

Bio-Efficacy of confidor 200 SL (IMIDACLOPRID) against sucking pests on groundnut

R.S. BHADANE, S.T. AGHAV, M.A. SUSHIR, P.K. DHARNE AND A.J. PATIL*

Department of Genetics & Plant Breeding, Oilseeds Research Station, MPKV, JALGAON (M.S.) INDIA

(Accepted : August, 2007)

The field experiment on bio-efficacy of confidor 200 SL against sucking pests on groundnut were conducted at Oilseeds Research Station, Jalgaon during *kharif* 2000 and 2001. Three levels of doses of confidor 200 SL @ 100 ml, 125 ml and 150 ml per hectare in comparison with conventional insecticides, dimethoate and acephate were evaluated for their relative merits at 3, 7 and 14 days after spraying. All the dose of confidor 200 SL tested under field conditions were found to be significantly effective in reducing the nymphal population of thrips species and leaf hopper at 3 days after spraying recording 70-90% reduction in comparison with conventional insecticides, acephate and dimethoate. The infestation level of LH was not desirable at 7th, 14th days after spraying. It appeared that the molecule confidor 200 SL gave significant protection and proved efficient against the sucking pests, thrips and LH on groundnut during *kharif* season under Jalgaon conditions.

Key words : Confidor, Imidacloprid, Sucking pest.

INTRODUCTION

Groundnut crop is affected by wide range of pests. About dozen of pests are economically important in India (Whiteman and Ranga Rao, 1994). The defoliators are predominantly important in southern parts of country. But sucking pest like leaf hopper and thrips are occurred in severe form as a direct pest and they take heavy toll in vector of majority of viral diseases in groundnut crop. Often these pests cause economic damage particularly in dry weather situation and this damage can be high. Of the vector of PBNB under recondition of late sown crops are often badly suffers. The foliar application of imidacloprid and other conventional insecticides were proved to be effective against the sucking pest of cotton, sunflower and other crops reported by various workers. (Bhat *et al.*, 2003 and Anonymous, 2003). The residual toxicity of imidacloprid (Confidor 200 SL) relatively higher upto 30 to 35 days in cotton reported by Anonymous (2003). Nevertheless, this insecticide found to be better and acting in reduction of neurotransmitter substance acetylene choline in nervous systems of insect pests which induces the killing effect. However, the molecule of imidacloprid was most effective against wide range of dipterous, lepidopterous and coleopterous pests (Elebert, 1990). The pest control perhaps is old farming itself and various practices were working on sustainable basis till middle half of 20th century with presence of maximum agricultural output but with fertilizers responsive variety

of the crop, repeated misuse of pesticides has resulted in the practices of thread mill. Therefore, molecule of newer group of insecticide were tried in comparison with conventional insecticides for their relative performance against the vector species on groundnut. The final tools of IPM technology to manage the noxious pest to keep in economic accommodation level and manage involving in other combination of methods in groundnut cropping system.

MATERIALS AND METHODS

A field experiment was conducted at Oilseeds Research Station, Jalgaon using variety JL-24 during *kharif* 2000 and 2001 to test the bio efficacy of imidacloprid (Confidor 200 SL) in comparison with conventional insecticides, acephate and dimethoate against the pest of thrips and leaf hopper. Trials were laid out in randomized block design with three replications. The sowing was completed during the second week of July in measured plot in 5 x 3 m² with row to row distance 30cm and plant to plant distance 10 cm. There were six treatments, out of which one was maintained as a untreated checks. The recommended crop management practices were followed. The observations of nymphal population of thrips and leaf hopper were recorded at peak incidence on 5 randomly selected plant from each of the treatment. Thereafter, subsequent day, spraying of insecticidal treatment were given with the help of knapsack sprayer. The post count observation on

survival population of thrips and leaf hopper were recorded at 3rd, 7th and 14th days after treatment. Finally, per cent survival of nymphal population in each treatment was worked out and data subjected to statistical analysis.

RESULTS AND DISCUSSION

The data on per cent survival nymphal population of thrips and leaf hopper in different treatment insecticidal application at 3rd, 7th and 14th days were found statistically significant. All the levels of imidacloprid alongwith conventional insecticides proved to be effective in reducing the infestation of foliage damage. Among the

Bhat (2003) and Singh (2003). The present studies confirmed the finding of Baraiay and Vyas (2002) who reported imidacloprid 0.006 per cent as foliar spray found to be effective against *Empoasca kerii*. Pruthi in groundnut with moderately economic.

It can be concluded that the application of imidacloprid at 125ml/ha. or 150ml/ha gave significant protection and proved efficacious against leafhopper to the greater extent compare to thrips during kharif . Therefore, imidacloprid could be used as effective insecticidal treatment for the control of leaf hopper in groundnut cropping system.

Table : Bio-efficacy of imidacloprid (Confidor 200 SL) against thrips and leafhopper on kharif groundnut during 2000 and 2001.

S. No.	Treatment	Per cent survival nymphal population (DAS)					
		Thrips			Leaf hopper		
		3 rd	7 th	14 th	3 rd	7 th	14 th
1	Imidacloprid 100 ml/ha	15.68 (23.31)b	25.15 (30.08)b	42.30 (40.50)a	17.54 (24.66)a	Nil	Nil
2	Imidacloprid 125 ml/ha	13.79 (21.65)b	21.64 (27.62)ab	31.69 (34.19)a	15.24 (22.77)a	Nil	Nil
3	Imidacloprid 150 ml/ha	7.63 (15.94) a	17.23 (24.30)a	34.75 (36.08)a	12.43 (19.98)a	Nil	Nil
4	Acephate 750 g/ha	33.21 (35.08)c	47.21 (43.41)c	62.0 (51.98)b	46.91 (43.16)b	Nil	Nil
5	Dimethoate 500ml/ha	34.35 (35.86)c	49.23 (44.56)c	52.47 (46.42)b	39.82 (39.06)b	Nil	Nil
6	Untreated control	75.39 (60.30)d	84.11 (66.63)d	95.01 (79.59)c	83.65 (67.16)c	Nil	Nil
	S.E. ±	1.42	2.0	3.18	3.74		
	CD at 5%	4.49	6.30	10.03	11.78		

DAS: Days After Spraying

Figures in parenthesis are the arcsin values.

Mean do not significantly differ by common alphabets.

insecticides, the treatment of imidacloprid at 150 ml/ha gave longer residual toxicity to its lower doses. The survival rate of nymphal population of thrips as well as leaf hopper was minimum compared to conventional insecticidal treatments at 14th days after application. The survival of leafhopper population was reported to be nil after 7th days after application in all of insecticidal treatments may be because of treatment exposures. The residual toxicity of imidacloprid was much higher against leafhopper as compared to thrips. It seems that the imidacloprid did not show effectiveness against thrips. Foliar application of imidacloprid at 100ml/ha was quite effective against leaf hopper on sunflower reported by

Asian J. Bio Sci. (2007) 2 (1&2)

REFERENCES

- Anonymous (2003).** Annual cotton research workers group meeting 2003. PP-105-107.
- Baraiay, K.P. and Vyas, H.J. (2002).** Efficacy of different insecticides against leafhopper, *Empoasca kerii* Pruthi on groundnut *J. Oilseeds Res.*, **19**: 135-137.
- Bhat, N.S., Kencharaddi, R.N. and Roy, Aprita. (2003).** Evaluation of seed treatment and foliar application with different insecticides against sucking pests on Sunflower. National seminar on stress management in oilseeds for attaining self-reliance in vegetable oil, held at DOR, Hyderabad on Jan. **28-30** : 2003.

Elbert, A. H., Overbeck, K. Iwaya and Tubboi, S. (1990). Imidacloprid a novel systemic nitromethyl analogue insecticide for crop protection, British Crop Protection Council.

Singh, Harvir. (2003). Management of leaf hopper in sunflower through seed treatment and foilar sprays with imidacloprid ISOR National Seminar: Stress management in Oilseeds Jan.28-30 held at DOR Hyderabad PP-80.

Whiteman, J.A. and Ranga Rao, G.A. (1994). The groundnut crop as scientific basis of Improvement . Ed.Smart *J. Chapman and Hall*, London. PP.151.

