

RESEARCH NOTES

Assessment of Contact Toxicity of Insecticides to  
*Chelonus blackburni* Cam. (Hymenoptera: Braconidae)

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*Chelonus blackburni* Cam. is an important parasite of cotton bollworms. To assess the relative safety of insecticides like methomyl (Lannate 24L.), endosulfan and EPN to this parasite, a laboratory study was conducted during 1984-85 at insectary, in Tamil Nadu Agricultural University, Coimbatore and the results are presented in this communication.

A transparent plastic cylinder of size 14 x 12.5 cm was used for confining five pairs of adult female parasites per replication. It was covered by a muslin cloth at the top to provide aeration. Cotton leaves that were treated with three insecticides viz., methomyl, EPN and endosulfan at different doses and untreated leaves were collected every 24 h from the field. The leaf was kept in the vial in such a way that the petiole was in contact with water and the mouth of the vial was then plugged with cotton wool. The leaf was changed every 24 h with fresh ones collected from the plants of treated fields. The experiments were conducted at room temperature (26-37°C). Fifteen pairs of adult female parasites were used per treatment having five pairs per replication.

There were three replications for each treatment. After every 24 h, mortality counts were taken and the leaves were also changed uniformly in all the treatments. The PT index (period x toxicity) was calculated from the percentage mortality of the parasite to compare the relative safety of insecticides.

The results showed that there was 100 per cent mortality of the parasitoids on the first two days of exposure in all the insecticides and on subsequent days, in some insecticides there was decline (Table 1). From the results it was seen that endosulfan at 700 g a.i./ha was relatively safer to *C. blackburni*

four days after treatment and the persistent toxicity was also lesser, when compared to other insecticides (Table 1). The relative safety of endosulfan to *C. blackburni* observed in the present study is in conformity with the findings of Manoharan and Balasubramanian (1982). The high toxicity of methomyl and EPN was reported by Campbell *et al.* (1952) who found that EPN 0.20 kg/ha applied for the control of cotton consistently eliminated *C. blackburni*. After application of methomyl 0.1 per cent, about 9 days were required for the mortality of *C. inanitus* to drop to 50 per cent. Rechav (1974) and Shelton *et al.* (1981) found that methomyl application for the control of potato tuber moth resulted in the total elimination of its parasite *C. phthorimaea*.

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KEY WORDS : *Chelonus blackburni*, insecticide safety

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Table 1. Contact toxicity of methomyl and EPN to *Chelonus Blackburni* exposed to insecticide treated cotton leaves at various doses (means of three observations)

Treatment	Percentage mortality days after sowing																P	Toxi- city	PT	ORS
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
Methomyl @ 300 g ai/ha	90.00	90.00	80.00	80.00	70.00	63.33	50.00	33.33	20.00	0.0							11	70.60	776.66	2
Methomyl @ 450 g ai/ha	96.67	90.00	83.33	80.00	70.00	66.67	63.33	36.67	20.00	0.0							11	73.33	806.67	3
Methomyl @ 600 g ai/ha	100.00	90.00	90.00	80.00	73.33	70.00	60.00	40.00	23.33	10.00	0.0						12	69.72	836.66	4
Methomyl @ 750 g ai/ha	100.00	93.33	90.00	86.67	73.33	60.00	46.67	46.67	33.33	20.00	0.0						12	70.83	850.00	5
EPN @ 563 g ai/ha	96.67	96.67	90.00	90.00	83.33	76.67	66.67	66.67	53.33	43.33	26.67	16.67	0.0				14	71.91	1006.68	6
EPN @ 844 g ai/ha	100.00	100.00	93.33	90.00	80.00	80.00	73.33	60.00	53.33	46.67	36.67	26.67	0.0				14	74.29	1040.00	7
EPN @ 1125 g ai/ha	100.00	100.00	100.00	90.00	90.00	80.00	80.00	73.33	66.67	50.00	46.67	43.33	36.67	30.00	10.00	0.0	17	70.39	1196.67	8
EPN @ 1406 g ai/ha	100.00	100.00	100.00	90.00	90.00	83.33	80.00	70.00	70.00	60.00	53.33	50.00	36.67	33.33	20.00	10.00	18	69.26	1246.66	9
Endosulfan at 700 g ai/ha	100.00	86.67	63.34	45.00	0.0												6	82.50	495.01	1

ORS : Order of safety, PT : Period x Toxicity