

OVICIDAL ACTION OF INSECTICIDES AND MOULTING INHIBITOR ON THE EGGS OF RICE EARHEADBUG *Leptocorisa oratorius* FABRICIUS

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Fenthion 0.01% was the most effective ovicide followed by phosphamidon 0.045% and malathion 0.01% in bringing high mortality of eggs of earhead bug. Cypermethrin 0.01%, permethrin 0.0125%, fenvalerate 0.01% and deltamethrin 0.00125% also exhibited high level of ovicidal action on eggs of earhead bug. Diflubenzuron @ 200 ppm had ovicidal action on eggs of earhead bug.

Pest control strategies are aimed to control the different stages of insects. Salkeld and Potter (1953) reported that the egg is the most vulnerable stage for its susceptibility to insecticides. Systemic aphicides like phorate, menazon and dimethoate showed ovicidal action on the eggs of *Anthocoris confusus* Renut (Elliot and Way, 1968).

Singh *et al* (1973) reported that the action of carbaryl 0.1% on the eggs of tur pod bug, *Clavigralla gibbosa* Spinosa which caused a mortality of 92% in wettable form and 96% in suspension form. Spraying of diflubenzuron on the eggs of *Leucoptera scitella* exhibited its ovicidal action at 100 mg/litre (Grosscurt, 1978). Hajjar and Cassida (1979) studied the effect of diflubenzuron on eggs of large milkweed bug, *Oncopeltus fasciatus* D. and found to reduce the viability of eggs. With a view to determine the toxicity of insecticides and moult inhibitor, experiments were conducted and the results furnished.

MATERIALS AND METHODS

The rice earhead bug was mass cultured as per the method of Valencia and Heinrichs (1982). The female earhead bugs were introduced into the cages having tumbler pots with rice seedlings for egg laying. The eggs were exposed for each treatment and for each replication.

Two experiments were conducted in a completely randomised block design replicated thrice, one with nine insecticides and check (water spray) (Table 1) and the other with four synthetic pyrethroids and three concentrations of moult inhibitors with a check (water spray) (Table 2). Observations were made on hatching of nymphs and mortality of eggs. The data on percentage mortality of eggs of earhead bug were transformed into arcsin values and analysed statistically. The mean values were separated using Duncan's Multiple Range Test (Gomez and Gomez, 1976).

RESULTS AND DISCUSSION

The results showed that among the organophosphorus insecticides

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Table 1. Ovicidal Action of Insecticides on the Eggs of *L. oratorius*-Insectary Experiment

Insecticides	Concentration %	Per cent mortality*
Fenthion 100 EC	0.01	77.7 (61.40) ^a
Phosphamidon 85 WSC	0.045	63.2 (52.72) ^{ab}
Malathion 50 EC	0.01	50.2 (45.10) ^{abc}
Quinalphos 25 EC	0.05	39.8 (39.12) ^c
Chlorpyrifos 20 EC	0.04	33.9 (32.99) ^{cd}
Endosulfan 35 EC	0.07	11.7 (18.57) ^d
Dichlorvos 100 EC	0.02	11.5 (19.17) ^d
Carbaryl 50 WP	0.1	10.2 (18.63) ^d
Monocrotophos 35 WSC	0.05	9.3 (17.76) ^d
Check	Water Spray	0.13 (2.07) ^e

* Mean of three replications

Figures in parentheses are arcsin transformed values

In a column, means followed by a common letter are not significantly different ($P=0.05$) by DMRT

fenthion had superior ovicidal action followed by phosphamidon and malathion with 77.7, 63.2 and 50.2% mortality of eggs respectively (Table 1). These results are in conformity with the findings of Rajendran and Chelliah (1985). The ovicidal action of malathion was earlier confirmed by Barnes and Ash (1955) on the eggs of grape leafhopper, *Erythroneura variabilis* and of two spotted spider mite, *Teranychus telarius* (L.) Mallioux and Morrison, 1962).

The ovicidal effect of carbaryl on eggs of earhead bug was poor with only 10% mortality of eggs. These results are also in consonance with the findings of Smith and Salkeld (1966) but Singh *et al.* (1983) reported, the high toxic effect of carbaryl on eggs of hemipteran bug, *C. gibbosa* S. Endosulfan treatment resulted in only 11.7 per cent mortality of eggs of *L. oratorius* exhibiting its weak ovicidal action (Table 1).

The eggs of earhead bug when exposed to pyrethroids showed higher level of mortality. Cypermethrin caused 100 per cent mortality exhibiting its superior ovicidal action. The next in the order of efficacy was deltamethrin > fenvalerate > permethrin which had recorded a mortality range of 85.6 to 93% (Table 2). The superior ovicidal action of cypermethrin, permethrin and fenvalerate on the eggs of two spotted spider mite, *Tetranychus urticae* Koch, was reported by Joe Korach and Clyde Gorsuch (1986) while that of deltamethrin on eggs of *T. arabicus* was reported by Nassar *et al.* (1985). Forty three per cent mortality of eggs was

evidenced with diflubenzuron at 200 ppm whereas 100 and 50 ppm dose resulted only 36 and 31% egg mortality respectively (Table 2). Chockalingam and Noorjahan (1984) found that diflubenzuron both at 100 and 1000 ppm resulted in hatching of eggs of *Dysdercus cingulatus* Fb. and *Chrysocoris purpureus*.

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Table 2. Ovicidal Effect of Synthetic Pyrethroids and Diflubenzuron on the Eggs of *L. oratorius*-Insectary Experiment

Treatments	Concentration %	Per cent mortality*
Cypermethrin 25 EC	0.01%	100.0 (89.01) ^a
Deltamethrin 2.8 EC	0.001 25%	93.0 (77.42) ^b
Fenvalerate 20 EC	0.01%	90.9 (72.52) ^{bc}
Permethrin 25 EC	0.0125%	85.7 (68.02) ^c
Diflubenzuron 25 WP	200 ppm	42.9 (36.69) ^d
Diflubenzuron 25 WP	300 ppm	36.1 (36.08) ^d
Diflubenzuron 25 WP	50 ppm	30.6 (33.57) ^d
Check	Water spray	7.2 (15.57) ^c

* Mean of three replications

Figures in parentheses are arcsin transformed values

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