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Efficacy of different insecticides against the litchi fruit infestation by *Platyepala illepida* Meyr

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Abstract : Litchi is a rich source of protein, carbohydrate, minerals (calcium, phosphorous and iron) and vitamins (Thiamine, Riboflavin, Niacin, Folic Acid and Ascorbic acid). So far as Litchi cultivation is concerned India ranks second (next to China). Yield return in India is still poor due to various factors. Out of which insect infestation is most important. Out of various insect pests, *Platyepala illepida* Meyr was also found to be destructive to Litchi fruits. The present investigation was carried out to study the efficacy of different insecticides against the infestation of this pest. It is evident from the findings that Rogor (0.05%) and Kelthane (0.25%) as post fruiting treatment gave the significant reduction of the pests followed by Malathion (0.2%). Fruit infestation in untreated plants was 35.8% while infestation in plants treated with rogor, kelthane and malathion was 9.5%, 10.5% and 12.0% respectively. Control of borer pests of Litchi fruits will increase the yield and India may earn more foreign exchange by exporting pest free Litchi fruits in foreign markets.

Key words: Litchi pest, Infestation, Insecticides, *Platyepala illepida*.

INTRODUCTION

Litchi (*Litchi Chinensis*; *Sapindaceae*) originated in Kwantung and Fukien state of South-East China, has been cultivated for more than two thousand years. The Litchi plantation was introduced in to Eastern India by the end of 17th century or shortly thereafter. The rank of China in Litchi production is first, having a largest acreage under Litchi cultivation. India is next to China in respect of total area under Litchi cultivation (Hayes, 1960).¹ According to Anonymous (1989)², the total area under Litchi cultivation in Bihar is estimated 18,184 hectares which is 85% area of total cultivation in India. The rest of the area under Litchi lies in the submountain districts of Saharanpur, Dehradun, Muzaffarnagar, Gorakhpur, Deoria, Gonda, Basti, Faizabad, Rampur, Bareilly, Pilibhit districts. Litchi

is cultivated to a small extent near Pathankot in Punjab and near Hooghly in West Bengal. Litchi fruits contain 70% pulp which is very delicious and sweet having sugar contents varied from 10–15% and protein 1.15%. It is a good source of vitamin C, riboflavin, thiamine and also contains rich quantity of phosphorus, calcium and iron (Singh and Sah, 1982)³. There are various insect pests of Litchi fruits viz. *Carpophilus obsoletus*, *Carpophilus mutilates*, *Platyepala illepida*, *Ephesia cautella* and *Dacus dorsalis* (Kumar & Lall, 1988)⁴. It has been observed that *Platyepala illepida* was found very destructive to Litchi fruits causing severe economic loss to farmers (Kumar et al, 2009)⁵. The larvae of *Platyepala illepida* were found to bore the Litchi fruits, seeds of Koa and *Macademia* seeds etc. in Hawaii (Fullavay, 1926)⁶. In view of the seriousness of the problem, present investigations were carried out to minimise the degree of infestation of Litchi fruits by using selective insecticides. Control of borer pests of Litchi fruits will increase the yield and as a result, India

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may earn more foreign exchange by exporting Litchi fruits in different foreign markets.

MATERIALS AND METHOD

To evaluate the comparative effect of insecticides to control the infestation of *Platyepela illepidia* an insecticidal trial was conducted on a randomised block design as post fruiting treatment at Muzaffarpur in the last week of March. The space between plant to plant was 12 metres and row to row was 14 metres. There were eight treatments including check. The treatments included were :

- T1 = Endosulphon 35 EC – 0.25%
- T2 = Phosphamidon 85% WSC – 0.05%
- T3 = Dimethoate (Rogor) 30 E – 0.05%
- T4 = Malathion 50 EC – 0.2%
- T5 = Methyl Parathion (Metacid) – 0.02%
- T6 = Kelthane EC – 0.25%
- T7 = Monocrotophos (Monocil) – 0.03%
- T8 = Check

Each treatment was replicated four times. The trees were sprayed with different concentrations of insecticides with power sprayer in the month of March. In the month of June, one hundred Litchi fruits were collected from each replicate of all the treatments and brought to the laboratory. Number of healthy and infested fruits were isolated under each treatment. Then percentage of infestation was estimated. Average fruit yield / tree was also estimated under different treatments.

RESULTS AND DISCUSSION

It is evident from the data of the Table–1 that the fruit infestation of the treated trees were comparatively lower in respect of untreated ones. The minimum infestation was observed under T3 (Dimethoate) followed by T6 (Kelthane) and T4 (Malathion). It is 9.5%, 10.5% and 12% respectively. T3, T6 and T4 are significant (at 0.001%). From the data of the table, it is also evident that when percentage of fruit infestation decreases, average yield of Litchi fruits / tree increases. According to Harold et al. (1971)⁷, Diazinon spray gave the best control of *Platyepela aprobola*. For controlling *Platyepela* spraying of Lebaycid (0.5%) followed by Rogor (0.1%) and

metasystox (0.3%) before flowering seasons has already been recommended (Lall, 1976)⁸. 0.1% pirimiphos – methyl and 0.5% azinophos–methyl were effective in controlling Litchi fruit borers *Carpophilus mutilates* and *Carpophilus hemipterus* (Kehat et al. 1976)⁹. The insect growth regulator, triflumuron as a single full cover spray 40 days before harvest or two sprays of teflubenzuran a fortnight apart commencing when the Litchi fruits were about 10 mm in diameter, were recommended to control the Litchi fruit infestation by *Platyepela illepidia* (Menzel 2002)¹⁰.

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Table 1 (A) :Comparative efficacy of selected insecticides as post fruiting treatment against *Platyepala illepida*

Replicates	Treatments							
	T1	T2	T3	T4	T5	T6	T7	T8
	Endosulphan (0.25%)	Phosphomidon (0.05%)	Dimethoate (0.05%)	Malathion (0.2%)	Metacid (0.02%)	Kalthe (0.25%)	Monocil (0.03%)	untreated check
I	15	18	7	8	16	9	12	33
II	22	25	6	11	18	10	17	35
III	29	28	12	13	27	12	20	35
IV	39	31	13	16	29	11	16	40
Average fruit infestation	26.3	25.5	9.5	12.0	22.5	10.5	16.3	35.8
Average fruit yield/tree in Kgs	71.2	70.0	92.4	85.2	73.4	89.0	80.0	58.5
t value at 6 df	1.781	3.245*	11.389**	10.556*	3.726*	15.523**	8.757*	-
		* significant at 0.05% level						
		** significant at 0.001%						

Table 1 (B) : ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Treatments	2407.22	7	343.89	12.35	0.000001	2.42
Within Replicates	668.25	24	27.84			
Total	3075.47	31				

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