

Regular Article

Bio Efficacy of Certain Insecticides against Chilli Aphid, *Aphis Gossypii* Glovers

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ABSTRACT: Bio efficacy of seven insecticides with different concentration viz., Endosulfan (0.07%), Monocrotophos (0.05%), Malathion (0.05%), Dimethoate (0.04%), Phosalone (0.04%), Cypermethrin (0.01%) and Neem oil (3.5%) was evaluated against aphid, *Aphis gossypii* (Glover) on chilli, Meitei morok *Capsicum annum* L. Among the insecticides, the best result was obtained with Malathion (0.05%) and Phosalone (0.04%), but Neem oil (3.5%) was found least effective in reducing *Aphis gossypii* population.

Key words: Insecticide, Chilli, Aphid, *Aphis Gossypii*

Introduction

Chilli aphid, *Aphis gossypii* Glover, a serious pest of chilli crops (*Capsicum annum*) is one of the limiting factors in achieving expected higher productivity of improved varieties of these crops in India. The unbridled development of use of insecticides often results in the development of resistance in insects to insecticides, residue problem, resurgence of secondary pests, effects on non target species including parasitoids, predators and insect pollinators. To minimize these adverse affects, it is imperative to use only the need based on population assessment of the insect pest. The considerations lead to evaluate some of the systemic and contact insecticides for their efficacy against chilli aphid under field conditions. The results of the study are given in this paper.

Materials and Methods

The experiment was conducted in the experimental field of Manipur University, Canchipur, Imphal during the year 2004 and 2005. The experiment was laid out in randomized block design with three replications. The plot size was (6.8×10.2) sq. ft. The recommended

seven insecticides namely Endosulfan (0.07%), Monocrotophos (0.05%), Malathion (0.05%), Dimethoate (0.04%), Phosalone (0.04%), Cypermethrin (0.01%) and Neem Oil (3.5%) were used. Second spray was followed 15 days after the first application. Field application were made knapsack sprayer having a hollow cone nozzle flowering and fruiting time. The pre-treatment count of *A. gossypii* population was taken on 10 leaves each from top, middle and bottom. Post treatment counts were recorded on 2, 5, 7 and 10 days after first and second spray. Five plants per treatment from each replication were selected randomly. The number of adults and nymphs of aphids were counted from February to August. The data on the mean population were transformed into square roots.

Results and Discussion

Despite the fact that many methods are available for the field control of insect pest, only chemical control is still considered as a method of quick relief from the desired insect pest and hence it is widely employed inspite of its many adverse effects. Therefore, it would be ideal to use these pesticides, which were comparatively better not only in combating the pest problem but at the same time cause less disturbance to the ecosystem and environment. The present study was therefore undertaken to control the chilli aphid, *A. gossypii* with seven insecticides viz, Endosulfan, Monocrotophos, Malathion, Dimethoate, Phosalone, Cypermethrin and Neem Oil in their recommended dosed under the agroclimatic conditions of Manipur. The observations have revealed that the insecticides Malathion and Phosalone during the year 2004 and Monocrotophos and Endosulfan during the year 2005 were almost equally effective in controlling the populations of the chilli aphid, *A. gossypii* (Table-1).

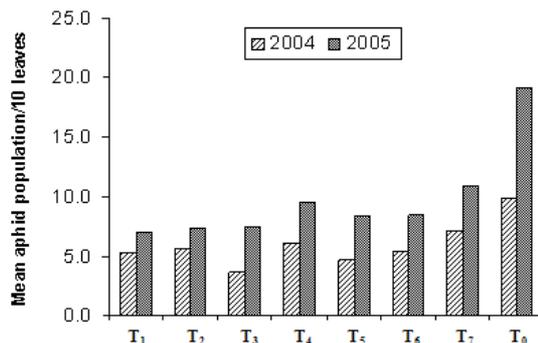
Table 1. Relative efficacy of different insecticides against *A. gossypii* G. infesting chilli during the year 2004 and 2005

Treatment	Concentration (%)	Mean larvae population/5 plants	
		2004	2005
T ₁ Endosulfan	0.07	5.31 (2.34)	7.08 (2.45)
T ₂ Monocrotophos	0.05	5.63 (2.27)	7.31 (2.71)
T ₃ Malathion	0.05	3.67 (2.00)	7.48 (2.34)
T ₄ Dimethoate	0.04	6.10 (2.44)	9.57 (2.85)
T ₅ Phosalone	0.04	4.74 (2.20)	8.40 (2.62)
T ₆ Cypermethrin	0.01	5.45 (2.33)	8.51 (2.56)
T ₇ Neem oil	3.50	7.15 (2.67)	10.96 (3.08)
T ₀ Control (1120)	0.00	9.94 (3.05)	19.22 (4.22)
C.D. at 5%		1.12	0.33

Figures in parenthesis are transformed values of $\sqrt{x + 0.5}$

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Fig. 1: Relative efficacy of different insecticides against *A. gossypii* infesting chilli during the year 2004 and 2005



It was also observed that these insecticides have quick knock down effect in reducing aphid populations (Fig.1). Malathion was found effective in checking aphid population even at one spray at the concentration of (0.05%). The efficacy of these chemicals against aphids has been reported by a number of workers (Easwaramoorthy and Jayaraj, 1997; Radke and Aherkar, 1987; Mishra, 2002) on the respective insect with certain variations. Moreover, Easwaramoorthy and Jayaraj, in 1977, reported that the most effective insecticides are acephate (0.225%) and Methyl demeton (0.025%) against chilli aphid, *M. persicae* in Tamil Nadu and other (Radke and Aherkar, 1987) in experimental Monocotophos (0.07%) against the chilli aphid, *A. gossypii* in PKV Akola. These variations might be due the difference of the host plants and the climatic conditions in these areas. Similarly, many more workers (Krishnaih et al. 1976; Pareek et al. 1987) have tried to control certain aphids on various crops using many insecticides. From the above results, it may be concluded that among the tested insecticides, the best result in controlling the aphid population on chilli was obtained with the treatment of Malathion (0.05%) and Phosalone (0.04%) in 2004 and Monocrotophos (0.05%), Endosulfan (0.07%) and Malathion (0.05%) in 2005. These insecticides can be effectively used before the initiation and after the completion of fruiting stage and also reported by others (Easwaramoorthy and Jayaraj, 1997; Radke and Aherkar, 1987). However, data on the field trials showed that single spray would be enough to control aphid on chilli during each season, especially under the agro climatic conditions of Manipur.

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