
BIO-EFFICACY OF BUPROFEZIN 70% DF AGAINST JASSID INFESTING OKRA***PATEL, J. J., PATEL, P. B. AND PATEL, H. C.****MAIN VEGETABLE RESEARCH STATION
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ABSTRACT

A field experiment was conducted at Main Vegetable Research Station, Anand Agricultural University, Anand, Gujarat during *kharif* 2010 and summer 2011, to study the efficacy of buprofezin in comparison to imidacloprid 17.8 SL (20 g a.i./ha) and acephate 75% SP (562.5 g a.i./ha) along with control. Among the different treatments, the higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population (2.25 jassid / leaf) than rest of the treatments during *kharif* 2010. During summer 2011, the higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population (2.75 jassid / leaf) than imidacloprid (3.35 jassid / leaf), its lower dose (150 g a.i./ha) (3.93 jassid / leaf) and acephate (4.87 jassid / leaf). In pooled of two seasons, the higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population (2.50 jassid / leaf) than imidacloprid (3.46 jassid / leaf), its lower dose (150 g a.i./ha) (3.54 jassid / leaf) and acephate (4.65 jassid / leaf). With respect to fruit yield, During *kharif* 2010, the highest dose of buprofezin (200 g a.i./ha) yielded significantly higher okra fruit yield (89.24 q/ha) than imidacloprid (75.53 q/ha) and acephate (66.48 q/ha). During summer 2011, the higher dose of buprofezin (200 g a.i./ha) registered significantly higher fruit yield (59.35 q/ha) than imidacloprid (46.95 q/ha), its lower dose (150 g a.i./ha) (48.69 q/ha) and acephate (40.28 q/ha). In pooled analysis, the higher dose of buprofezin (200 g a.i./ha) registered significantly higher fruit yield (74.29 q/ha) than acephate (53.38 q/ha).

KEY WORDS: *Amrasca biguttula biguttula*, buprofezin, jassid, okra,

INTRODUCTION

Okra [*Abelmoschus esculentus* (L.) Moench] is an important vegetable crop mostly grown for its immature green and non fibrous edible fruits in the tropical and sub tropical regions of the world. It is quite popular in India because of easy cultivation, dependable yield and adaptability to varying moisture conditions. Okra alone accounts for 21 per cent of the exchange earnings from export of vegetables from India (Gupta *et al.*, 2009). India ranks first in the world with a production of 4.53 million tonnes of fruits (70 % of the total world production) of okra from 0.43 million ha of land with a productivity of 10.5 tonnes/ha. In Gujarat, it is cultivated in the area of 0.44 lakh hectares with a production of 4.0 lakh tones of fruits and a productivity of 9.1 tones/ha (Anon., 2009).

There are many factors affecting the low productivity of okra. One of them is the losses caused by insect pests. The crop is affected by number of insect pest, mites and nematodes during different growth stages. Of the various sucking pests, jassid (*Amrasca biguttula biguttula* Ishida) is one of the important pests causing economic damage to the crop at early season. Both nymphs and adults suck the cell sap from ventral surface of leaves and also inject toxic saliva in to the plant tissue while feeding. As a result, the plant become stunted, the leaves crinkle, turn yellowish and become cup shaped. Brownish or reddish colour may develop along the edges of the leaves.

Various new molecules with different mode of action are available in the market which required to be tested for the control of jassid in okra. Farmers use large quantities of chemical insecticides singly or in combination in order to combat this pest problem and higher yield. Indiscriminate use of pesticides particularly at fruiting stage and non adoption of safe waiting period leads to accumulation of pesticide residues in consumable vegetables. Many research workers evaluated imidacloprid against jassid in okra and found effective [Bhargava and Bhatnagar (2001); Acharya *et al.* (2002); Misra and Senapati (2003) and Solangi and Lohar (2007)]. However, information on buprofezin against jassid is scanty. Keeping the above point in view, the present investigation was carried out to study the bio-efficacy of buprofezin 70% DF against jassid infesting okra.

MATERIALS AND METHODS

The field experiment was conducted at Main Vegetable Research Station, Anand Agricultural University, Anand during *khari* 2010 and summer 2011. Okra crop was sown in plot area of 3.0 m x 4.5 m with spacing of 60 x 30 cm. Two doses of buprofezin 70 % DF (150 g a.i./ha and 200 g a.i./ha) were evaluated in comparison to imidacloprid 17.8 SL (20 g a.i./ha) and acephate 75% SP (562.5 g a.i./ha) along with control in a randomized block designed with three replications. The bio-efficacy of buprofezin 70% DF was evaluated based on jassid population and okra fruit yield. For recording the observations, five plants were selected randomly and tagged in each net plot. The observations on jassid population were recorded from the five leaves of selected plants from each net plot prior to 24 hours of insecticide spray as well as 7, 15 and 21 days after each spray. Two sprays of respective insecticides were done, first on appearance of jassids and second after 21 days of first spray were given during both the seasons. The marketable fruit yield was recorded picking wise from each plot. The data obtained for jassid population were analyzed by adopting square root transformation, whereas the data on fruit yield were analyzed without any transformation. The data obtained were analyzed pooled over periods and sprays.

RESULTS AND DISCUSSION

The analysis of the data pooled over periods and sprays on bio-efficacy of buprofezin 70% DF against jassid population are presented in Table 1 indicated that all the insecticidal treatments were significantly effective when compared with control during both the seasons as

well as in pooled over seasons. Among the different treatments, the higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population (2.25 jassid / leaf) than rest of the treatments during *kharif* 2010. The lower dose (150 g a.i./ha) of buprofezin (3.15 jassid / leaf) was at par with imidacloprid (3.56 jassid / leaf), but recorded significantly lower jassid population (4.34 jassid / leaf) as compared to acephate. During summer 2011, the higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population (2.75 jassid / leaf) than imidacloprid (3.35 jassid / leaf), its lower dose (150 g a.i./ha) (3.93 jassid / leaf) and acephate (4.87 jassid / leaf). In pooled of two seasons, the higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population (2.50 jassid / leaf) than imidacloprid (3.46 jassid / leaf), its lower dose (150 g a.i./ha) (3.54 jassid / leaf) and acephate (4.65 jassid / leaf). The lower dose (150 g a.i./ha) of buprofezin was at par with imidacloprid, but recorded significantly lower jassid population as compared to acephate.

The data on fruit yield are presented in Table 2 indicated that all the insecticidal treatments registered significantly higher fruit yield when compared with control during both the seasons as well as in pooled analysis. During first season *kharif* 2010, the highest dose of buprofezin (200 g a.i./ha) yielded significantly higher okra fruit yield (89.24 q/ha) than imidacloprid (75.53 q/ha) and acephate (66.48 q/ha), but was at par with its lower dose (150 g a.i./ha) (82.51 q/ha). The lower dose (150 g a.i./ha) of buprofezin recorded significantly higher okra fruit yield as compared to acephate, but was at par with imidacloprid. During second season summer 2011, the higher dose of buprofezin (200 g a.i./ha) registered significantly higher fruit yield (59.35 q/ha) than imidacloprid (46.95 q/ha), its lower dose (150 g a.i./ha) (48.69 q/ha) and acephate (40.28 q/ha). The lower dose (150 g a.i./ha) of buprofezin gave significantly higher fruit yield as compared to acephate, but was at par with imidacloprid. In pooled analysis, the higher dose of buprofezin (200 g a.i./ha) registered significantly higher fruit yield (74.29 q/ha) than acephate (53.38 q/ha), but was at par with its lower dose (150 g a.i./ha) (65.60 q/ha) and imidacloprid (61.24 q/ha). The lower dose (150 g a.i./ha) of buprofezin was at par with imidacloprid and acephate for okra fruit yield.

CONCLUSION

The higher dose of buprofezin (200 g a.i./ha) recorded significantly lower jassid population than rest of the treatments during both the season as well as in pooled analysis. Higher dose of buprofezin (200 g a.i./ha) yielded significantly higher okra fruit yield.

REFERENCES

- Acharya, S., Mishra, H. P. And Dash, D. (2002). Efficacy of insecticides against okra jassid, *Amrasca biguttula biguttula* Ishida. *Annals of Pl. Prot. Sci.*, **10**(2): 230-232.
- Anonymous (2009). Indian Horticulture Database-2009. Directorate of Horticulture, Gujarat State, Gandhinagar, pp-164 (www.nhb.gov.in).

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- Bhargava, K. K. and Bhatnagar, A. (2001). Bioefficacy of imidacloprid as a seed dresser against sucking pests of okra. *Pest Mgmt. Eco. Zool.*, **9**(1): 31-34.
- Gupta, S., Sharma, R. K., Gupta, R. K., Sinha, S. R., Singh, R. and Gajbhiye, V. T. (2009). Persistence of new insecticides and their efficacy against insect pests of okra. *Bull. Environ. Conta. Toxicol.*, **82**(2): 243-247.
- Misra, H. P. and Senapati, B. (2003). Evaluation of new insecticides against okra jassid (*Amrasca biguttula biguttula*). *Indian J. Agric. Sci.*, **73**(10): 576-578.
- Solangi, B. K. and Lohar, M. K. (2007). Effect of some insecticides on the population of insect pests and predators on okra. *Asian J. Pl. Sci.*, **6**(6): 920-926.

Table 1: Effectiveness of buprofezin 70% DF against jassid in okra

Treatments (g a.i./ha)	Number of Jassid per Leaf*		
	Kharif 2010	Summer 2011	Pooled
RIL 021/F2 70% DF (150)	1.90(3.15)	2.10(3.93)	2.00(3.54)
RIL 021/F2 70% DF (200)	1.64(2.25)	1.80(2.75)	1.72(2.50)
Imdacloprid 17.8% SL (20)	2.01(3.56)	1.95(3.35)	1.98(3.46)
Acephate 75% SP (562.5)	2.21(4.34)	2.31(4.87)	2.26(4.65)
Control	2.56(6.16)	2.66(6.63)	2.61(6.39)
S. Em. $\pm$ T	0.04	0.02	0.03
T x Y	0.05	0.05	0.05
C.D. at 5% T	0.12	0.06	0.07
T x Y	0.14	NS	0.14
C.V. (%)	4.90	4.70	4.80

* $\sqrt{X} + 0.5$ transformed values while, those in parenthesis are original values

Table 2: Impact of buprofezin 70% DF on okra fruit yield

Treatments (g a.i./ha)	Fruit yield (q/ha)		
	Kharif 2010	Summer 2011	Pooled
RIL 021/F2 70% DF (150)	82.51	48.69	65.60
RIL 021/F2 70% DF (200)	89.24	59.35	74.29
Imdacloprid 17.8% SL (20)	75.53	46.95	61.24
Acephate 75% SP (562.5)	66.48	40.28	53.38
Control	24.83	18.12	21.47
S. Em. $\pm$ T	02.31	01.58	05.31
T x Y	-	-	01.98
C. D. at 5% T	07.12	04.86	20.84
T x Y	-	-	05.77
C.V. (%)	06.83	07.39	07.17