INTERNATIONAL JOURNAL OF PLANT PROTECTION
VOLUME 7 | ISSUE 2 | OCTOBER, 2014 | 462-464 ● e ISSN-0976-6855 | Visit us : *www.researchjournal.co.in*

IJPP

RESEARCH PAPER

DOI : 10.15740/HAS/IJPP/7.2/462-464

Effect of some newer insecticides against okra aphids, *Aphis gossypii*

■ S.M. GAIKWAD*[1], P.N. MAGAR[2] AND A.S. DAMRE[1]

[1]Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA
[2]Entomology section, College of Agriculture, PUNE (M.S.) INDIA

ARITCLE INFO

Received : 29.03.2014
Revised : 06.09.2014
Accepted : 17.09.2014

KEY WORDS :
Okra, Aphids, *Aphis gossypii*, Insecticides

***Corresponding author:**
Email: shardgiakwad@gmail.com

ABSTRACT

The field experiment was carried out to evaluate the effect of newer insecticide molecules against sucking pest complex of okra. Thiamethoxam @ 25 g a.i./ha recorded 1.38 overall average survival of aphid population on plant and was significantly superior over all other treatments. Fipronil @ 50 g a.i./ha was found to be at par with thiamethoxam @ 25 g a.i./ha and recorded 1.68 overall average survival aphids/3leaves/plant. The next best treatment, buprofezin @ 156 g a.i./ha, recorded 2.44 overall average survival aphids/ 3leaves /plant. Spinosad @ 50 g a.i./ha and imidacloprid @ 25 g a.i./ha were at par with buprofezin @ 156 g a.i./ha and recoded 2.74 and 2.81 overall average survival aphids/ 3leaves /plant, respectively. Abamectin @ 100 g a.i./ha was found to be less effective recording 4.10 average survival aphids/ 3leaves /plant.

How to view point the article : Gaikwad, S.M., Magar, P.N. and Damre, A.S. (2014). Effect of some newer insecticides against okra aphids, *Aphis gossypii*. *Internat. J. Plant Protec.*, **7**(2) : 462-464.

INTRODUCTION

Okra [*Abelmoschus esculentus* (L). Moench] is commonly known as lady's finger in western style and 'Bhindi' or 'Bhendi' in Indian style language. It is one of the major vegetable crops grown over worldwide. Pests and diseases have been most frequently cited as the major agronomic constraints in intensive monocrop horticultural fields. Producers of okra frequently complain yield losses due to insect pests. Butani and Verma (1976) recorded 20 pests infesting okra crop. In summer, okra fruits fetch higher price in the market however, the sucking pest attack is comparatively more, which results in low yields of marketable fruits than other seasons (Radke and Undirwade, 1981). The important pests affecting the yield of okra are shoot and fruit borer (*Earias vittella* Fab.), jassids (*Amrasca biguttula biguttula* Ishida), aphids (*Aphis gossypii* Glover), whiteflies (*Bemisia tabaci* Genn.) and mites (*Tetranychus* spp.). The shoot and fruit borer is major pest causing direct damage to marketable produce *i.e.* green fruits. It is alone reported to cause 57.17 per cent fruit damage and 54.04 per cent net yield loss in okra (Chaudhary and Dadheech, 1989).

There is a great acceptance for safer and more selective insecticides. The rapidly developing resistance to number of pesticides, residue hazards and resurgence of secondary pests provided the impetus to study new alternative of more ecologically acceptable selective insecticides for pest control strategies as a part of IPM programmes. One of these approaches which has captured worldwide attention to the development of compounds with novel modes of action and action selectively on certain groups of insect pests. Therefore, the present investigation was planned to effective management of okra aphids.

MATERIAL AND METHODS

Field experiment was carried out in Randomized block design with nine treatments including control replicated three times. The field experimemt was carried out at Research farm of College of Agriculture, Pune. The insecticide treatments used for foliar spray included thiamethoxam 25 WG @ 25 g a.i./ha, spinosad 45 SC @ 50 g a.i./ha, fipronil5 SC @ 50 g a.i./ha, imidacloprid 200 SL @ 25 g a.i./ha, profenophos50 EC @ 750 g a.i./ha, buprofezin25 SC @ 156 g a.i./ha, acetamiprid 20 SP @ 50 g a.i./ha and abamectin1.9 EC @ 100 g a.i./ha. To record pre and post-treatment observations, five plants from each treatment were randomly selected and tagged. Observations on aphids were recorded on five randomly selected plants per plot. Number of survival aphids were recorded from three leaves of each randomly selected plants, *i.e.* one upper, one middle and one lower as per the methodology of Singh and Kaushik (1990). Observations were recorded just before first spray and 1st, 3rd, 7th and 14th days after each spray. The average number of pest individuals survival per three leaves of a selected plant for each plot were calculated. The data recorded on population of aphids at 3, 5, 7, 10 and 14 days after each treatment spray were averaged. Cumulative average population of aphids after third spray were computed. The superimposed average survival population of aphids was subjected to standard statistical analysis using square root values by Poisson formula.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under the following heads :

Efficacy of insecticidal treatments in controlling aphids on okra :

One day after spraying :

Perusal of data on mean population of aphid one day after insecticidal application revealed that all the insecticidal treatments were significantly superior over untreated control. The thiamethoxam @ 25 g a.i./ha recorded to be most effective treatment which recorded minimum 1.12 aphids/ 3leaves/plant against aphids. It was also found significantly superior treatment. The treatment, fipronil @ 50 g a.i./ha was at par with thiamethoxam @ 25 g a.i./ha which recorded 1.47 average survival aphids/3leaves/plant. The treatment, spinosad @ 50 g a.i./ha was the next best treatment which recorded 2.91 average survival aphid population/3leaves/ plant. The treatment imidacloprid @ 25 g a.i./ha and buprofezin @ 156 g a.i./ha were at par with spinosad @ 50 g a.i./ha recording 2.93 and 3.07 average survival population/ 3leaves/plant, respectively. The treatment acetamiprid @ 50 g a.i./ha was the least effective that recorded 4.27 aphids/ 3leaves/plant (Table 1).

Three days after spraying :

The data on aphid population recorded three days after spraying revealed that all the treatments were significantly superior over untreated control. The most promising treatment was thiamethoxam @ 25 g a.i./ha which recorded a minimum number of 1.24 survival aphids/3 leaves/plant and was found to be significantly superior treatment. The treatment fipronil @ 50 g a.i./ha showed 1.44 average survival aphid population/3leaves/plant and was at par with the treatment thiamethoxam @ 25 g a.i./ha. Spinosad @ 50 g a.i./ha recorded 2.22 average survival aphid population/ 3leaves/plant and was next best treatment. The treatment, buprofezin @ 156 g a.i./ha was at par with treatment spinosad @ 50 g a.i./ha and recorded 2.56 average survival population of aphid/3leaves/plant. Abamectin @ 100 g a.i./ha recorded 4.00 average survival aphids/3leaves/plant and appeared to be less effective against aphids on okra (Table 1).

Seven days after spraying :

The data recorded on seven days after spraying indicated

Table 1 : Effect of various treatments on population of aphids in okra

Tr. No.	Treatments	Pre - count	Av. no. of survival aphids/ 3leaves/plant (Days after spraying)				Cum. av.
			1st day	3rd day	7th day	14th day	
T_1	Thiamethoxam 25 WG	8.87 (3.06)	1.12 (1.27)	1.24 (1.32)	1.42 (1.38)	1.73 (1.49)	1.38 (1.37)
T_2	Spinosad 45 SC	7.33 (2.79)	2.91 (1.84)	2.22 (1.64)	2.40 (1.70)	3.44 (1.99)	2.74 (1.80)
T_3	Fipronil 5 SC	7.40 (2.81)	1.47 (1.40)	1.44 (1.39)	1.51 (1.41)	2.29 (1.66)	1.68 (1.48)
T_4	Imidacloprid 200 SL	7.33 (2.79)	2.93 (1.85)	3.11 (1.88)	2.53 (1.72)	2.67 (1.77)	2.81 (1.82)
T_5	Profenophos 50 EC	7.00 (2.73)	3.89 (2.09)	3.44 (1.98)	3.49 (1.99)	4.33 (2.19)	3.79 (2.07)
T_6	Buprofezin 25 SC	7.40 (2.81)	3.07 (1.88)	2.56 (1.74)	1.91 (1.55)	2.22 (1.65)	2.44 (1.71)
T_7	Acetamiprid 20 SP	7.60 (2.84)	4.27 (2.17)	3.44 (1.98)	2.93 (1.85)	3.91 (2.09)	3.64 (2.03)
T_8	Abamectin 1.9 EC	7.33 (2.79)	4.20 (2.16)	4.00 (2.12)	3.78 (2.06)	4.42 (2.21)	4.10 (2.14)
T_9	Untreated control	7.40 (2.81)	6.87 (2.71)	6.80 (2.70)	5.71 (2.49)	5.91 (2.53)	6.32 (2.61)
	SE ±	0.06	0.06	0.07	0.06	0.06	0.05
	C.D. (P=0.05)	N.S.	0.18	0.21	0.19	0.19	0.14

that, all the insecticidal treatments were significantly superior over untreated control. However, the treatment with thiamethoxam @ 25 g a.i./ha was significantly superior over all insecticidal treatments recording 1.42 average survival aphids/3leaves/plant. Fipronil @ 50 g a.i./ha and buprofezin @ 156 g a.i./ha were at par with thiamethoxam @ 25 g a.i./ha and recorded 1.51 and 1.91 average survival aphids/3leaves/plant, respectively. The next best treatment was spinosad @ 50 g a.i./ha in order of merit with 2.40 aphids/3leaves/plant. Succeeding treatments, imidacloprid @ 25 g a.i./ha and acetamiprid @ 50 g a.i./ha were at par with spinosad @ 50 g a.i./ha indicated 2.53 and 2.93 average survival aphids/3leaves/plant, respectively. Abamectin @ 100 g a.i./ha was least effective treatment and recorded 3.78 average survival aphids/3leaves/plant (Table 1).

Fourteenth days after spraying :

The data recorded on fourteenth days after spraying revealed that, all the insecticidal treatments were significantly superior over untreated control. The surviving population recorded on fourteenth day after spraying exhibited that, thiamethoxam @ 25 g a.i./ha recorded 1.73 average survival aphids/3leaves/plant and was found to be significantly superior over other treatment. The treatment buprofezin @ 156 g a.i./ha and fipronil @ 50 g a.i./ha which were at par with thiamethoxam @ 25 g a.i./ha recorded 2.22 and 2.29 average survival aphids/3leaves/plant, respectively. The next best treatment, imidacloprid @ 25 g a.i./ha, recorded 2.67 average survival aphids/3leaves/plant. The treatment abamectin @ 100 g a.i./ha recorded 4.42 survival aphids/3leaves/plant, was least effective against aphids as compared to other treatments.

Overall effect of various treatments on aphids :

The treatment thiamethoxam @ 25 g a.i./ha recorded 1.38 overall average survival aphid population on plant was found significantly superior over all other treatments. Fipronil @ 50 g a.i./ha was found to be at par with thiamethoxam @ 25 g a.i./ha that recorded 1.68 overall average survival aphids/3leaves/plant. The next best treatment buprofezin @ 156 g a.i./ha, recorded 2.44 overall average survival aphids/3leaves/plant. Spinosad @ 50 g a.i./ha and imidacloprid @ 25 g a.i./ha were at par with buprofezin @ 156 g a.i./ha which recorded 2.74 and 2.81 overall average survival aphids/3leaves/plant, respectively. Abamectin @ 100 g a.i./ha was found to be less effective and recorded 4.10 average survival aphids/3leaves/plant (Table 1). The present findings of effectiveness of thiamethoxam are in agreement with the studies of Misra (2002), who reported that thiamethoxam 25 WG was superior over the conventional insecticides in controlling aphids.

REFERENCES

Annonymus (2010). Indian Horticultural Database, National Horticultural Board. 2008. Govt. of India.

Butani, D.K. and Verma, S. (1976). Insect pests of vegetables and their control 3 : Lady's finger. *Pestol.,* **10**(7): 31-37.

Chaudhary, H.R. and Dadheech, L.N. (1989). Incidence of insects attacking okra and the avoidable losses caused by them. *Ann. Arid Zone*., **28**(3-4): 35-37.

Dhawan, A.K. and Simwat, G.S. (2002). Field evaluation of thiamethoxam for control of cotton jassid, *Amrasca biguttula biguttula* (Ishida) on upland cotton. *Pestol.,* **26**(1): 15-19.

Misra, H.P. (2002). Field evaluation of some newer insecticides against aphids (*Aphis gossypii*) and jassids (*Amrasca biguttula biguttula*) on okra. *Indian J. Ent.,* **64**(1): 80-84.

Singh, G. and Kaushik, S.K. (1990). Comparative efficacy of sampling techniques for jassid population estimation on okra. *Indian J. Ecol.,* **17**(1): 58-60.

Radke, S.G. and Undirwade, R.S. (1981). Seasonal abundance and insecticidal control of shoot and fruit borer, *Earias* spp. on okra. *Indian J. Ent.,* **43**(3): 283-287.

Vadodaria, M.P., Patel, U.G., Patel, C.J., Patel, R.B. and Maisurig, I.M. (2001). Thiamethoxam (Cruiser) 70 WS : A new seed dresser against sucking pests of cotton. *Pestol.,* **25**(9): 13-18.