INTERNATIONAL JOURNAL OF PLANT PROTECTION / VOLUME 6 | ISSUE 1 | APRIL, 2013 | 227-228

RESEARCH NOTE

Efficacy of newer insecticides against bud fly (*Dasyneura lini* Barnes) in linseed

■ R.K. PAL

Department of Entomology, C.S. Azad University of Agriculture and Technology, KANPUR (U.P.) INDIA

ARITCLE INFO

Received : 06.03.2013
Accepted : 30.04.2013

Key **W**ords :
Newer insecticides,
Dasyneura lini,
Linseed

*Corresponding author:
rpal09@rediffmail.com

ABSTRACT

Experiments on newer insecticides *viz*., imidacloprid @ 0.0045%, acetamiprid @0.004%, thiomethoxam @ 0.005%, abamectin @ 0.0009 %, fipronil @ 0.01%, thidicarb @ 0.075%, spinosad @ 0.0096 % and indoxacarb @ 0.006 % were carried out to test their efficacy against bud fly on linseed during *Rabi* 2008-09 and 2009-10. Results revealed that spinosad @ 0.0096 % gave significant lowest bud fly infestation *i.e.* 9.4 per cent with higher per cent reduction (80.2 per cent) over control. The highest yield (1889.6 kg/ ha) was obtained in spinosad @ 0.0096 % treated plot followed by thiomethoxam 0.005 % (1632.00 kg/ ha).

How to view point the article : Pal, R.K. (2013). Efficacy of newer insecticides against bud fly (*Dasyneura lini* Barnes) in linseed. *Internat. J. Plant Protec*., **6**(1) : 227-228.

Linseed (*Linum usitatissimum*) is an important oilseed and fibre crop. This crop has various industrial utilities in paper, pulp and flax. Linseed crop is infested and damaged by more than eight insect pests. Among these insect pests, linseed bud fly (*Dasyneura lini*) has been rated the most destructive pest of the flower bud (Patel and Thakur, 2005). Some of newer formulations are considered safer in pest control programme and may prevent several side effects. Thus, an attempt was made to find out the efficacy of some newer insecticides against the incidence of *Dasyneura lini* under field conditions.

The field trials were conducted during *Rabi* season of 2008-09 and 2009-10 on linseed cv. Neelam at Crop Research Farm, Mauranipur, Jhansi of C.S. Azad University of Agriculture and Technology, Kanpur to find out the most effective newer insecticides against linseed bud fly. The treatment comprised of imidacloprid @ 0.0045 % (T_1), acetamiprid @ 0.004 % (T_2), thiomethoxam @ 0.005% (T_3), abamectin @ 0.0009 % (T_4), fipronil @ 0.01 % (T_5), thiodicarb @ 0.075 % (T_6), spinosad @ 0.0096 % (T_7) indoxacarb @ 0.006 % (T_8) and untreated control (T_9) and the experiment was laid out in Randomized Block Design with three replications. The plot size was 3x4 m with spacing of 25 cm and 5 cm between lines and plants, respectively. The sowing was done in the second fortnight of November in both the years. All the standard crop production practices were fallowed except plant protection measures. Two fortnightly sprayings of newer formulations were done by knepshek sprayer starting from bud initiation. Observations on per cent infestation were recorded by counting of buds on five randomly selected plants at dough stage in morning hours. The seed yield of each plot was recorded at threshing and converted in kg/ ha basis.

Desired concentration of insecticides was prepared by using the following formula :

$$\text{Amount of insecticide} = \frac{\text{Concentration required x Amount required}}{\text{Concentration of material a.i.(ml)}}$$

The mean data of population were calculated as percentage reduction over control and per cent increase yield over control was calculated by Abbott's formula (1925) :
where,

C= Per cent damage of control
T= Per cent damage of treated plot

$$\text{Per cent incresed yield over control} = \frac{T - C}{T}$$

where,

T= Yield in protected plot
C= Yield in unprotected plot

Table 1: Efficacy of newer insecticides against linseed bud fly, *Dasyneura lini* Barnes Figures in parentheses are angular transformed values

Treatments	Dose (%)	Bud fly infestation (%)			Reduction over control (%)	Seed yield (kg/ha)			Per cent increased yield over control
		2008-09	2009-10	Mean		2008-09	2009-10	Mean	
T_1 Imidacloprid	0.0045	22.1	19.5	20.8 (27.1)	56.3	1585.8	1475.0	1530.4	50.9
T_2 Acetamiprid	0.004	25.7	23.6	24.6 (29.7)	48.4	1462.5	1383.3	1422.9	47.1
T_3 Thiomethoxam	0.005	20.3	17.5	18.9 (25.7)	60.3	1722.5	1541.6	1632.0	53.9
T_4 Abamectin	0.0009	32.4	28.3	30.3 (33.3)	36.4	962.5	1141.6	1052.0	28.6
T_5 Fipronil	0.01	36.3	31.3	33.8 (35.5)	29.1	894.1	1083.3	988.7	23.9
T_6 Thiodicarb	0.075	41.4	38.6	40.0 (39.2)	16.1	835.0	933.3	884.1	14.9
T_7 Spinosad	0.0096	8.6	10.3	9.4 (17.8)	80.2	2070.8	1708.3	1889.6	60.3
T_8 Indoxacarb	0.006	30.5	26.5	28.5 (32.2)	40.2	1105.0	1275.0	1190.0	36.8
T_9 Control		49.0	46.5	47.7 (43.6)		695.0	808.3	751.6	
S.E.±				1.26				131.3	
C.D. at 5%				2.67				275.8	

All the newer formulations were found significantly effective in reducing the bud fly infestation by 16.1 to 80.2 per cent in linseed. Observation of Table 1 showed that spinosad @ 0.0096 % was found most effective in minimizing bud fly infestation (9.4 per cent) in comparison to other treatments and control (47.7 per cent). This treatment also gave higher (80.2 per cent) reduction of bud fly incidence over control. However, thiomethoxam @0.005 and imidacloprid @ 0.0045 per cent were found at par to each other by giving 60.3 and 56.3 per cent reduction of bud fly over control. Other treatments varied from 24.6 to 40.0 per cent bud fly infestation followed by 16.1 to 48.4 per cent bud fly infestation over control. The different newer insecticides followed the order with regards to bud fly infestation, *i.e.* spinosad > thiomethxam > imidacloprid > acetamiprid > indoxacarb > abamectin > fipronil and > thiodicarb. The findings of Patra *et al*. (2009) were similar to the present investigations. They reported that spinosad with a noble mode of action having ovicidal and larvicidal properties was proved to be excellent against *Earias vittella* in okra.

The spraying of spinosad @ 0.0096 % was found most effective by giving 1889.6 kg/ ha linseed yield with 60.3 per cent increased yield over control. The higher yield with this formulation was mainly due to efficient control of bud fly. Rest of the treatments varied from 884.1 to 1632.0 kg/ ha yield with 14.9 to 53.9 per cent increased yield over control (751.6 kg/ha). Similar results were also observed by Dwawan *et al*. (2007) against *Spodoptera litura.*

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