three insecticides (thiocyclam, bensultap and imidaclopride) on mite and beanfly was evaluated in two field trials during 2007 and 2008 seasons at Horticultural Research Station, El - Kassasein, Ismailia Governorate. The number of two pests population and so the reduction percentages of infestation were calculated.

I. First season (2007)

The results presented in Tables (1 and 2) revealed the suitability feeding and tolerance of the three tested bean varieties to infestation with *T. urticae* and *O. phaseoli*.

A. Effects of seed treatment (Effect of Gaucho)

Effect of Gaucho on the three bean varieties against two tested pests was good, where it significantly reduced the population densities of two pests compared with untreated check.

Giza 6 variety was more tolerance and low suitable food for two pests than to other two varieties, the population of *T. urticae* and *O. phaseoli* decreased by 54.61 and 51.49% reduction respectively, while the %R in population were decreased by 37.28, 28.11 for *T. urticae* and 37.95, 32.72 for *O. phaseoli* in paulista and bronco varities, respectively. These clearly indicated that, Bronco variety was the lowest tolerance and own high suitability feeding for two pests than to other two varieties. Paulista variety was intermediate between to other two varieties.

This is in agreement with the results of Abbassy *et. al*. (2008) who cited that seed dressing with Gaucho significantly reduced leafminer larval in common bean fields and gave good protection up to 6 weeks from sowing.

B. Effects after spray

1. Effects of the 1st treatment (T1)

Bensultap was exceeded than two other pesticides which reduced the population of *T. urticae* and *O. phaseoli* specially on Giza 6 variety treated with Gaucho, it gave as a general mean of percent reduction (GR%) 73.29 in mobile stages/leaflet for mite and 68.93 %R in mines containing a live larvae for beanfly.

These reslutes are in agreement with those obtained by El-Bessomy (1998), who mentioned that the natural insecticide bensultap at recommended rate (150 gm /100liter water) reduced significantly the population of the beanfly *O. phaseoli*.

Bronco variety treated with Gaucho was more suitable than Giza 6 variety to infestation with two pests when sprayed with thiocyclam which recorded 55.12 and 68.22 GR% in mobile stages/leaflet & recorded 48.58 and 61.78 GR% in mines/10

leaflets respectively, while thiocyclam on Paulista recorded 55.89 and 58.34 GR% in population of two pests, respectively.

These results are in agreement with Omar and Faris (2000), who found that Bronco variety was more susceptible for infesting with beanfly than Paulista. Thiocyclam reduced the number of *L. trifolii* in Paulista than Bronco. It's recorded 94.68% and 88.75% reduction, in beanfly population, respectively.

2. Regarding the results obtained for bean varieties which seeds treated with Gaucho only and did not sprayed later (T2), three bean varieties were more infested by two tested pests indicated from mean numbers (**) at the end of season than (T1) where Giza 6 variety was the lowest infestation with two pests then Paulista then Bronco which infested by 7.28, 7.38 and 8.71 individuals/ leaflet for mite and 4.98, 6.00 and 7.99 mines / 10 leaflets, respectively.

Previous results lead to the speculation that the three tested bean varieties differ in their suitability to infestation with *T. urticae* and *O. phaseoli* according to general mean number of populations.

Data obtained seem to go in line with the findings of Omar *et al*., (1994), who revealed that the cucumber seeds treated with Gaucho induced more than 80% reduction in the number of larvae, pupae and adults for a period of 4 and 6 weeks for the egg of *B. tabaci*, but EL-Defrawi *et al*., (2002),found that pre-sowing seed treated with Gaucho (imidaclopride 70% WSP), at a rate 3 g/ kg seed weight was superior performance against cowpea aphid through 12 weeks after sowing, and gave over 80% reduction in number of larvae, pupae and adults for a period of 4 and 6 weeks for the egg of *B. tabaci*.

3.Concerning to (T3), the results indicated that, the three tested compounds showed acceptable control for the two pests. Giza 6 variety was the first one when sprayed by bensultap, while Bronco variety was the lowest tolerance, where it's recorded (1.51, 43.35 and 2.06,42.86)as a mean number of individuals / leaflet (**) and GR% for mobile stages of mites and recorded (3.67, 40.35 and 3.88, 47.05) as a mean number of mines / 10 leaflets(**) and GR%, respectively. Thiocyclam when sprayed on Giza 6, Paulista and Bronco varieties caused lowest general means of % reduction (GR%) in population of mites which recorded 26.31, 25.39 and 24. 67 % respectively, while imidaclopride was the least one on beanfly, which recorded 26.22, 36.35 and 30.73 % reduction in mines for Giza 6, Paulista and Bronco, respectively.

These result agree with those obtained by Omar and Faris (2000), who cited that Paulista was more tolerant than Bronco to infestation with *L.trifolii* after sprayed with thiocyclam. It,s recorded 92.91 % and 94.46 %R in population of beanfly, respectively. On the other hand, Bronco variety generally showed moderately

tolerance for two pests. Such results seem to coincide with EL-Lakwa *et. al.,* (1999) who found that Bronco variety moderately susceptible to infestation with sucking pests (*B. tabaci* and *M. persicae*).

4. Concerning the obtained results from Snap bean varieties as untreated check (T4), it could be concluded that Giza 6 was the least varieties infected with beanfly while Bronco variety was the most one of feeding suitability. It's recorded 11 and 12.19 mines as a mean number of mines /10 leaflets (**) respectively, while Paulista variety was the least varieties infected with mobile stages of mite and Bronco variety also was the most one of feeding suitability, which recorded (11.23 and 12.42) as a mean number of individuals/leaflet (**) and GR%, respectively. It could be arranged that, the three tested bean varieties were descendingly with respect to their feeding suitability to beanfly as follows: Paulista then Bronco followed by Giza 6. Such result, seem to coincide with Hady (2004), who found that *L. trifolii* infested *P.vulgaris* at Nili season by rate ranged between 16.9 to 51.8 mines / 10 leave. Also, Omar and Faris92000) found that, the population density of *L. trifolii* infesting Paulista and Bronco varieties cultivated in January ,20,1999 were 2.46 and 2.56 / leaf, respectively.

П. Second season (2008)

In this trial, seeds of three bean varieties were treated with three doses of Gaucho (0.5 R, 1 R and 1.5 R) and sprayed with thiocyclam, bensultap and imidaclopride, the obtained results in Tables (3 and 4) were as follows:

1. Regarding to the (T1) , bensultap for each variety was occur the highest % R in population of mobile stages of mite and numbers of mines containing a live larvae except 0.5R at Giza 6 and 1R at Bronco for mites and 1R at Paulista for beanfly. Giza 6 variety was the lowest feeding suitability and more affected with bensultap which recorded (51.73, 84.63 and 83.48%R) &(0.5, 0.06 and 0.06) individual / leaflet as a (GR%) and mean number (**) for both 0.5 R, 1R and 1.5 R respectively, while recorded (59.3,72.91 and 80.65) & (2.42, 0.94 and 0.45) as a (GR%) and mean number of mines/10 leaflets for three doses, respectively.

These results agree with those obtained by Mousa M. Gehad and EL-Sisi (2008), they found that Gaucho when used as a seed treatment for bean seeds at the rate of 8g / kg seeds was effective in reducing infestation of *T. urticae* up to the 11^{th} week after planting.

2. Concerning the varieties treated with Gaucho and not sprayed with any pesticides (T2), the obtained results showed that statistical analysis of the data revealed highly significant differences between the reduction percentages in both mite and beanfly populations existed in field of Snap bean varieties for the three tested rates of Gaucho. Thus, Gaucho with the rate of 3 gm / kg seed weight was enough to give

adequate control of two pests which is indicative to their high persistence of their bioactivity over 7 weeks after sowing date. Also, *T. urticae* on Giza 6 variety recorded (2.03, 0.99 and 0.37) as a mean number (**) and (23.83,11.32 and 39.26) as a (GR%) in mite and recorded (10.94,8.39 and 6.64) as a mean number of mines/10 leaflets and recorded (27.3,25.39 and 36.29) as a (GR%) in beanfly for three doses of Gaucho, respectively.

3. Regarding the type of the insecticide treatments used (T3), the mean number of living larvae in all treatment started to increase gradually from the 5th day of spraying reaching higher levels after 7th days.

It 's likely that the different insecticides used had a lethal effect for a short period a bout one week on the larvae of *O. Phaseoli* reaching the maximum toxic effect between 2th to 7th days after treatment which the infestation by the beanfly started to increase.

4. In the case of untreated check (T4) , Giza 6 variety was the least infected varieties with two pests, while Bronco variety was the highest one with two pests, it's recorded (4.23 and 7.27) and (25.78 and 35.34) as a mean No. (**) for mites and mines /10 leaflets in beanfly, respectively.

This is agreement with the results of Cox *et al.,* 1995 **,** who stated that all results to intensive chemical use *O. phaseoli* has developed resistance to all classes of registered insecticides.

Ш. Effects of insecticides treatment on natural enemies :

Four natural enemies recorded associated with the pests were as follows :

1. Coccinellids: a*) Coccinella septempanctata* and b)*Stethorus* sp.

(Coloptera , Coccinelidae).

2. Predaceous thrips : c) *Scolothrips longiconis* (Thythanoptera, Thripdae).
3. Predaceous mite: d) *Phytoseiulus sp*.

Perusal of data given in Table 5 indicate clearly that total number of natural enemies on Giza 6 variety was 130 and 90 individual while there were 92 and 58 individual on Bronco in both season 2007 and 2008, respectively . This phenomenon indicates clearly the effects of varieties from season to another. Also, the plots treated with chemical pesticides exhibited the lowest number of natural enemies on three tested varieties in both seasons. The phenomenon indicates the drastic effect of pesticides application on vegetable crops (EL-Maghraby *et al.*, 1990) in both seasons, the predaceous insects *(C. septempanctata* and *Stethorus* sp.) counted in Giza 6 variety were highest than two tested Snap bean varieties . Giza 6 variety recorded (65.39 %, 12.31 %) and (60%, 10%) from total number of natural enemies in both seasons respectively. Bronco variety recorded the lowest numbers compared with the

other two varieties. On the other hand, Gaucho recorded acceptable control of the two pests without seriously affecting populations of natural enemies. In contrast, thicyclam was the least effect in controlling of two pests but it was seriously affecting on it,s natural enemies . This results was in agreement with the findings of Emara *et al.*, (1999) who found that, thiocyclam was the least effective in controlling of the cotton pests but it was seriously affecting on it,s natural enemies. Also, Hamid *et al.*, (2003) indicated that Gaucho have not significant decrease on the population density of associated predator of cotton plants . Sharaf H. Fayza *et al.*, (2003***)*** reported to Gaucho had no effectonll tested natural enemies (True spider, *C.unseptempanctata*) on cotton plants . Gamieh *et al.*, (2001) found that population of predatory mites was negatively correlated with population density of moving stages of spider mite on Soybean.

CONCLUSION

Gaucho induced a complete protection for bean seedling for 4 weeks from planting, the compound had fast initial effect and when the population was increased again, it may be clear that the natural insecticide, bensultap can be applied at the recommended rate to control the two pests without hazards to the environment .

IV. Yield ability:

Data in Tables (6a and 6b) showed the yield ability as kg green pods / fed. . It was evident that Giza 6 variety gave better result than other especially the treatment with Gaucho at the recommended rate and sprayed with bensultap together. It's recorded 3731 kg / fed. and 3777.2 kg / fed. for 1^{st} and 2^{nd} seasons respectively. Also, data indicated clearly that, Bronco variety gave a lowest yield in untreated check at two seasons which reached to 2079 and 2332.6 kg green pods / fed. respectively.

On the other hand, Giza 6 variety in 2^{nd} season which treated with Gaucho (1.5 R) and sprayed with bensultap produced the highest yield (3801 kg green pods / fed.).

These data are in agreement with those obtained by Omar and Faris (2000).

Table (6a). Yield of three tested bean varieties in 2007 season.

Varieties / Treatments	Yield (kg green pods/ fed.)		
	Giza 6	Paulista	Bronco
Gaucho + thiocyclam	3710^{ab}	3544.8^{d}	3647^{c}
Gaucho + bensultap	3731^{a}	3551.8^{de}	3666.6^{c}
Gaucho + imidaclopride (Pestidor)	3690.4^{b}	3514^{e}	3633^{c}
Gaucho	2823.8^{k}	2794.4^{l}	2522.8^{m}
thiocyclam	3220^{g}	30.29.6^{j}	3102.4^{i}
bensultap	3283^{f}	3210.2^{g}	3220.3^{g}
imidaclopride (Pestidor)	3215.8^{g}	3172.4^{h}	3203.2^{g}
Untreated check	2147.6^{n}	2115.4^{o}	2079^{p}
L.S.D. $_{0.05\%}$	28.23		

Table (6,b). Yield of three tested bean varieties in 2008 season.

Varieties / Treatments	Yield (kg green pods/ fed.)		
	Giza 6	Paulista	Bronco
Gaucho (0.5 R) + thiocyclam	3521^{l}	3227^{r}	3316.6^{o}
Gaucho (0.5R)+ bensultap	3578.4^{jk}	3269^{p}	3367^{n}
Gaucho(0.5R)+ imidaclopride (Pestidor)	3500^{m}	3243.8^{q}	3353^{n}
Gaucho (0.5R)	2667^{f}	2681^{vw}	2660^{x}
Gaucho (1R)+ thiocyclam	3640^{gh}	3570^{k}	3619^{i}
Gaucho (1R)+ bensultap	3777.2^{b}	3588.2^{j}	3683.4^{ef}
Gaucho (1R)+ imidaclopride (Pestidor)	3722.6^{d}	3624.6^{hi}	3633^{ghi}
Gaucho (1R)	2695^{uv}	2737^{t}	2674^{wx}
Gaucho (1.5R)+ thiocyclam	3672.2^{f}	3640^{gh}	3634.4^{ghi}
Gaucho (1.5R)+ bensultap	3801^{a}	3682^{ef}	3756.2^{c}
Gaucho(1.5R)+ imidaclopride (Pestidor)	3693.2^{e}	3647^{g}	3693.2^{e}
Gaucho (1.5R)	2748.2^{t}	2781.8^{s}	2699.2^{u}
Untreated check	2335.2^{z}	2387^{y}	2332.6^{a}
L.S.D. $_{0.05\%}$	16.718		

REFERENCES

1. Abbassy, M.A., H.I. Omar and Walaa A.Yones 2008. Development of IPM techniques for control of leafminer, *Liriomiza trifolii* (Burgess) on common bean, *Phaseolus vulgaris* L. Egypt J.A.Agric. Res., 86(4): 1305-1315.
2. Abbott's W. S.1925**.** A method of comuting the effectiveness of an insecticides . J. Econ. Entomol., 18: 265-167.
3. Cox, D.L., O.D. Remick, J. A. Lasota and R.A.D. Dybas. 1995. Toxicity of Avermectins to *Liriomyza trifolii* (Diptera: Agromyzidae) larvae and adults J. Econ. Entomol., 88 : 1415-1419.
4. El-Bessomy, O.A.E. 1998. Effect of natural insecticide (Bancol) on population density of the beanfly, Melanagromiza *phaseoli*. J. Agric. Sci., Mansoura Univ., 23 (7): 3369-3373.
5. EL-Deferawi,G.O., I.S. Abd EL-Wahab,S.A. Mostafa and F.H. Shalaby. 2002**.** Effect of sowing date seed treatment with Gaucho (imidaclopride)on the population abundance of cowpea aphid, *Aphis craccivora* Koch, yield and it's components of Faba bean crop in Beni-Suef , Middle Egypt. J. Agric .Sci. Mansoura Univ., 27(1):583-595.
6. El-Lakwa, F.A.O., E.F. El-Khayat, A.A. Hafez and H.H. Shalaby. 1999. Susceptibility of three varieties of bean (*Phaseolus vulgaris* L.) to infestation with whitefly and aphid. Annals of Agric. Sc. Moshtohor. 37 (1): 585-603.
7. EL-Maghraby, O.O.A., A. Shahein and O.A. EL-Deeb. 1990. Relationship between certain pests and their natural enemies on tomato and pepper plants in plastic mines in the newly reclaimed sandy areas of EL-Kasasien District,Egypt .Zagazig J.Agric.,Res.,Vol.17(5B) :1709-1713 .
8. Emara, S.A., A.O.Taha, O.Z. Dawood and K.K. EL-Rafie. 1999. Effect of oils, insecticides and the entomopathoginic fungus, *Beauveria bassiana* on the cotton white fly, *Bemisia tabaci* Genn. And it,s natural enemies on cotton plants in Menofia Governorate. Egypt. J. Appl. Sci., 14(8): 282-295.
9. Faris, F.S., Magda, K. Megali and A.H. Amer 1997. Yield bean loss in relation to mites infestation in Egypt. J. Agric. Sci. Mansoura Univ., 22 (11): 4013-4022.
10. Gamieh, G.N. and Asmaa, A. EL-Bsuony 2001. Population densities of piercing sucking pests in Soybean fields as influenced by varieties, predators and leaf physical and chemical properties.J.Agric.MansouraUniv., 26(2):1089-1099.
11. Hady, S.A. 2004. Influence of temperature and relative humidity on population density of the broad bean beanfly *Liriomyza trifolii* (Brugess) (Diptra: A gromizidae) which infested common bean. J. Agric. Sci. Mansoura Univ., 29 (10): 5939-5946.

12. Hamid,A.O., Suzan A. EL-Bassyouni,Fayza H. Sharaf and A.A. Korkor. 2003. Effeicency of Gaucho and Cruiser applied as cotton seed treatment on sucking pests and associated predators as long acting effect.J.Agric.Sci. Mansoura Univ., 28(4):3085-3091.
13. Henderson, C.F. and E.W. Telton. 1955. Tests with acaricids against the brown wheat mite.J. Econ. Entomol. 48 : 157-161.
14. Ibrahim, S.O. 1999. Studies on *Aphis craccivora* Koch and *Bemisia tabaci* (Genn .) infesting the bean (*Phaseolus vulgaris* , L.) cultivars at Menoufia Governorate, Egypt. J. Agric. Sci. Mansoura Univ. 24 (9): 5111- 5117.
15. Ibrahim, S.O.F. and S. Abd EL-Moity. 1997**.** Biocontrol of beanflys *Liriomiza* spp. (Diptera : Agromizidae) in Faba bean field and it,s parasitoids at Kafr EL-Shikh region. J. Agric. Mansoura Univ., 19:1215-1222.
16. Karel, A. K. and R. O. K. Maghogho. 1985**.** Effects of insecticide and plant populations on the insect pests and yield of common bean *(Phaseolus vulgaris* L.). J. Econ. Entomol., 78 : 917-921.
17. Mousa, M. Gehad and A.G. EL-Sisi. 2008. Efficiency of some systemic insecticides for controlling bean seedling pests when used as seed treatment. Egypt J. Agric. Res., 86(6):2303-23011.
18. Omar, B.A. and F. S. Faris. 2000. Bio-residual activity of different insecticides on the beanflys and yield components of Snap bean *Phoseolus vulgaris* (L.) . Egypt J. Agric. Res., 78 (4): 1485 – 1496.
19. Omar, H.I. H., O.H.O. El-Khawalka, H. O. El-Maghraby and O.A.E. El-Bessomy. 1994. Reduction of different stages of the whitefly, *Bemisia tabaci* (Genn.) on cucumber plants after foliar and seed treatments with insecticides . Alex. Sci. Exch, Vol. 15 (1): 95-103.
20. Salem, R.O., E.O.E. Khalafala and Y.S. Ibrahim. 1998. Gaucho (imidaclopride) as a safe compound for aphid managemefaba bean and wheat. J. Agric. Sci. Mansoura Univ., 23 (3) : 1283-1291.
21. Shraf, Fayza H., Suzan A.EL-Basyouni and A.O. Hamid. 2003. Insicticidal efficiency of some chemical compounds on the whitefly *Bemisia tabaci*(genn.) infesting cotton plants and it's associated natural enemies. J.Agric. Sci. Mansoura Univ., 28(2):1419-1423.
22. Snedecor, G.W. and W. C. Cochran. 1971. Statistical Methods. Iowa State Univ., Press, USA.
23. Voicun, O., O.C. Mateias and O. Pricop. 1994. Contribution to the knowledge of the harmful and beneficial entomofauna in bean crops probleO. de protectio Plantelor, 20: 1-2, 3-7.

محاولة لمكافحة كيماوية مرشدة لكلا من أكاروس العنكبوت الأحمر وذبابة الفاصوليا اللتان تهاجمان ثلاثة أصناف من نباتات الفاصوليا

عاطف عبدالفتاح أحمد عبدالله

مركز البحوث الزراعية – معهد بحوث وقاية النباتات – الدقى – جيزة

درس تأثير الملائمة الغذائية ومدى تحمل ثلاثة أصناف من الفاصوليا الخضراء وهى جيزة 6 وبوليستا وبرونكو للإصابة بكل من أكاروس العنكبوت الأحمر *Tetranychus urticae* وذبابة الفاصوليا *Ophiomyia phaseoli* ودرست أيضآ فاعلية كلا من جاوشو(معاملة بذور) و ثلاث مبيدات أخرى وهى ثيوسيكلام ، بينسلتاب (وهو مبيد طبيعى مستخلص من بعض الديدان البحرية من جنس (*Lumbrinereis* sp) ، إيميداكلوبراید وذلك فى محطة بحوث البساتين – القصاصين – محافظة الإسماعيلية خلال موسمى 2007 ، 2008 م وقد أوضحت النتائج مايلى :

1- الصنف جيزة 6 كان أقل الأصناف المختبرة ملائمة غذائية تؤدى إلى الإصابة بكلا من الآفتين حيث أنه أصيب بأقل تعداد منهما كما أنه أعطى أفضل محصول قرون خضراء ، بينما كان الصنف برونكو هو الأكثرملائمة غذائية ثم الصنف بوليستا .

2- قلل المبيد الطبيعى بينسلتاب بالجرعة الموصى بها فى الموسم 2007 تعداد العنكبوت الأحمر وذبابة الفاصوليا على الصنف جيزة 6 المعامل وغير المعامل بالمركب إيميداكلوبريد (جاوشو) بنسب مئوية عامة للإنخفاض فى التعداد مقدارها (73.29 ، 68.93) و (43.35 ،40.35) على التوالى ، كما أعطى المبيد بينسلتاب بجرعاته الثلاثة نتائج جيدة على الصنف جيزة 6 فى الموسم 2008 حيث خفض تعداد العنكبوت الأحمر بنسب مئوية عامة مقدارها (51.73 ٪، 84.63 ٪ و 83.48 ٪) وخفض تعداد وذبابة الفاصوليا بنسب مقدارها (59.3٪ ، 72.91 ٪، 80.65 ٪) على التوالى .

3- سبب المركبان ثيوسيكلام وإيميداكلوبريدعلى الصنف برونكو الغير معامل بالجاوشو أقل نسبة مئوية عامة للإنخفاض فى تعداد العنكبوت الأحمر(24.67٪ ، 28.62 ٪) وذبابة الفاصوليا (42.26 ٪، 30.73 ٪) فى الموسم 2007 على التوالى .

4- جاء الصنف بوليستا فى مركز متوسط بين كلا من الصنفين الآخرين من حيث حساسيته للأصابة بكلا الأفتين و على مدار الموسمين .

5- آوى الصنف جيزة 6 أعلى تعداد من الأعداء الحيوية الأربعة (أبى العيد ذو السبع نقاط ، أبى العيدالأسود الصغير ، التربس المفترس و الأكاروس المفترس) والتى سجلت تعداد كلى مقداره 130 ، 90 فرد فى كلا الموسمين على التوالى ، بينما سجل الصنف برونكو أقل تعداد منها وكان مقداره 92 ، 58 فرد لكلا الموسمين على التوالى.

لذلك يمكن أعتبار أن معاملة بذورصنف الفاصوليا جيزة 6 بالجاوشو ثم الرش عند زيادة التعداد بالمبيد الطبيعى بينسلتاب من أهم عوامل الإدارة المتكاملة لنجاح أنتاج محصول الفاصوليا (I.C.M.) وتقليل تلوث البيئة.