

EVALUATION OF EFFICIENCY OF INSECTICIDES FOR THE CONTROL OF RICE LEAF FOLDER

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ABSTRACT

Spraying monocrotophos (Nuvacron) 36 SWC @ 500 ml/ha on need basis was found to be the most effective in keeping the rice leaf folder infestation below ET level as well as in giving highest grain yield with maximum net profits. Quinalphos (Ekalux) 25 EC and phosalone (Zolone) 35 EC ranked second in order of efficacy. Performance of chlorpyrifos (Coraban) 20 EC and phosphamidon (Dimecron) 85 SC was moderate, while fenitrothion, dichlorvos, fenthion and carbaryl were not very effective.

KEY WORDS: Leaf folder, Insecticides, Rice.

The leaf-folder (*Cnaphalocrocis medinalis*) is now considered to be a threat to rice production in many rice growing areas. Earlier scientists reported the efficacy of endosulfan (Das and Nair, 1974), monocrotophos (Velusamy et al. 1978, (Heinrichs and Valencia, 1980), chlorpyrifos and monocrotophos (Jutrao and Hirao, 1982) against leaf folder. With a view to re-evaluate nine currently recommended chemicals and to find out the most effective ones against leaf folder, field trials were conducted at Rice Research Station, Tirur during samba season of 1985, 1986 and 1987 and the results are reported.

MATERIALS AND METHODS

Trials were laid out in randomised block design with ten treatments, replicated thrice. Twenty five days old seedlings of variety CO 43 were planted in plots of 10 m² adopting 20 x 10 cm spacing. The treatments consisted of sprays of fenitrothion (Folithion) 50 EC (625), monocrotophos (Nuvacron) 36SC (180), Phosalone (Zolone) 35 EC (525), Quinalphos (Ekalux) 25 EC (250), dichlorvos (Nuvan) 76 SC (190), phosphamidon (Dimecron) 85 SC (213), chlorpyrifos (Coraban) 20 EC (250), fenthion (Lebaycid) 100 EC (500) and carbaryl (Sevin) 50% WP (1250) g.a.i./ha.

Three rounds of treatments

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Table 1. Data on leaf-folder infestation and grain yield.

Treatments	Dose g.a.i./ha	Percentage of leaf-folder infestation						Grain yield (kg/ha)		
		1984		1985		1986		1984	1985	1986
		%	T.V.	%	T.V.	%	T.V.			
Fenitrothion	625	20.71	27.06	13.43	21.49	8.2	16.67	3375	3574	4940
Monocrotophos	180	4.00	11.45	6.05	14.24	4.6	12.33	3767	4266	5433
Phosalone	525	15.61	23.27	10.03	18.46	6.3	14.50	3278	3597	4750
Quinalphos	250	10.85	19.27	9.20	17.66	7.3	15.68	3705	3677	4730
Dichlorvos	190	15.20	22.95	16.30	23.00	7.6	16.03	3425	3432	5017
Phosphamidon	213	14.41	20.60	10.40	18.81	13.2	21.25	2861	3750	4600
Chlorpyrifos	250	16.25	23.76	9.53	17.98	10.5	18.88	3641	3544	4850
Fenthion	500	22.65	28.39	14.68	22.53	10.3	18.76	3570	3112	4750
Carbaryl	1250	15.10	22.87	13.55	21.60	7.9	16.31	2928	3194	4467
Control	-	37.94	38.02	27.13	31.38	19.3	26.08	2667	3080	4333
C.D. (P=0.05)		4.08		0.83		1.34		N.S	379	319

T.V. - Transformed Values

were given when the pest infestation crossed the ET level (10% leaf damage at vegetative phase and 5% at flowering stage) using a hand operated knapsack sprayer at 500 litres of spray fluid per hectare. Observations on leaf damage by leaf folder were made at weekly intervals in order to find out whether the infestation had crossed ET level or not. Further ten days after each round of treatment also, leaf damage was assessed. Total number of leaves and affected leaves from 25 hills were selected at random per plot and percentage of infestation

were worked out. The data were transformed into arcsin values for the purpose of statistical scrutiny. The plot-wise grain yield was also recorded and the data were analysed statistically. The cost benefit ratios were also worked out for each treatment for 1985 and 1986 trials.

RESULTS AND DISCUSSION

The treatment differences with respect of leaf folder damage were highly significant in all the three trials (Table 1). Significantly lesser damage was recorded in insecticidal

Table 2. Economics of insecticide application per ha.

Treatments	Cost of 3 rounds of treatment (Rs.)	1985		1986	
		Cost of extra yield (Rs.)	Net Profit (Rs.)	Cost of extra yield (Rs.)	Ne Prof. (Rs.)
Fenitrothion	560	741	181	911	351
Monocrotophos	270	1779	1509	1650	1380
Phosalone	460	776	316	626	166
Quinalphos	360	869	536	600	240
Dichlorvos	190	528	338	1026	836
Phosphamidon	230	1005	775	401	171
Chlorpyriphos	440	696	250	776	336
Fenthion	360	48	Loss	626	266
Carbaryl	265	171	Loss	201	Loss
Control	-	-	-	-	-

treatments as compared to untreated control. Monocrotophos proved to be the most effective insecticide by registering the least infestation of 3.9, 6.0 and 4.6% as against 37.9, 27.1 and 19.3% in untreated control during 1984, 1985 and 1986 respectively. In the order of efficacy, quinalphos ranked second in 1984 and 1985 while phosalone stood second in 1986 trial. The performance of phosphamidon and chlorpyriphos was moderate while fenitrothion, fenthion, dichlorvos and carbaryl were not consistent in their efficacy.

The yield differences though were not significant during 1984 trial, monocrotophos gave the highest yield of 3767 kg/ha as against 2667 kg/ha of control. The yield differences among the treatments were statistically significant in 1985 and 1986 trials. In both the years, monocrotophos was significantly superior to other chemicals and untreated control by recording highest yields of 4266 and 5433 kg/ha respectively during 1985 and 1986 as against 3080 and 4333 kg/ha in untreated control.

Among the nine insecticides tested monocrotophos realised the highest net profit of Rs.1,509/ha in 1985 and Rs.1,380/ha in 1986. The monetary returns were impressive in the case of phosphamidon, quinalphos and dichlorvos also (Table 2).

Velusamy et al. (1978) found that spraying monocrotophos was efficient in checking rice leaf-folder. According to Heinrichs and Valencia (1980), cent percent mortality of larvae was observed in pots sprayed with monocrotophos. Field studies conducted by the Directorate of Rice Research, Hyderabad

revealed monocrotophos, chlorpyrifos and quinalphos to be very effective in checking leaf-folder (Dorr, 1981). Jutrao and Hirao (1982) found out chlorpyrifos and monocrotophos to be very promising in controlling leaf-folder. The results of the present study are also in conformity with the earlier results.

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