

Regular Article

Relative Efficacy of Different Insecticides Againsts Chilli Pod Borer, *Spodoptera Litura Fabr.* (Lepidoptera - Noctuidae) in Manipur

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ABSTRACT: The bio-efficacy of seven insecticides namely Endosulfan (0.07%), Monocrotophos (0.05%), Malathion (0.05%), Dimethoate (0.04%), Phosalone (0.04%), Cypermethrine (0.01%) and Neem oil (3.5%) were applied on Chilli. *Capsicum annum* was grown in the field for the control of Chilli pod borer, *Spodoptera litura* Fabr. The insecticide like Phosalone (0.04%) and Endosulfan (0.07%) were most effective and the neem oil were found to be the least effective in reducing borer population.

Key words: *Spodoptera litura*, relative toxicity, *Capsicum annum*, Chilli

Introduction

Chilli is cultivated in India for the fruits which are used as condiments both as green and ripe. The Chilli plants are attacked by more than 20 insects and non insect pests like mites and nematodes etc. Among these insects, *S. litura* which is a polyphagous insect has been observed to be the serious pest of Chilli pods in Manipur. It survived by making holes in the leaves, scratching young shoots and feeding on the fruits. Fairly good amount of literature on the biology, incidence and control had been reported by many workers (Choudhury, 1967; Ayyanna et al. 1982; Hosmani, 1998; Jalali et al. 1986; Ahmed et al. 2000) but there are non-existent of such data particularly on chilli in North Eastern States of India. Therefore, an attempt has been made to evaluate the efficacy of some of the insecticides on this insect. The results of the present study are given in this communication.

Materials and Methods

All the experiments were carried in the experimental farm of the Manipur University, Canchipur. The relative efficacies of seven insecticides were evaluated at different doses in the experimental field of the University during the year 2004 and 2005. Sprayings were undertaken during morning hours and care was taken to prevent the drift of the spray fluid reaching adjacent plots by keeping a screen in between plots. A total of two sprayings were

given at an interval of 15 days when there was incidence of *S. litura*. Observations with regard to pest incidence were recorded one day before spraying and thereafter the counts were made after 2,5,7, and 10 days after spraying in all the treatments. 10 plants per treatment from each replication were selected randomly. The numbers of larvae were counted. The data on mean population were transformed into square roots.

Results and Discussion

Among the insect pests recorded on Chilli pod borer, *S. litura* has been considered an important one because of its high degree of infestation and synchronization on their occurrence with the boring activity. In certain season of the year, its incidence was alarming. Similarly Mahadevan and Balasubramanian, 1981; Ayyana et al. 1982; Krishnaiah et al. 1985, Rao and Ahmed, 1986 and Ahmed et al. 2000, also reported that it is a major pest of chilli, black gram, tobacco, and groundnut in different part of Andhra Pradesh, Tamil Nadu and many other states of India, resulting in direct fruit yield losses. Out of seven insecticidal treatments Phosalone and Endosulfan were found to be the most effective against the chilli pod borer, *S. litura* during the year 2004 and 2005 in the present study. It was closely followed by Monocrotophos and Malathion which are at par with Phosalone and Endosulfan, while maximum larval population (1.03 larvae/5 plants) was recorded in Dimethoate and (1.11 larvae/5 plants) in Cypermethrin treated plots (Table-I). Our findings on the effectiveness of Phosalone and Endosulfan against the chilli pod borer at fruiting stage was in agreements with those reported by Manisegaran et al. 1995. However, according to Rao and Ahmed in 1986, the effective insecticides were Decamethrin, Cypermethrin, Fenvalerate and Permethrin, while other (Ahmed et al. 2000), also reported that Thiodicarb and Chloropyriphose are effective for chilli pod borer, *S. litura*. The effectiveness of phosalone, endosulfan and malathion may be due to time of commencement of application at early flowering to fruiting stage and second instar larvae of the borer from the early infestation on the floral buds.

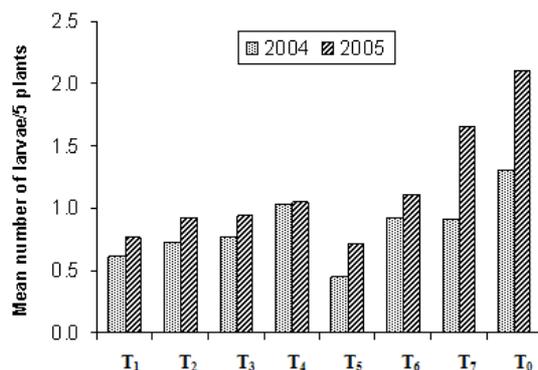
Table 1. Relative efficacy of different insecticides against Chilli pod borer, *Spodoptera litura* F. infesting Chilli during the year 2004 and 2005.

Treatment	Concentration (%)	Mean larvae population/5 plants	
		2004	2005
T ₁	Endosulfan	0.61 (1.03)	0.77 (1.14)
T ₂	Monocrotophos	0.72 (1.07)	0.92 (1.15)
T ₃	Malathion	0.77 (1.08)	0.94 (1.17)
T ₄	Dimethoate	1.03 (1.14)	1.05 (1.22)
T ₅	Phosalone	0.45 (0.94)	0.71 (1.07)
T ₆	Cypermethrin	0.92 (1.15)	1.11 (1.25)
T ₇	Neem oil	0.91 (1.16)	1.65 (1.44)
T ₀	Control (1120)	1.31 (1.31)	2.10 (1.58)
C.D. at 5%		0.003	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 *S. litura* infesting chilli during the year 2004 and 2005.



Moreover, the effectiveness of Phosalone, Endosulfan, Monocrotophos and Malathion against the normal development of borer was probably due to their quick knock down effect and higher persistence. Whereas, the results obtained on the less effectiveness of Dimethoate (1.03 larvae/5 plants) and Cypermethrine (1.11 larvae/5 plants) against the chilli pod borer may be due to its lower persistence as found in the present investigations. (Fig. 1). Rao and Ahmed in 1986, reported that Decamethrin, Cypermethrin, Fenvalerate and Permethrin are the effective insecticides against chilli pod borer and enhanced the yield of chilli. Similarly, several workers (Mahadevan and Balasubramanian 1981; Ayyanna et al. 1982; Krishnaiah et al. 1985; Jalali et al. 1987; Ahmed et al. 2000; Rao et al. 2000), have studied the chemical control of *S. litura* on chilli as well as many other vegetable crops and reported different type of results. On the basis results shown by the spray of the insecticides like Phosalone, Endosulfan, Monocrotophos and Malathion it may be concluded that these insecticides are highly toxic against the chilli pod borer, *S. litura*

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