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BIO EFFICACY OF CERTAIN SYNTHETIC PYRETHROIDS AGAINST MAJOR PESTS OF BRINJAL

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ABSTRACT

Field experiments wore conducted to evaluate the bio-efficacy of new synthetic pyrethroids in comparison with conventional insecticides against the shoot and fruit borer, *Leucinodes orbonalis* Guen. and spotted beetle, *Henosepilachna vigintioctopunctata* L. Cypermethrin 55 g a.i/ha was effective against the shoot borer and cypermethrin and carbaryl were effective against spotted beetle.

KEY WORDS : Synthetic Pyrethroids, Brinjal pests

Among the pests of brinjal, the damages inflicted by shoot and fruit borer, *Leucinodes orbonalis* Guen. and spotted leaf beetle, *Henosepilachna vigintioctopunctata* L. result in economic loss. The effectiveness of monocrotophos, carbaryl and endosulfan in the control of the above pests could be only to a limited extent (Uthamasamy *et al.*, 1977; Teotia and Sinha, 1977; Nighut and Taley, 1979). In the present study the efficiency of synthetic pyrethroids and a few conventional insecticides are reported.

MATERIALS AND METHODS

Two field experiments in brinjal were conducted in the farmer's holdings at Chidambaram in South Arcot district. The first trial was conducted during July - October, 1985 and the second one during January - April 1986. The experiments were of a randomised blocks design with nine treatments (Table 1) replicated four times. The plots were of the 4 m x 4 m. The insecticides were sprayed four times at fortnightly intervals commencing from 35 days after transplanting. Observations on shoot infestation by the borer showing deadhearts were observed on 7th and 14th day after each spray by counting the total and affected plants in each plot. The fruit borer damage was assessed on number basis by counting the total number of fruits per plot at each harvest and weighing the healthy and affected fruits per plot. The mortality of grubs and adults of spotted beetle was recorded from five selected plants in each plot on 1, 3, 7 and 14 days after each spray. The data on the mean incidence of the pests after each spray were analyses statistically.

RESULTS AND DISCUSSION

The data from the first experiment (Table 1) indicated that all the insecticides significantly reduced the shoot borer infestation.

Cypermethrin @ 55 g a.i/ha effected 79.7% reduction in infestation of shoot borer followed by fluvalinate 70 g a.i./ha (77.0%) and monocrotophos (77.0%). Fluvalinate @ 30 g a.i./ha was found to be the least effective among the treatments by recording only 54.1% reduction of the pest.

The results of the second trial (Table 1) indicated that complete elimination of shoot borer was observed after second spray itself. Monocrotophos recorded the maximum reduction of 88.2% in shoot infestation by the borer

Table 1. Efficiency of Insecticides on brinjal shoot and fruit borer

Treatments	Concentration g.ai/ha	Shoot infestation (%) Experiment		Fruit infestation (%) Experiment I		Fruit infestation (%) Experiment II		Yield of helathy frutis Experiment	
		I	II	No.	Wt.	No.	Wt.	I	II
Fluvalinate	30	6.8^{b} (2.65)	4.9^{b} (2.26)	40.4^{c} (39.37)	38.1^{c} (39.10)	50.5^{b} (45.32)	47.8^{b} (43.37)	8575	8063
Fluvalinate	50	3.5^{c} (1.91)	3.3^{cde} (1.79)	20.6d (26.90)	16.9^{d} (24.17)	25.7^{f} (30.25)	23.5^{e} (28.75)	19456	11750
Fluvalinate	70	3.4^{c} (1.88)	3.9^{bcd} (2.02)	19.8^{d} (26.35)	16.2^{d} (23.56)	12.8^{h} (20.57)	10.5^{g} (18.53)	17756	16125
Fenvalerate	110	3.3^{c} (1.84)	2.7^{cde} (1.60)	16.2b (23.60)	14.2^{e} (22.15)	14.5^{g} (22.92)	12.4^{f} (20.27)	22419	10875
Cypermethrin	55	3.0^{c} (1.76)	2.3^{de} (1.48)	14.8^{e} (22.50)	13.3^{e} (21.40)	10.5^{c} (18.57)	7.9^{h} (15.72)	19606	24063
Monocrotophos	400	3.4^{c} (1.92)	1.7^{e} (1.28)	42.8^{c} (40.73)	39.7^{c} (39.06)	38.2^{d} (38.27)	33.8^{c} (36.42)	8675	9438
Quinalphos	313	6.5^{b} (2.59)	6.8^{f} (2.64)	50.0^{b} (45.02)	46.9^{b} (43.20)	48.3^{c} (43.97)	47.1^{b} (43.24)	7775	8625
Carbaryl	1000	5.1^{b} (2.33)	2.1^{de} (1.37)	42.7^{c} (40.74)	39.2^{c} (36.65)	30.2^{e} (33.25)	28.6^{d} (32.24)	8669	13438
Control		14.8^{a} (3.92)	11.5^{a} (3.43)	80.0^{a} (63.91)	79.2^{a} (62.79)	85.5^{a} (67.28)	83.2^{a} (65.56)	5338	3563
CD (P = 0.05)				1.55	1.35	1.742	1.76		

Figures in parentheses are transformed values. Means with similar alphabets do not differ significantly.

larvae as against only 40.9% reduction in quinalphos treated plots.

The percentage of fruit infestation from first experiment on number basis was minimum with 14.8% in cypermethrin treated plots. A similar trend was observed on weight basis also. Fenvalerate recorded the highest yield of healthy fruits, 22419 kg/ha as against 7775 kg in quinalphos treated plots. In the second field trial, cypermethrin recorded minimum infestation on the basis of number and weight, whereas fluvalinate @ 30 g a.i./ha was the least effective treatment. Cypermethrin and fluvalinate @ 70 g a.i./ha treated plots recorded 24,063 kg/ha and 16,125 kg of healthy brinjal fruits per plot (16 m^2) respectively.

The data on the mean incidence of spotted beetle grubs (Table 2) indicated that cypermethrin and carbaryl were effective. Considering both the trials, cypermethrin was effective against the adults of spotted beetles.

Table 2. Efficancy of Insections spotted beetle grubs and adults

Treatments	Grubs				Adults			
	Experiment I		Experiment II		Experiment I		Experiment II	
	Mean	% reduction	Mean	% reduction	Mean	% reduction	Mean	% reduction
Fluvalinate @ 30 g a.i./ha	8.0^{bc} (2.81)	30.4	6.1^{b} (2.51)	57.0	5.9^{b} (2.48)	43.3	6.1^{bc} (2.54)	48.3

Treatments	Grubs				Adults			
	Experiment I		Experiment II		Experiment I		Experiment II	
	Mean	% reduction	Mean	% reduction	Mean	% reduction	Mean	% reduction
Fluvalinate @ 50 "	7.1^{bcd} (2.74)	38.3	4.5^{cd} (2.14)	68.3	3.6^{d} (1.91)	65.4	4.1^{d} (2.06)	65.4
Fluvalinate @ 70 "	5.9^{de} (2.54)	48.7	4.2^{cd} (2.05)	70.4	3.2^{d} (1.83)	69.2	3.2^{e} (1.88)	72.9
Fenvalerate @ 110 "	5.8^{cde} (2.68)	40.9	4.6^{cd} (2.18)	67.6	2.8^{de} (1.75)	73.1	3.4^{e} (1.88)	71.2
Cypermethrin @ 55 "	5.7^{e} (2.46)	50.4	4.1^{b} (2.03)	71.1	2.3^{e} (1.57)	77.9	2.4^{f} (1.61)	79.7
Monocrotophos @ 0.4kg "	6.8^{cde} (2.66)	40.9	4.4^{cd} (2.14)	79.0	5.4^{bc} (2.39)	48.1	5.4^{c} (2.38)	54.2
Quinalphos @ 0.313kg "	8.2^{b} (2.93)	28.6	5.7^{bcd} (2.36)	59.0	6.5^{b} (2.61)	37.5	6.3^{b} (2.60)	46.6
Carbaryl 1.0 kg a.i/ha "	7.8^{bc} (2.85)	32.2	3.9^{d} (2.00)	72.5	4.7^{c} (2.22)	54.8	4.5^{d} (2.18)	61.9
Control	11.5^{a} (3.33)	-	14.2^{a} (3.79)	-	10.4^{a} (3.30)	-	11.8^{a} (3.50)	-
C.D. (P = 0.05)	0.214		0.314		0.223		0.170	

Figures in parentheses are transformed values means with same alphabets do not differ significantly.

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INFLUENCE OF VARIETIES, SPACINGS AND PEST MANAGEMENT ON THE INCIDENCE OF THREE MAJOR PESTS OF RICE

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ABSTRACT

In a study on the influence of varieties, spacings and pest management, spraying with monocrotophos 36 WSC at 500 ml/ha. recorded significantly lower infestation of pests and an increase of 10% grain yield. Insect resistant cultures IET 6315 and ACM 8 recorded significantly lower incidence of gall midge and stem borer as compared to IR 20. Spacings had no influence on the incidence of the pests and yield. IR 20 at a spacing of 20 x 15 cm, sprayed at ETL recorded the lowest incidence of leaf folder.