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Efficacy of Certain Alternative Insecticides against Major Insect Pests of Sesame Crop under Field Conditions

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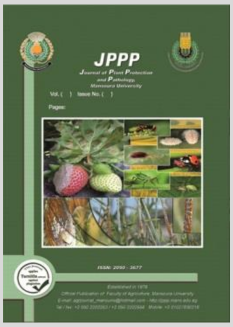

ABSTRACT

Sesame (*Sesamum indicum* L.) crop considers as one of the important oilseed crops in the world. Effectiveness of ten selected insecticides [Vertimec 1.8% EC, Agrin 6.5% WP, Thiovit 80% WG, Spinosad 48% SC, Evisect 50% SP, Match 5% EC , Pestban 48% EC, Dolf 5% EC , Lannate 90% SP and Proclaim 5% SG] against *Antigastra catalaunalis*, *Spodoptera exigua* and leafhoppers was examined. This study was carried out in farmer's field at New Valley, Egypt during 2021. The recommended concentrations for each insecticidal product were tested against *A. catalaunalis*, *S. exigua* and leafhoppers. The percentages of mortality were recorded after 3, 7, 14, 21 and 28 days. In case of *A. catalaunalis*, Spinosad 48% SC and Dolf 5% EC were found to be the most effective compounds. While, Pestban 48% EC and Spinosad 48% SC were found to be most effective compounds against *S. exigua*. On the other side, Dolf 5% EC and Match 5% EC were found more effective against leafhoppers than other chemical products. These alternative insecticides could be recommended to use against *A. catalaunalis*, *S. exigua* and leafhoppers in sesame crop and elsewhere.

Keywords: Oilseed, *Antigastra catalaunalis*, Leafhoppers, Mortality, *Spodoptera exigua*

INTRODUCTION

Sesame (*Sesamum indicum* L.) plant is one of the most economic important oil crops all over the world (El Naim *et al.*, 2010; Umar and Mamman 2010). Sesame seeds are a good source of healthy fats, protein, B vitamins, minerals, fiber, antioxidants, and other beneficial plant compounds. The crop has highly values of edible oil and protein contents (Xu *et al*., 2017). It is an important oil seed crop in the warm region of the tropics and sub-tropics. The largest producer countries of this crop in 2007 were India, China, Myanmar, Sudan, Ethiopia, Uganda and Nigeria. The cultivated area of sesame in 2013 was 9416368.86ha. around the world (FAO, 2015).

Sesame crop is afflicted by several insect pests causing serious losses reached to 90% loss in yield (Egonyu *et al*., 2005 and Ahirwar *et al*., 2010). Among them, the leaf roller and capsule borer (*Antigastra catalaunalis* Dup.) and *Spodoptera exigua* (Hübner) are serious pests, since they attack all parts of the plant (Ahuja and Kalyan, 2002).

The newly emerged larvae of *A. catalaunalis* starts feeding by making tunnels in the soft leaves of the plant, and when they are fully grown, they emerge from the tunnels and weave silk threads where the apical leaves or upper branches of the plant are intertwined. Then it pierce capsules and feed inside the seeds (Thakur and Ghorpade, 2006; Ahirwar *et al.,* 2010; Wazire and Patel, 2016). While, the infestation by *S. exigua* begins with the beginning of growth, where the young larvae feed on the epidermis of the lower surface of the leaf, while the old larvae feed on the leaves and make holes in them.

Phyllody an important disease of sesame caused by phytoplasma and transmitted by leafhoppers. It converts the flowering parts into green leafy structures then causes severe vein clearing. Though the capsules are formed on the lower portion, the plant does not yield quality seeds. This is the major yield-reducing problem affecting sesame (Akhtar *et al*., 2008; Win *et al*., 2010; Ikten *et al*., 2014; Tseng *et al*., 2014; Nabi *et al*., 2015; Rao *et al*., 2015 and Salehi *et al*., 2017). Pathological symptoms appear in the form of crowding of leaves and short internodes, especially near the growing top, so that the leaves appear as if they are emerging from one point resembling a rose (Fig. 1).

According to Deshmukh, 2009, the use of insecticides is of very importance for *A. catalaunalis* and *S. exigua*.

Fig. 1. Symptoms of phyllody disease on Sesame (*Sesamum indicum* L.)

MATERIALS AND METHODS

The toxicity of certain insecticides against *A. catalaunalis*, *S. exigua* and leafhoppers were tested under field conditions in El-Kharga city, the New Valley governorate, Egypt. Insecticides used were: The formulations of Vertimec 1.8% EC, Agrin 6.5% WP, Thiovit 80% WG, Spinosad 48% SC, Evisect 50% SP, Match 5% EC , Pestban 48% EC, Dolf 5% EC , Lannate 90% SP and Proclaim 5% SG. These insecticides were obtained from the Central Laboratory for Pesticides in

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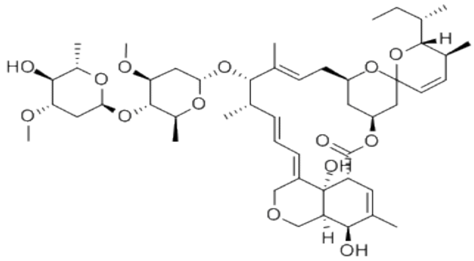
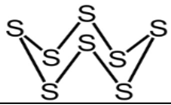
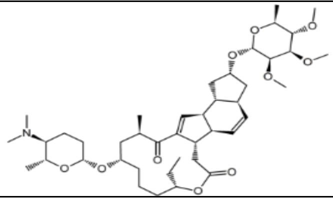
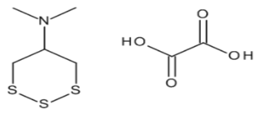
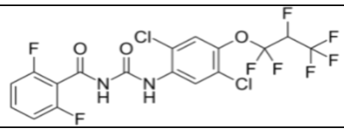
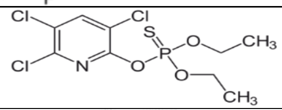
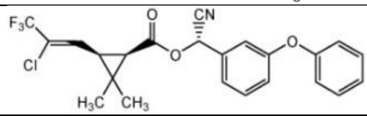
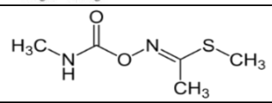
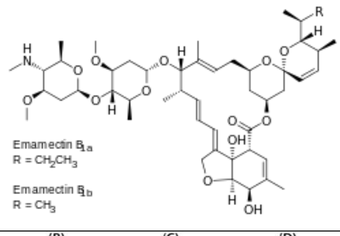
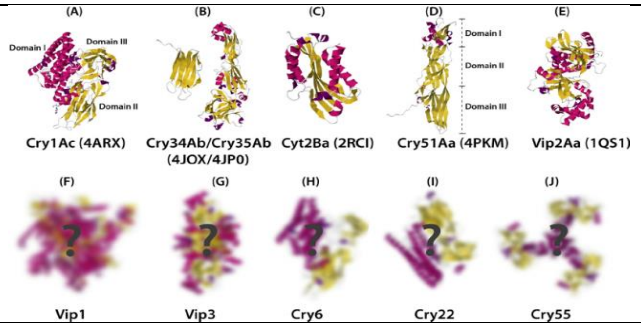
Cairo, Egypt. The concentrations used in this study were: as follows; Vertimec 1.8% EC at 40 ml/100L water, Agrin 6.5% WP at 250g/feddan, Thiovit 80% WG at 250g/100L water, Spinosad 48% SC at 20g/3L water, and Evisects 50% SP at 75g /100L water, Match 5% EC at 40cm/100L water , Pestban 48% EC at 1L/feddan, Dolf 5% EC at 250g/200L water, Lannate 90% SP at 300g/feddan and Proclaim 5% SG at 80 g / feddan (Table 1).

Table 1. Descriptions of the insecticides used against *Antigastra catalaunalis* and *Spodoptera exigua* and leafhoppers.

Trade name	(a.i.) % and formulation	Active ingredient (a.i.)	Recommended rate	structure
Vertimec	1.8% EC	Abamectin	40 ml/100 L	
Thiovit	80% WG	Sulfur	250g/ 100L	
Spinosad	48% SC	Actinomycetes Spinosyn A, Spinosyn D	20g/3L	
Evisect	50% sp	Thiocyclam hydrogen oxalate	75g / 100L	
Match	5% EC	Lufenuron	40cm/ 100L	
Pestban	48% EC	Chlorpyrifos	1L/ Feddan	
Dolf	5% EC	Lambda- Cyhalothrin	250g/ 200L	
Lannate	90% SP	Methomyl	300g/ Feddan	
Proclaim	5% SG	Emamectin benzoate	80g / 100L	
Agrin	6.5% WP	Bacillus thuringiensis	250g/ Feddan	

EC: mulsifiable concentrate, WP: Wettable powder, SC: Suspension concentrate, SP: Soluble powder.

The Experiment was carried out through the period beginning from June, 2021 to August, 2021 in a simple randomized block design with ten treatments and three replications. The seeds of sesame plants were planted on June, 2021 in plots each 3 x 2 m, keeping 25 cm a distance between rows and 20cm between plants. The pesticides were sprayed using a 20-liter sprayer. The Recommended farming practices are followed. The density of *A. catalaunalis, S. exigua* and leaf hopper was recorded from ten randomly selected plants. To calculate the percentages of reduction in larvae of *A. catalaunalis* and *S. exigua*, the numbers of larvae were recorded before and after 3, 7, 14, 21 and 28 days from spray by each insecticidal treatment according to formula of Henderson and Tilton (1955).

$$\text{Reduction \%} = 1 - \left(\frac{\text{n in Co before treatment} \times \text{n in T after treatment}}{\text{n in Co after treatment} \times \text{n in T before treatment}} \right) \times 100$$

Where: n = pest population, T = treated, Co = control

Statistical analysis: The results were analysed using one-way ANOVA and presented as mean ± SEM (Standard Error of Mean).

RESULTS AND DISCUSSION

Data given Tables (2-4) and Figures (2-4) show the reduction percentages of ten selected Insecticides: [Vertimec 1.8% EC, Agrin 6.5% WP, Thiovit 80% WG, Spinosad 48% SC, and Evisect 50% SP], Match 5% EC , Pestban 48% EC, Dolf 5% EC , Lannate 90% SP and Proclaim 5% SG].

The reduction percentages of Vertimec 1.8% EC, Agrin 6.5% WP, Thiovit 80% WG, Spinosad 48% SC, and Evisect 50% SP], Match 5% EC , Pestban 48% EC, Dolf 5% EC , Lannate 90% SP and Proclaim 5% SG after 3 days of treatment were 81.18, 90.26, 83.22, 94.51, 95.51, 90.88, 89.87, 91.16, 90.78 and 90.39%, respectively. While, after 7 days of treatment these numbers were: 68.17, 80.88, 73.93, 91.54, 89.08, 87.16, 85.79, 87.94, 82.96 and 83.91 %, respectively. Furthermore, after 14 day, the reduction percentages were 70.40, 81.73, 75.70, 88.15, 86.09, 82.74, 84.10, 90.78, 84.18 and 79.00 %, respectively. The reduction percentages were 66.78, 76.97, 70.60, 91.88, 87.14, 80.15, 81.43, 90.56, 82.44and 74.26%, after 21 days and 56.90, 75.13, 69.50, 93.07, 87.22, 84.55, 86.09, 90.51, 79.06 and 70.45%, after 28 days, respectively (Table 2 and Fig. 2). In general Spinosad 48% SC and Dolf 5% EC, were more affected against *A. catalaunalis* than other insecticides.

The reduction percentages of Vertimec 1.8% EC, Thiovit 80% WG, Spinosad 48% SC, Match 5% EC, Pestban 48% EC, Dolf 5% EC, Lannate 90% SP and Proclaim 5% SG after 3 days of treatment were 60.46, 71.57, 58.71, 86.25, 71.67, 80.85, 89.01, 61.50, 58.06 and 89.06%, respectively. While, after 7 days of treatment these numbers were: 75.38, 75.12, 73.17, 92.63, 88.01, 75.92, 92.22, 82.57, 80.28, and 93.47 %, respectively. Furthermore, after 14 day, the reduction percentages for Vertimec 1.8% EC, Agrin 6.5% WP, Thiovit 80% WG, Spinosad 48% SC, and Evisect 50% SP], Match 5% EC , Pestban 48% EC, Dolf 5% EC , Lannate 90% SP and Proclaim 5% SG were 65.65, 74.22, 70.28, 93.02, 85.66, 78.58, 89.35, 82.03, 78.65 and 86.80 %, respectively. The reduction percentages were 55.65, 65.15, 65.44, 94.15, 93.20, 84.90, 94.61, 77.61, 78.71, 78.71 after 21 days and 49.90, 71.18, 67.73, 90.21, 91.66, 83.27, 91.57, 84.42, 82.12, 82.12, after 28 days, respectively (Table 3 and Fig. 3). In general Spinosad 48% SC and Pestban 48% EC, were more affected against *S. exigua* than other insecticide compounds.

The reduction percentages of Vertimec 1.8% EC, Agrin 6.5% WP, Thiovit 80% WG, Spinosad 48% SC, and Evisect 50% SP], Match 5% EC , Pestban 48% EC, Dolf 5% EC , Lannate 90% SP and Proclaim 5% SG after 3 days of treatment were 70.55, 61.93, 43.59, 85.92, 94.72, 69.82, 55.90, 70.50, 74.53 and 60.01 %, respectively. While, after 7 days of treatment these numbers were: 73.29, 80.07, 41.95, 77.92, 80.51, 66.60, 60.77, 71.88, 73.62 and 62.08 %, respectively. Furthermore, after 14 day, were 68.34, 59.91, 46.46, 63.02, 55.19, 69.69, 64.09, 78.28, 68.66 and 70.83%, respectively. The reduction percentages were 67.21, 48.05, 29.06, 42.89, 38.81, 72.36, 67.84, 81.28, 67.82, 58.62 after 21 days and 37.73, 26.08, 24.94, 26.66, 32.30, 74.85, 62.13, 88.17, 49.51 and 73.29, after 28 days, respectively (Table 4). In general Dolf 5% EC and Match 5% EC, were more affected against leafhoppers (Table 4 and Fig. 4).

Yalawar *et al*., (2020). evaluated the insecticidial effect against leaf webber and capsule borer, *A. catalaunalis*. They found that spinosad 45% SC was very effective followed by indoxacarb 14.5% SC and emamectin benzoate 5% SG against *A. catalaunalis*. flubendiamide 2% WG, novaluron 10% EC and thiodicarb 75% WP had moderate effect and lambda-cyhalothrin 2.5% EC, quinalphos 25% EC and profenophos 50% EC had less effect against leaf webber. Sasikumar and Kumar, 2015; Wazire and Patel, 2016 and Naveen *et al*., 2019) reported that spinosad was the most effective against the leaf webber and capsule borer, *A. catalaunalis*. Jyothi *et al*., (2019) found that the spinosad, indoxacarb and emamectin benzoate were the most toxic against *A. catalaunalis* . While, profenophos was the less toxic one. Varma *et al*., (2003) found that the leaf webber and capsule borer, *A. catalaunalis* exposed to emmamectin benzoate had higher rates of mortality than those exposed to other compounds.

Table 2. Effect of ten selected insecticides against larva of *Antigastra catalaunalis.*

Insecticides	**Before treatment**	**No. of larvae/10 plant**				
		After treatment (days)				
		3 day	**7 day**	**14 day**	**21 day**	**28 day**
Vertimec 1.8% EC	58.00±4.58C	13.67±2.08B	25.00±1.00B	24.33±3.21B	25.33±1.53B	41.33±1.53B
Agrin 6.5% WP	65.67±2.08B	8.00±1.00CD	17.00±1.00C	13.33±1.53CDE	20.33±1.53C	27.00±2.00C
Thiovit 80% WG	39.67±2.08G	8.33±1.53C	14.00±0.00D	13.33±1.53CDE	15.33±0.58D	20.00±1.00DE
Spinosad 48% SC	43.67±2.08DF	3.00±0.00GH	5.00±1.00H	7.33±1.53GH	4.667±1.15G	5.00±0.00G
Evisect 50% SP	47.33±1.53E	2.33±0.58H	7.00±0.00GH	9.33±1.53FG	8.00±0.00F	10.00±0.00F
Match 5% EC	61.33±0.58C	7.00±1.00CDE	10.67±2.08EF	15.00±0.00CD	16.00±1.00D	15.67±1.53E
Pestban 48% EC	71.00±2.00A	9.00±0.00C	14.00±2.00D	16.00±0.00C	17.33±1.53CD	16.33±0.58E
Dolf 5% EC	51.00±0.00D	4.67±1.15FG	8.33±0.58FG	6.33±1.15H	6.33±0.58FG	8.00±0.00FG
Lannate 90% SP	52.00±2.65D	6.00±0.00DEF	12.00±2.00DE	11.67±1.52EF	12.00±0.00E	18.00±2.00DE
Proclaim 5% SG	44.33±0.58DF	5.33±0.58EF	9.33±0.58FG	13.00±0.00DE	15.00±1.00DE	21.67±1.53D
Control	42.33±1.53FG	53.00±2.00A	57.33±2.08A	60.00±2.00A	55.67±5.03A	70.00±7.00A
Sig.F-test	**	**	**	**	**	**

Values bearing the same capital letters within a row are significantly different (P ≤ 0.01)

Table 3. Effect of ten selected insecticides against larva of *Spodoptera exigua*.

Insecticides	Before treatment	No. of larvae/10 plant				
		After treatment				
		3 day	7 day	14 day	21 day	28 day
Vertimec 1.8% EC	44.67±1.15E	20.33±0.58D	13.67±2.08D	22.00±0.0C	31.00B±1.0C	40.00±0.0B
Agrin 6.5% WP	55.00±0.00B	18.00±1.00E	17.00±1.00C	20.00±1.0D	30.00±0.0C	28.33±0.58D
Thiovit 80% WG	61.00±1.00A	29.00±0.00B	20.33±0.58B	26.00±1.0B	33.00±3.6B	35.67±0.58C
Spinosad 48% SC	40.00±1.00G	6.333±0.58HI	3.667±0.58F	4.000±1.0I	3.667±1.15F	7.00±0.0H
Evisect 50% SP	42.33±0.58F	9.333±0.58G	12.67±1.15D	13.00±0.0F	10.00±1.0E	12.67±1.15F
Match 5% EC	47.00±0.00D	15.33±0.58F	7.00±0.00E	9.67±1.15G	5.00±1.0F	7.00±1.0H
Pestban 48% EC	55.33±0.58B	7.00±2.00H	5.33±0.58EF	6.67±1.15H	4.667±1.15F	8.33±0.58G
Dolf 5% EC	32.33±0.58I	14.33±0.58F	7.00±2.65E	8.33±0.0.58GH	11.33±0.58E	9.00±0.0G
Lannate 90% SP	49.00±0.00C	23.67±1.15C	12.00±0.0D	15.00±2.0E	16.33±0.58D	15.67±1.15E
Proclaim 5% SG	37.00±2.00H	4.33±0.58I	5.000±0.0EF	7.00±2.0H	6.00±2.65F	9.00±1.0G
Control	33.00±0.00I	38.00±3.00A	41.00±0.0A	47.33±0.58A	51.67±1.15A	59.00±0.0A
Sig.F-test	**	**	**	**	**	**

Values bearing the same capital letters within a row are significantly different (P ≤ 0.01)

Table 4. Effect of ten selected insecticides against leafhoppers.

Insecticides	Before treatment	No. of leafhoppers/10 plant				
		After treatment				
		3 day	7 day	14 day	21 day	28 day
Vertimec 1.8% EC	61.00±0.00HI	19.33±0.58F	19.00±1.00G	24.00±0.00G	26.00±1.00G	51.00±1.00E
Agrin 6.5% WP	93.33±5.77A	37.00±0.00C	21.00±1.00F	45.00±0.00D	61.00±1.00C	86.33±5.51B
Thiovit 80% WG	85.67±1.15BC	52.00±1.00B	58.00±1.00B	47.00±0.00C	49.00±1.00D	86.33±0.58B
Spinosad 48% SC	66.00±0.00FG	10.00±1.00G	17.00±1.00H	30.33±0.58E	49.00±1.00D	65.00±0.00D
Evisect 50% SP	88.00±2.00B	5.00±1.00H	20.00±.00FG	49.00±1.00B	70.00±0.00B	82.00±0.00C
Match 5% EC	77.00±2.00D	25.00±1.00E	30.00±1.00D	29.00±1.00E	27.67±1.15F	26.00±1.00H
Pestban 48% EC	59.00±1.00 I	28.00±1.00D	27.00±1.00E	26.33±0.58F	24.67±1.15G	30.00±1.00G
Dolf 5% EC	63.00±1.00GH	20.00±1.00F	20.67±0.58F	17.00±1.00H	15.33±0.58H	13.67±1.15I
Lannate 90% SP	69.33±0.58EF	19.00±1.00F	21.33±0.58F	27.00±2.00F	29.00±1.00F	47.00±0.00F
Proclaim 5% SG	83.67±1.15C	36.00±1.00C	37.00±1.00C	30.33±0.58E	45.00±1.00E	30.00±0.00G
Control	70.00±0.00E	75.33±0.58A	81.67±1.15A	87.00±1.00A	91.00±1.00A	94.00±1.00A
Sig.F-test	**	**	**	**	**	**

Values bearing the same capital letters within a row are significantly different (P ≤ 0.01)

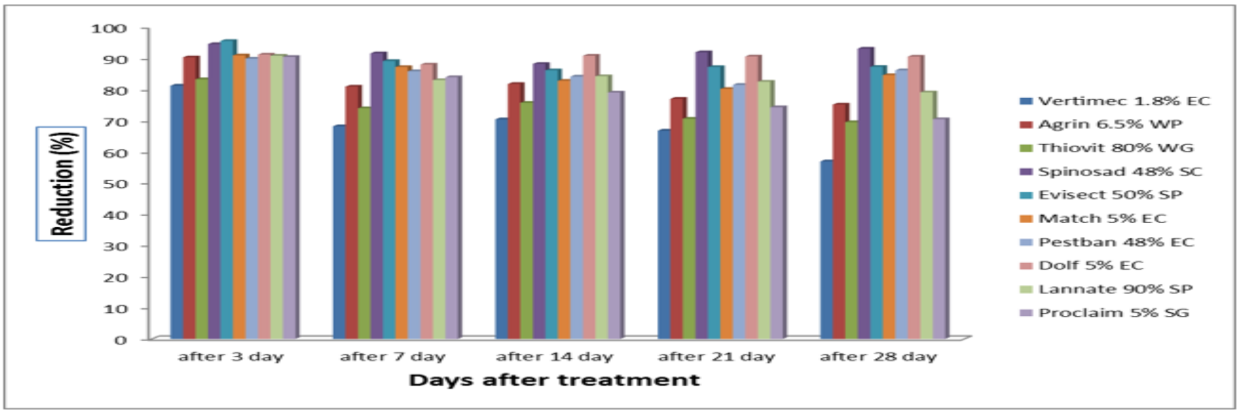


Fig. 2. The reduction percentages of eight selected insecticides against larva of *Antigastra catalaunalis* after 3, 7, 14, 21 and 28 days of treatment.

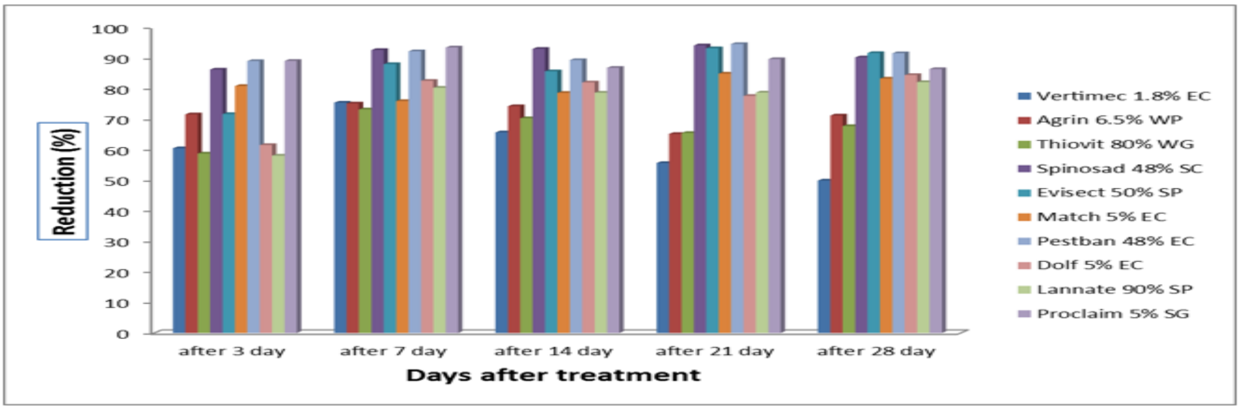


Fig. 3. The reduction percentages of eight selected insecticides against larva of *Spodoptera exigua* after 3, 7, 14, 21 and 28 days of treatment.

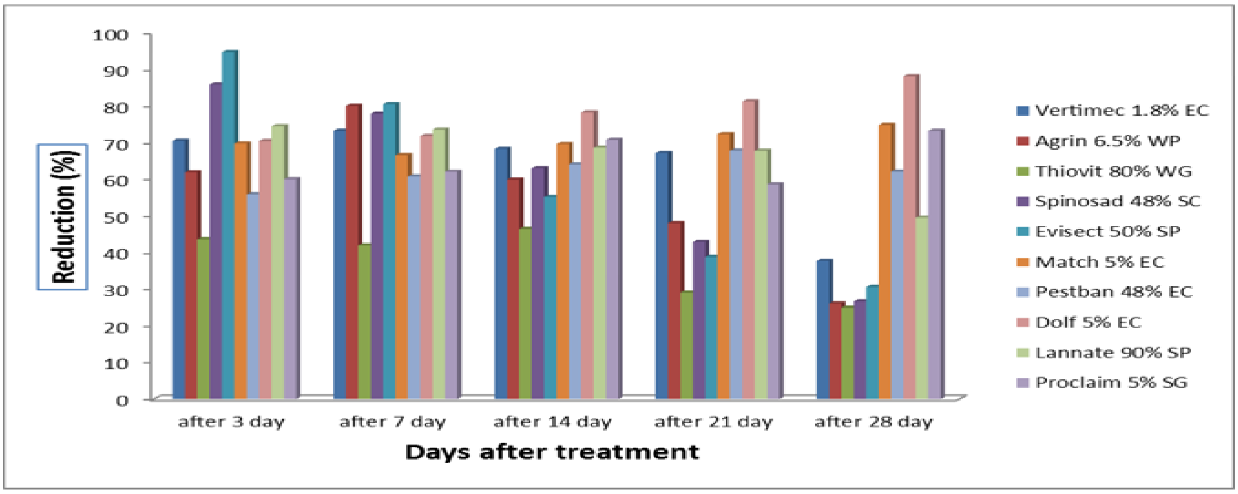


Fig. 4. The reduction percentages of different insecticidal against leafhoppers after 3, 7, 14, 21 and 28 days of treatment.

REFERENCES

Ahirwar, R. M., Gupta M. P. and Banerjee, S. (2010): Field efficacy of natural and indigenous products on sucking pests of sesame. Indian Journal of Natural Product Resources. 1(2): 221-226.

Ahuja, D. B. and Kalyan, R. K. (2002): Losses in seed yield due to insect pests in different varieties of sesame, *Sesamum indicum* (Linn.). Annals of Plant Science Research. 4(1): 99-103.

Akhtar, K. P.; Dickinson, M.; Sarwar, G.; Jamil, F. F.; Haq, M. A. (2008): First report on the association of a 16SrII phytoplasma with sesame phyllody in Pakistan. Plant Pathology. 57: 771.

Deshmukh, M. J. (2009): Efficacy of insecticides and botanicals on major pests of *Sesamum indicum*. M.Sc. (Agri.) Thesis (unpub.), Dr. PDKV, Akola, 46-48.

Egonyu, J. P., Kyamanywa, S., Anyang. W., Sekabembe, C. K. (2005): Review of pests and diseases of sesame in Uganda. African Crop Science Conference Proceeding. 7:1411-1416.

El Naim, A. M., Ahmed, M. F. and Ibrahim, K. A. (2010): Effect of Irrigation and Cultivar on Seed Yield, Yield's Components and Harvest Index of Sesame (Sesamum indicum L.). Research Journal of Agriculture and Biological Sciences. 6(4): 492-497

El Naim, A. M., Ahmed, M. F. and Ibrahim, K. A. (2010): Effect of Irrigation and Cultivar on Seed Yield, Yield's Components and Harvest Index of Sesame (Sesamum indicum L.). Research Journal of Agriculture and Biological Sciences. 6(4): 492-497

El Naim, A. M., Ahmed, M. F., Ibrahim, K. A. (2010): Effect of Irrigation and Cultivar on Seed Yield, Yield's Components and Harvest Index of Sesame (*Sesamum indicum* L.). Research Journal of Agriculture and Biological Sciences. 6(4): 492-497

FAO (2015): Agricultural data FAOSTAT. Food and Agriculture Organization of the United Nations, Rome.

Henderson, C. and Tilton, E. (1955). Test with acaricides against the brown wheat mite. Journal of Economic Entomology. 84:157-161.

Ikten, C., Catal, M., Yol, E., Ustun, R., Furat, S., Toker, C., Uzun, R. (2014): Molecular identification, characterization and transmission of phytoplasmas associated with sesame phyllody in Turkey. European Journal of Plant Pathology. 139: 217-229.

Jyothi, J., Vijay Kumar, L., Shruthi, R., Anusha, S. B. (2019): Management of leaf webber and capsule borer *Antigastra catalaunalis* (Lepidoptera: Pyralidae) in sesame. International Journal of Chemical Studies. 7(3):5135-5140.

Nabi, S., Madhupriya, S., Dubey, D. K., Rao, G. P., Baranwal, V. K., Sharma, P. (2015): Molecular characterization of '*Candidatus* Phytoplasma asteris' subgroup I-B associated with sesame phyllody disease and identification of its natural vector and weed reservoir in India. Australasian Plant Pathology. 44: 289-297.

Naveen, B., Sushila, N., Ashoka, J., Sreenivasa, A. G. (2019). Bio efficacy of Novel Insecticides against Capsule Borer *Antigastra catalunalis* (Duponchel) in Sesame. International Journal of Current Microbiology and Applied Sciences. Special. 9:279-284.

Rao, G. P., Nabi, S. U. and Madhupriya, S. (2015): Overview a century progress of research on sesame phyllody disease. Phytopathogenic Mollicutes. 5: 74-83.

Salehi, M., Esmailzadeh-Hosseini, S.A., Salehi, E., Bertaccini, A. (2017): Genetic diversity and vector transmission of phytoplasmas associated with sesame phyllody in Iran. Folia Microbiology. 62: 99-109.

Sasikumar, K. and Kumar, K. (2015). Bioefficacy of newer insecticide against the Sesame Shoot and Leaf Webber, *Antigastra catalaunalis* Duponchel. (Pyraustidae: Lepidoptera) on flower and pod damage basis in Sesame. Trends in Biosciences. 8(17):4747-4750.

Thakur, S. G. and Ghorpade S. A. (2006): Sesame leaf webber and capsule borer, *Antigastra catalaunalis* Dup. a review. Journal of Maharashtra Agricultural University. 31(3):300-307.

Tseng, I. W., Deng, W. L., Chang, C. J., Huang, J. W., Jan, F. J. (2014): First report on the association of a 16SrII-A phytoplasma with sesame (*Sesamum indicum*) exhibiting abnormal stem curling and phyllody in Taiwan. Plant Disease 98: 990.

Umar, H., Okoye, C., Mamman, B. (2010): Resource use efficiency in sesame (*Sesamum indicum* L.) production under organic and inorganic fertilizers applications in Keana Local Government Area, Nasarawa State, Nigeria. Res J Agric Biol Sci. 6(4):466–71.

Varma, H. S., Patel, I. S., Shinde, Y. A. (2013): Efficacy of certain insecticidal molecules against *Antigastra catalaunalis* (dup.) in sesamum. Indian Journal of Entomology. 75(2):137-140.

Wazire, N. S., Patel, J. I. (2016): Determination of economic injury level (EIL) for leaf webber and capsule borer, *A. catalaunalis* (Duponchel) in sesamum. International Journal of Life Sciences. A6:169-172.

Wazire, N. S., Patel, J. I. (2016): Estimation of losses by leaf webber and capsule borer *Antigastra catalaunalis* (Duponchel) in sesamum. Indian Journal of Entomology. 78(2):184-185.

Win, N. K. K., Back C. G., Jung, H. Y. (2010): Phyllody phytoplasma infecting sesame (*Sesamum indicum*) in Myanmar. Tropical Plant Pathology. 35: 310-313.

Xu, Y.D., Zhou, Y. P. and Chen, J. (2017): Near-infrared spectroscopy combined with multivariate calibration to predict the yield of sesame oil produced by traditional aqueous extraction process. J Food Qual, pp. 1-5.

Yalawar, R., Acharya, V. S. and Hiremath, R. (2020): Bio efficacy of different insecticides against leaf webber and capsule borer, *Antigastra catalaunalis* (Dup.) on sesame, Journal of Pharmacognosy and Phytochemistry. 9(5): 90-93.

فعالية بعض بدائل المبيدات الحشرية ضد الآفات الحشرية الرئيسية لمحصول السمسم تحت الظروف الحقلية

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الملخص

يعتبرمحصول السمسم (*Sesamum indicum* L.) من أهم محاصيل البذور الزيتية في العالم. تم اختبار فعالية عشرة مبيدات حشرية(Vertimec 1.8 % EC و٪ Agrin 6.5WP و ٪ Thiovit 80WG و Spinosad 48% SC و Evisect 50% SP و Match 5%EC و Pestban 48%EC و Dolf 5%EC ، Lannate 90%sp و Proclaim 5% SG ضد Antigastra catalaunalis و Spodoptera exigua ونطاطات الأوراق). وأجريت الدراسة في احدى مزارع الوادي الجديد بمصر خلال عام 2021 وتم اختبار التركيزات الموصى بها لكل مبيد حشري على *A. catalaunalis* و *S. exigua* ونطاطات الأوراق. تم تسجيل نسب الموت بعد 3 و 7 و 14 و 21 و 28 يومًا. في حالة *A. catalaunalis* ، وجد أن المعاملة Spinosad 48%SC و Dolf 5%EC هي الأكثر فعالية. بينما وجد ان المعاملة ب Pestban 48%EC و Spinosad 48%SC هي الأكثر فعالية ضد S. exigua كما وجد أن المعاملة بـ Dolf 5%EC و Match 5%EC كانت فعالة ضد نطاطات الأوراق. أعطت بدائل المبيدات الحشرية نتائج واعدة واتجاهات حديثة في مكافحة *A. catalaunalis* و *S. exigua* ونطاطات الأوراق في محصول السمسم.