

Field evaluation of some insecticides in control of cardamom thrips *Sciothrips Cardamomi* Ramakrishna (Thysanoptera : Thripidae)

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INTRODUCTION

SCIOTHRIPS cardamomi Ramak. is the most destructive pest of *Elettaria cardamomum* (L.) Maton, in all the cardamom growing tracts of India. Severe damage to the capsules of cardamom by this pest was first reported from Anamalai Hills of S. India (Ayyar, 1935; Ayyar and Kylasam, 1935). Now this pest is seen all over the cardamom growing tracts of Kerala, Karnataka and Tamil Nadu in different degrees of intensity.

Colonies of the thrips live inside leaf sheaths and spindles of the pseudostems as well as inside the bracts, perianth and unopened flowers on the panicles. The rasping injury by the adults and immature stages of thrips on the pericarp of developing capsules results in the formation of corky encrustations on the rind popularly known as cardamom 'itch'. In severe cases of infestation the capsules become malformed and puny with shrivelled rinds and the seeds show only poor development and quite often will be devoid of the characteristics cardamom aroma. The panicles become stunted as a result of severe infestation and flowers and immature fruits shed (Nair, 1967). The extent of damage in terms of quantity and quality of the produce is upto 80-90% in the endemic areas.

Insecticidal treatments that have been recommended against this pest since it was first reported, include Nicotine sulphate spray, or dusting with 5 or 10% BHC or 2% dieldrin dust, all applied at monthly intervals (Jones, 1943; Nair, 1967). Of these insecticidal applications, BHC dusting at monthly intervals was the most popular treatment among the planters in the High Ranges of Kerala from 1945 until about 1955, when instances of failure began to be reported. The first workshop of the All India Co-ordinated Spices and Cashewnut Improvement Project held in October 1971 at the Central Plantation Crops Research Institute, Kasaragod discussed the thrips control problem in cardamom in detail

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and suggested taking up trials with newer chemicals to evolve suitable control schedules against this important pest. The results of these trials are presented here.

MATERIALS AND METHODS

The experiment was conducted at the Cardamom Research Station, Pampadumpara, Idikki district, Kerala State in a randomised block design using eight insecticides each at two levels. Three popular cardamom cultivars, Malabar (prostrate panicle), Mysore (erect panicle), and Vazhukka (semierect panicle) were included in all the treatments. Two control plots were included in each replication. There were eighteen treatments replicated twice with a plot size of six cardamom clumps. Guard row plants were also maintained between different treatments. High volume sprays were used to give a thorough coverage of the pseudostems and panicles. A total of seven rounds of sprayings was given. The spray schedule was fixed taking into consideration the fluctuations in population density of thrips on the pseudostems and panicles obtained from another study on seasonal abundance of the pests carried out in the same plantation in the previous year (unpublished). The first round of spray was given in early June before the South-west monsoon and the remaining six rounds after the rains at monthly intervals commencing from late August, when the pest population started its build up with the onset of bright weather. The percentages of pseudostems and capsules infested by thrips were recorded every month. Any pseudostem showing the physical presence of thrips, adults or immature stage, in its leaf sheath or unopened front and capsules showing scabby symptoms were recorded as infested by the pest. The data on percentage infestation were analysed using the Arcsin percentage transformation values and the Duncan's New Multiple Range Test.

RESULTS AND DISCUSSION

Four chemicals — Quinalphos, PAP (Phenothoate), dimethoate and phosphamidon — were effective in significantly reducing thrips infestation in pseudostems and capsules (Table 1). The plots treated with both the concentrations (0.05%

TABLE 1
EFFECT OF DIFFERENT INSECTICIDES ON THE
INCIDENCE OF *SCIOTHRIPS CARDAMOMI* RAMAK.
ON THE PSEUDOSTEMS AND CAPSULES OF
ELETTARIA CARDAMOMUM (L.) MATON

Insecticide	% Spray concentration (a.i.)	Infestation (%) on	
		Pseudostems	Capsules
Quinalphos	0.05	22.2 ab	24.1 ab**
PAP (Phenthoate)	0.05	22.1 ab	33.5 ab
	0.10	22.8 ab	14.4 a
	0.10	19.8 a	22.3 ab
Dimethoate	0.05	22.2 ab	34.8 ab
	0.10	23.8 ab	31.2 ab
Phosphamidon	0.05	23.7 ab	34.3 ab
	0.10	23.2 ab	39.7 ab
Malathion + Fenitrothion	0.05	26.0 bc	40.5 abc
	0.10	26.8 bc	34.2 ab
Pyrethrum Extract	0.10	24.2 ab	47.1 abc
	0.20	26.7 bc	57.1 bcd
	0.10	25.0 abc	47.8 abcd
Trichlorphon	0.05	26.6 abc	52.8 bcd
	0.10	27.7 bc	49.3 bcd
Endosulfan	0.05	25.0 abc	41.3 abc
	0.10	30.4 c	76.1 cd
Control*		39.0 d	81.9 d

* There were two plots of control in each replication and the means for each are presented here.

** Means not followed by the same case letter in the same column are significantly different as judged by the Duncan's New Multiple Range Test.

and 0.1%) of these insecticides showed infestation on pseudostems ranging from 19.8 to 23.8% as against 30.4% 39.0% in the untreated plots. Similarly the percentage of capsule infestation also was significantly less in these insecticide-treated plots. Quinalphos (0.1%) treated plots showed 14.4% capsule infestation whereas it was 22.3% in Phenthoate (PAS) 0.1%, 31.2% in dimethoate 0.1% and 39.7% in Phosphamidon 0.1% treated plots, as against 76.1 and 81.9% in the untreated control plots. On the other hand, Malathion + Fenitrothion, Pyrethrum extract, Trichlorphon and Endosulfan, in both the concentrations did not effect control of thrips to any significant level. The percentage of infested pseudostems in these insecticide-treated plots ranged from 24.2% to 27.7% as against 30.4% and 39.0% in the untreated controls. The percentage of infested capsules also showed more or less the same trend. It ranged from 34.2% to 57.1% as against 76.1% and 81.9% infestation in the untreated controls.

An important observation in this trial was that seven rounds of spray would be adequate to get satisfactory control of thrips infestation on cardamom and that ten or twelve rounds of insecticide treatments now being adopted by most of the planters in the High Ranges of Kerala are

not quite necessary. One important point to be observed is that the first round of spraying has to be done at the time of commencement of fruit setting to control the thrips populations that have migrated from the pseudostems to the panicles. The spraying operation could be suspended during the period of heavy showers in the monsoon season when the thrips population will be meagre. With the onset of bright weather in late August the pest population begins to build up again and the spray operations has to be resumed at that time and continued at monthly intervals till the harvests are over. Altogether seven rounds of spray, first during the premonsoon period in early June and the remaining six rounds from late August onwards with quinalphos, phenthoate, dimethoate or phosphamidon at 0.1% concentration would give satisfactory control of cardamom thrips.

SUMMARY

Field control trials against cardamom thrips using different insecticides showed that spraying quinalphos, PAP (phenthoate), dimethoate and phosphamidon, at 0.1% concentration, effected significant reduction in thrips infestation on pseudostems and capsules. Seven rounds of spray first in early June (premonsoon period) and the remaining six rounds with the onset of bright weather from late August onwards at monthly intervals, are adequate to effect satisfactory controls of thrips infestation.

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