EFFECT OF SOME INSECTICIDES ON THE CONTROL OF CACAO MEALYBUG

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ABSTRACT

A field trial undertaken at Central Plantation Crops Research Institute, Regional Station, Vittal, Karnataka State showed that the relative efficacy of seven insecticides tried in controlling the population of the mealybug, *Planococcus lilacinus* Ckll. on Cacao and in reducing the percentage of shoots and pods infested by the mealybug was in the order monocrotophos = fenthion > phosphamidon = quinalphos > dimethoate > phosalone > endosulfan, when applied as 0.1% spray twice at monthly interval. There was no significant difference in their relative efficacy.

INTRODUCTION

Cacao (*Theobroma Cacao* L.) is subject to attack by a variety of species of insect pests in South India of which the mealybug, *Planococcus lilacinus* Ckll. (Pseudococcidae) is the most destructive (Nair, 1976). Though persistent in nature its populaiion reaches peak during April and May (Nair, 1976). This mealybug has been reported as the most important among the insects associated with cacao in Sri Lanka and Java (Entwistle, 1972). Considering its importance as a serious pest of this newly introduced crop, a field trial was carried out at Central Plantation Crops Research Institute, Regional Station, Vittal, Karnataka State to evaluate the relative efficacy of different insecticides in controlling the pest and the results of the trial are presented in this paper.

MATERIALS AND METHODS

The trial was undertaken in a five year old Cacao garden in Randomised Block Design using seven insecticides, each as a 0.1% spray (Vide Tables). Each treatment including an untreated control was replicated thrice, each treatment plot consisting of two plants. The insecticides were applied as high

volume sprays to run-off levels, first during the second week of April and the second 30 days later. The second spray was given as there was a secondary build up of the bug population. Results were assessed in terms of the average number of bugs per colony and the percentage of shoots and pods infested by the bug. The average number of bugs per colony was based on counts of bugs in five colonies on each of the 25% of infested shoots and pods, selected for counting. Result assessments were done on four occassions, i.e. one day prior to and 15 days after each spraying. The data were analysed statistically.

Results and Discussion

The immediate suppression of the mealybug population (6.0 - 17.5 bugs / colony as against 45.0 bugs / colony in control) was significant as seen in the counts 15 days after first application, under all insecticide treatments which among themselves did not differ significantly in their effect (Table 1). The suppression remained effective upto one month in the case of phosalone, phosphamidon and quinalphos treatments while in the others a buildup of the bug population was in evidence. With the second application, suppression of the population was very drastic and all the insecticides were equally and significantly effective excepting endosulfan and dimethoate. Shoot infestation by the bug (Table 2) was significantly reduced by the first application (2.72 to 19.15% against 28.5% under control) except in the case of endosulfan. This reduction was maintained even upto one month excepting with dimethoate and endosulfan. The second application reduced the shoot infestation to very low levels (0.7 - 23%), all the insecticides being equally effective. The control of the mealybug on the pods (Table 3) after 15 days of first treatment was significant (4.11 to 22.8% against 80.8% in control) with all the insecticides except endosulfan. This effect continued to be so even upto 30 days. After the second application all the insecticides were equally effective in reducing the pod infestation.

Table 1. Mean number of *P lilacinus* per colony on Cacao plants treated with sprays of different insecticides, observed at different occasions.

Insecticides	1 day prior to first spraying	15 days after first spraying	30 days after first spraying (1 day prior to second spraying)	15 days after second spraying
Monocrotophos	17.33	6.00	14.33	0.67
Endosulfan	18.02	16.17	19.50	11.07
Phosalone	48.50	8.50	9.67	3.33
Dimethoate	32.33	8.33	15.17	5.17
Phosphamidon	35.50	12.00	6.17	1.33
Fenthion	34.00	17.50	13.17	1.50
Quinalphos	28.83	7.50	10.00	3.17
Control	19.50	45.00	34.00	16.00
C. D. (5%)	17.23	24.24	20.87	10.86

Table 2. Mean number of infested shoots per Cacao plant treated with different insecticide sprays observed at different occasions.

Insecticides	1 day prior to first spraying.	15 days after first spraying	30 days after first spraying (1 day prior to second spraying)	15 days after second spraying
Monocrotophos	38.07	4.80	25.90	4.12
Endosulfan	59.40	42.70	49.30	6.61
Phosalone	32.60	2.72	5.61	1.99
Dimethoate	67.30	11.20	30.50	1.44
Phosphamidon	74.50	19.15	24.90	7.23
Fenthion	66.30	17.53	23.80	0
Quinalphos	71.90	13.73	12.96	3.97
Control	60.60	28 50	52.10	63.90
C. D. (5%)	—	7.50	23.80	19.08

Table 3. Mean number of infested pods per Cacao plant treated with different insecticide sprays observed at different occasions.

Insecticide	1 day prior to first spraying	15 days after first spraying	30 days after first spraying (1 day prior to second spraying)	15 days after second spraying
Monocrotophos	42.50	4.11	47.20	0
Endosulfan	74.20	44.40	62.30	16.03
Phosalone	39.60	6.70	14.90	22.00
Dimethoate	47.70	8.65	40.90	18.53
Phosphamidon	56.30	11.60	16.80	0
Fenthion	62.40	22.80	19.50	1.85
Quinalphos	53.10	5.77	15.90	0.37
Control	36.90	80.80	77.50	80.65
C. D. (5%)	—	40 11	27.00	44.08

When an overall assessment was made of the relative efficacy of the different insecticides in suppressing the bug population and in reducing shoot and pod infestations, the insecticides could be ranked as monocrotophos = fenthion > phosphamidon = quinalphos > dimethoate > phosalone > endosulfan There was, however' no significant variation in their relative efficacy.

The report of Chacko *et al* (1976) that quinalphos, fenitrothion and fenthion gave effective control of *P. lilacinus* on coffee agrees with the present findings.

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