Environment & Ecology 27 (4B) : 1907—1909, 2009
 ISSN 0970-0420

Economics and Efficacy of some Newer Insecticides against Linseed Budfly *Dasyneura lini* Barnes in Linseed under Mid -Western Plain Zone of UP

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Abstract

Efficacy of eight insecticides viz, imidaclopride methyl-demeton, methyl parathion, phosolon, malathion, dimethoate, cypermethrine and fenvalvarate with their recommended dose were tested against linseed budfly *(Dasyneura lini Barnes*) under mid-western plain zone during *rabi* of 2006-07 and 2007-08. Imidaclopride with its recommended dose (600 ml/ha) was highly effective against budfly with highest grain yield and cost benefit ratio. Methyl-demeton with its recommended dose (750 ml/ha) was also recorded lower incidence with comparatively higher grain yield and cost benefit ratio, which was at par with the recommended dose of phosolon. Methyl parathion, malathion, dimethoate, cypermethrine and fenvalvarate (1,000, 800, 1000, 1,250, 750 and 750 ml respectively). Dimethoate, malathion phosolon and methyl parathion could not give effective control of budfly at their recommended doses.
Key words : Linseed *Dasyneura lini,* Incidence, Chemical control, Efficacy.

The linseed (*Linum usitatissimum* L.) is grown in some areas of mid-western plain zone of UP on marginal lands under irrigated forming. Pest surveillance studies revealed that the budfly *Dasyneura lini* Barnes is the most destructive pest of linseed. The extent of damage due to this pest has been reported to the tune of 75 to 80% (1, 2). Singh and Mathur (3), Singh et al. (4, 5) and Sood and Pathak (6) suggested that the linseed budfly can be controlled by application of insecticides as dust, ec and granular formulations under different agro-climatic conditions. However, information regarding chemical control of this pest in mid-western plain zone is lacking. Since this is a marginal crop for which farmers cannot afford for plant protection. Eight common newer insecticides, viz. imidaclopride, methyldemeton, methyl parathion, phosolon, malathion, dimethoate, cypermethrine and fenvalvarate with their recommended doses were tried to find out the economic control of linseed budfly.

Methods

Field trials were conducted to assess the efficacy of insecticides against budfly during 2006-07 and 2007-08 at the Zonal Research Station Nagina linseed variety Garima was sown under irrigated condition in 5 × 3 m plots, using randomized block design with four replications during second week of November in both the years. Fertilizer application and other agronomic practices were followed based on recommendations. Eight insecticides viz. imidaclopride (600 ml/ha), methyl-demeton (750 ml/ha), methyl parathion (800 ml/ha), phosolon (1 liter/ha), malathion (1 liter/ha), dimethoate (1250 ml/ha) cypermethrine (750 ml/ha) and fenvalvarate (750 ml/ha) were applied twice, first at the primordial stage and 15 days after first application. Observations on bud infestation were recorded at harvest. Twenty plants from each plot were selected at random and five buds from each plot were plucked and percent infestation was computed as suggested by Singh et al. (4). Economics of insecticidal application was calculated.

Results and Discussion

All the eight insecticides provided significantly lower incidence of budfly as compared to control during both the years. In the insecticide treated plots, the budfly infestation ranged from 7.11 to 21.25% and 8.31 to 22.78% compared to 43.62 and 45.33% in the untreated checks during 2006-07 and 2007-08 respectively. The minimum incidence (7.11 and 8.31%) was recorded in plots treated with imidaclopride (600 ml/

Table 1. Effect of different insecticides on grain yield and economics of linseed. Cost of insecticides and labor charges are based local rates. Cost of linseed grain yield is Rs 1,500/ q. Figures in parentheses are percentages values.

Treatments	Dose (ml/ha)	Mean budfly damage (%) 2006-07	2007-08	Yield (q/ha) 2006-07	2007-08	Mean
Imidaclopride 17.6 EC	600 ml	7.11	8.31	7.5	7.9	7.70
Methyl demetan 25 EC	750	16.73	17.11	6.8	6.1	6.45
Methyl Parathion 50 EC	800	20.07	19.37	5.1	4.2	4.65
Phosolon 36 EC	1000	21.25	22.78	4.9	4.5	4.70
Malathion 50 EC	1000	17.74	18.39	4.8	4.3	4.55
Dimethoate 25 EC	1250	19.21	20.18	3.6	4.5	4.05
Cypermethrine 20 EC	750	16.74	15.64	5.7	5.2	5.45
Fenvalvarate 20 EC	750	14.34	15.68	4.9	4.7	4.80
Control	-	43.62	45.35	2.6	2.9	2.75
		2.19	2.18	0.59	0.71	-

Table 1. Continued.

Treatments	Increase in yield over control (q/ha)	cost of additional yield (q/ha)	cost of insecticidal application (Rs/ha)	Net profit (Rs/ha)	Cost benefit
Imidaclopride 17.6 EC	4.95	7425	2500	4925	1 : 1.9
Methyl demetan 25 EC	3.70	5450	1950	3400	1 : 1.7
Methyl Parathion 50 EC	2.70	4050	1500	2550	1 : 1.7
Phosolon 36 EC	1.95	2925	1200	1725	1 : 1.4
Malathion 50 EC	1.80	2700	1200	1500	1 : 1.2
Dimethoate 25 EC	1.30	1950	1200	750	1 : 0.63
Cypermethrine 20 EC	2.05	3075	1500	1575	1 : 1.05
Fenvalvarate 20 EC	2.05	3075	1500	1575	1 : 1.05
Control	-	-	-	-	-
	-	-	-	-	-

ha) and it was at par with the recommended doses of methyl demeton (750 ml/ha), methyl parathion (800 ml/ha), phosolon (1 liter/ha), malathion (1liter/ha), dimethoate (1,250 ml/ha), cypermethrine (750 ml/ha) and fenvalvarate (750 ml/ha) during both the years.Methyl parathion, phosolan and dimethoate were less effective in controlling the budfly incidence, recording 19 to 22% damage. Results with respect to newer insecticide are in conformity with the findings of Singh et al. (4) and Sood and Pathak (6).

The results indicated that there were significant yield differences among the treatments. The highest grain yield (7.5 and 7.9 q/ha) was recorded in plots treated with imidaclopride at 600 ml/ha. The second best yield (6.8 and 6.1 q/ha) at recommended dose (750 ml) and (7.5 q and 5.2 q/ha) at recommended dose (750 ml) was obtained by the application of methyl-demeton and cypermethrine. However, no significant differences were observed between methyl parathion, phosolon, malathion and dimethoate. These findings are similar to those of Singh et al (4, 5), who recorded maximum yield with phosphamidan 0.05%

Economics of Control. Imidaclopride applied at 600 ml/ha was the most economical treatment with cost-benefit ratio of 1 : 1.9. However, methyl-demeton applied at recommended dose (750 ml/ha) was second best effective with cost benefit ratio of 1 : 1.7. The lowest cost benefit (1 : 0.63) was obtained with dimethoate applied at 1,250 ml/ha.

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