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CONTROL OF POPULATIONS OF THRIPS PALMI (KARNY) ON VEGETABLE CROPS IN MARTINIQUE (F.W.I.)

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ABSTRACT

Damage caused by Thrips palmi (Karny) on vegetable crops has continued to increase since this insect was reported in October 1985. The first trials involved chemical control. Among the 26 pesticides tested, only avermectin and carbofuran induced a decrease in the importance of the population of thrips. Avermectin produced the best results, but the commercial product was not yet authorized for treatment on vegetables. Carbofuran is less effective than avermectin.

Presently, other means of control are under consideration. First, prophylactic measures are fundamental. A second line of investigation is to explore the activity of native predators of thrips. Some have been observed and it is necessary to preserve them by rational pesticide use from an integrated control perspective.

INTRODUCTION

In October 1985, Thrips palmi (Karny), a recently introduced exotic insect which causes damage to vegetable crops, was found in Martinique. Very quickly, most melon, cucumber and eggplant fields were destroyed, and no pesticide had any effect. Since then, the situation has improved, except for export eggplant, which are still not being grown. The research done by IRAT, in conjunction with INRA in Guadeloupe, has been oriented mainly to chemical control, and more recently to prophylactic measures and biological control.

MATERIAL AND METHODS

The active ingredients of pesticides tested are given in Table 1. The trials were carried out on cucumber, melon and eggplant crops. Initially, four active ingredients were tested and compared with an untreated control. This was repeated six times following a Fisher block pattern. Each study plot had a surface area of about 50 sq.m.

In all, 26 active ingredients were evaluated for efficacy. Three or four foliar applications or a single soil treatment were made. The number of thrips on 20 leaves from each plot were counted before and after the applications using the Berlèzes extraction funnel method.

RESULTS AND DISCUSSION

Examples of population response of Thrips palmi following treatment are presented in Figures 1 and 2.

Most of the insecticides tested against thrips were shown to be ineffective. Some appear to favor thrips proliferation, probably by eliminating natural enemies. Only avermectin lessens the population to any considerable and lasting degree (up to the final harvest). Carbofuran lessens the population for two or three weeks after having been spread on the ground at the time of planting, but has no insecticidal effect subsequently. Carbofuran only makes it possible to delay population build-up so that the initial crops are satisfactory. Application of avermectin on vegetable crops was not a registered use at the time of the trials.

Prophylaxis

Given the failure of chemical control, other methods are being considered. A survey underway among several Martinican growers is attempting to isolate the factors encouraging proliferation.

Initial findings suggest that some prophylactic measures are necessary:

- the seed bed should not be near contaminated fields;
- planting out should be done upwind from an existing field;
- a strong plant resists insect and diseases better. It is therefore necessary to pay attention to soil preparation, fertilizing, irrigation and weeding;
- bury or pull up and burn the old crops promptly.

Biological Control

Some sueceptible crops which have not been treated with pesticides have small thrips populations, especially eggplant. On these we usually find predators, and in particular anthocorid bugs of the genus Orius, which regularly eat thrips.

Other predators, such as ladybird beetles and predaceous thrips, can play a role. Their action is only possible if pesticide treatment is not drastic, which necessitates well thought-out chemical control: the use of specific pesticides such as pyrimicarbe against aphids, Bacillus thuringiensis against caterpillars and treatments with other products at certain stages of growth. This partly explains the fact that numerous pesticides favor thrips by eliminating predators and parasites.

CONCLUSIONS

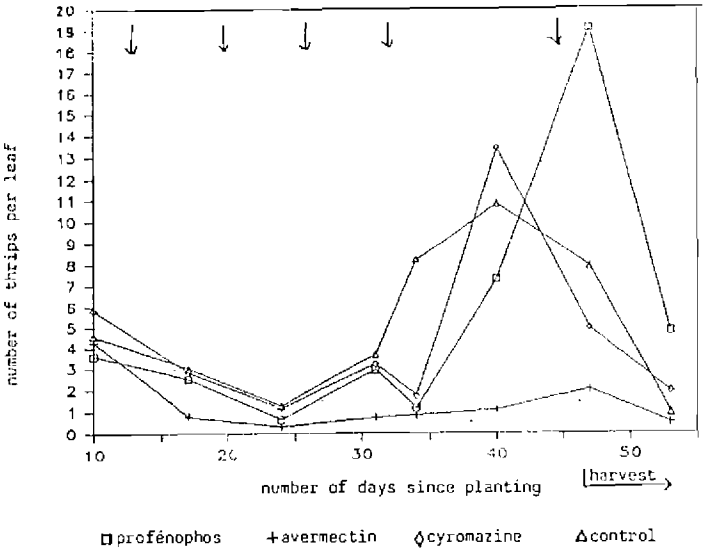
The problem of Thrips palmi is still important in the French West

Indies, all the more so since no pesticide available on the market is really effective. It would seem that the solution is to be found in an integrated control approach which adopts prophylactic measures and uses reasonable chemical control, enabling natural predators to limit the thrips populations.

Table 1. Insecticides tested against Thrips palmi

	Active Ingredient	g a.i./ha
1.	éthoprophos	10000
2.	lindane	600
3.	sulprophos	1000
4.	fenpropathrine	75
5.	fénitrothion + BPMC	750
6.	pyrazophos	1328 & 2000
7.	heptenophos	385 & 500
8.	fénitrothion	800 & 200
9.	phosmet	500
10.	profénofos	600
11.	fluvalinate	200
12.	dichlorvos	1500
13.	fenvalérate	100
14.	avermectin	12
15.	cyromazine	150
16.	profénofos + cyperméthrine	360 + 36
17.	étrimphos	630
18.	éthiophencarbe	500 & 1000
19.	carbofuran	1200
20.	phosalone	750
21.	fénoxycarbe	600
22.	méthamidophos	600
23.	prothoate + tétradifon	250 + 125
24.	isophenphos	1000

Graph 1. Trial on Cucumber. Lamentin, March - May 1987.



Graph 2. Trial on Cucumber. Lamentin, June - July 1987.