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Effectiveness of Different Insecticides Against Bud Boring Insects, *Anarsia achrasella* Bradlay and *Nephopteryx eugraphella* Rag. on Chiku

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ABSTRACT

The trial was conducted during 1982-83 to compare the effectiveness of various insecticides against bud boring insects, viz. *Anarsia achrasella* **Bradlay and** *Nephopteryx eugraphella* **Rag. infesting chiku. The spray treatments were given three times in a year and combined percentage infestation by both the pests has been worked out based on the observations at various intervals after each spray. Among the insecticides tested malathion 0.05% has been found most effective followed by fenvalerate 0.01%, fenthion 0.1%, Endosulfan and phosalone each @ 0.075% and permethrin 0.01% to control infestation caused by these pests.**

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INTRODUCTION

In Gujarat State ninety per cent of the chiku (*Achras sapota* L.) cultivation is in South Gujarat and its area of cultivation is increasing year after year. The area is 4500 hectares in 1979-80 compared to 1500 hectares in 1974-76 (Patel, 1981). Thus it has acquired an important economical position among the farmers of South Gujarat.

Even though chiku trees are considered to be tolerent to insect pests as compared to other fruit crops the insect pests reported to be infesting chiku tree, chiku moth, *Nephopteryx eugraphella* Rag. (Lepidoptera: Pyrilidae) and chiku bud borer, *Anarsia achrasella* Bradley (Lepidoptera: Gelechiidae) are the main pests (Butani, 1977 and Patel, 1981) as they damage the flowering parts. The infestation of both the pests has been reported for most of the period in the year (Anonymous, 1982) and thus considered as potential pests of chiku in the area.

As regard the control of these pests, information available is scanty. Patel, (1982) reported monocrotophos @0.03% to be most effective against *A. achrasella* Bradlay. Butani (1979) has suggested 0.05% endosulfan, chlorpyriphos, quinalphos and phosphamidon for the control of *N. eugraphella*. The present paper deals with the results of the experiment carried out in the year 1982-83 to find out effective insecticides against both these pests.

MATERIALS AND METHODS

The experiment with ten treatments and three replications was carried out in 1982-83 in a farmer's orchard (Gandhi Wadi) located near Navsari Campus of Gujarat Agriculturl. University. Ten rows each having more than ten trees of

chiku were selected and each row was adopted for a single treatment. The treatments were monocrotophos 0.03%, carbaryl 0.2%, quinalphos 0.05%, phossalone 0.075%, permethrin 0.01%, fenvalerate 0.01%, malathion 0.05%, endosulfan 0.075%, fenthion 0.1% and control (No spray). The insecticides were sprayed three times i.e. in the month of November '82, March '83 and July '83. A Marut foot sprayer with triple action nozzle was used for all treatments. The quantity of spray mixture applied was decided according to the canopy of the individual tree in each row. One tree was considered as one replication and 3 such trees from each treatment were observed randomly for percentage infestation. For assessing infestation, 10 twigs having flower buds were randomly selected at various interval on each tree and damaged as well as healthy buds were counted. Percentage infestation caused by both the pests together was worked out based on eight observations after first spray, six observations after second and third spray and overall twenty observations recorded during the experimental period. The data were analysed using compietely randomized design after converting them to square root transformation.

RESULTS AND DISCUSSION

The results of the experiment are presented in table 1. It can be seen that after first spray, the treatments of permethrin 0.01% (4.80 % damage) and fenvalerate 0.01% (5.02% damage) recorded the lowest percentage damage and were at par with the treatment of endosulfan 0.075% (6.20% damage) and they were significantly superior to the rest of the treatments. All the treatments were significantly superior to control.

The difference among the treatments was not significant after second spray. However, average percentage of damaged buds after third spray indicated that treatment with malathion 0.05% had lowest percentage damage (3.10%) and was at par with the treatment of fenvalerate 0.01% (4.88% damage) but significantly superior than the rest of the treatments. All the remaining treatments were at par with untreated control.

Overall mean percentage of damaged buds based on twenty observations throughout the experimental period showed that malathion 0.05% and fenvalerate 0.01% were at par recording lowest percentage damage (6.76%). These two treatments were also at par with fenthion 0.1% (8.12% damage), endosulfan 0.075%, phosalone 0.075% (8.41% damage) and permethrin 0.01% (8.82% damage) but significantly superior than rest of the treatments. All the treatments were significantly superior than control except carbaryl 0.2% which was at par with control. Thus, from the study, among the conventional insecticides, malathion 0.05%, fenthion 0.1%, endosulfan 0.075% and phosalone 0.075% were found effective for control of bud boring insects while Patel (1982) had reported monocrotophos to be effective for the control of *A. achresella* Bradlay. Both the synthetic pyrethroids tested viz. fenvalerate and permethrin at 0.01% were also effective for the control of bud boring insects on chiku.

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TABLE 1

Efficacy of different insecticides against bud boring insects, *Anarsia achrasella* **and** *Nephopteryx eugraphella* **of chiku.**

Sr. No.	*Treatments*	*Average percentage of damaged buds based on*			
		8 observations after first spray	*6 observations after second spray*	*6 observations after third spray*	*Overall 20 observations*
1	*2*	*3*	*4*	*5*	*6*
1.	Monocrotophos 0.03%	7.08 (2.66)bc	15.05 (3.88)	7.73 (2.78)bcd	9.24 (3.04)bc
2.	Carbaryl 0.2%	7.51 (2.74)bc	15.13 (3.89)	10.43 (3.23)d	10.50 (3.24)cd
3.	Quinalphos 0.05%	8.70 (2.95)c	14.67 (3.83)	8.53 (2.92)bcd	9.99 (3.16)bc
4.	Phosalone 0.075%	8.47 (2.91)c	14.29 (3.78)	5.86 (2.42)abcd	8.41 (2.90)abc
5.	Permethrin 0.01%	4.80 (2.19)a	13.84 (3.72)	8.47 (2.91)bcd	8.82 (2.97)abc
6.	Fenvalerate 0.01%	5.02 (2.24)a	13.25 (3.64)	4.88 (2.21)ab	6.76 (2.60)a
7.	Malathion 0.05%	7.24 (2.69)bc	13.69 (3.70)	3.10 (1.76)a	6.76 (2.60)a
8.	Endosulfan 0.075%	6.20 (2.49)ab	13.40 (3.66)	7.34 (2.71)bcd	8.41 (2.90)abc
9.	Fenthion 0.1%	7.13 (2.67)bc	13.18 (3.63)	6.35 (2.52)abcd	8.12 (2.85)ab
10.	Control (No spray)	11.63 (3.41)d	17.22 (4.15)	10.30 (3.21)cd	12.67 (3.56)d
	S.Em. ±	(0.11)	(0.17)	(0.28)	(0.13)
	C.D. at 5%	(0.34)	N.S.	(0.84)	(0.38)
	C.V. %	7.38	7.57	18.43	7.48

Note: 1. Figures in parentheses are mean transformed percentage damaged buds; those outside parentheses are retransformed values.

2. Treatment means having letter/letters in common are statistically at par in respective column.

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