

EFFECTS OF SOME ANTIFEEDANTS ON THE CATERpillARS OF *PERICALLIA RICINI* F. (ARCTIIDAE, LEPIDOPTERA), A PEST OF CACAO

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ABSTRACT

Triphenyl tin acetate, triphenyl tin chloride, and AC 24055 were tested on *Pericallia ricini* for assessing their efficacy as antifeedants at five concentrations ranging from 0.0125% to 0.2%. Triphenyl tin acetate at 0.2% and 0.1% and 0.2% triphenyl tin chloride were most effective in checking the leaf consumption by caterpillars protecting the leaf and causing maximum mortality of caterpillars. The chemical AC 24055 was least effective for all the factors studied.

INTRODUCTION

THE side effects of insecticides like the emergence of resistant strains of insects, toxicity to nontarget organisms, etc., have led to the search for alternate methods of controlling injurious insects. One of the new approaches in insect pest management has been the use of antifeedants. The antifeedant property of Brestan (Triphenyl tin acetate) was observed by Ascher and Rones (1964). Subsequent work of Abdul Kareem (1970), Dale and Chandrika (1973), Joshi, Rama Prasad and Narayana (1967), Mathur and Saxena (1972), Muniappan (1972) and Verma and Jain (1972) revealed the antifeedant property of many chemicals. Murbach and Corbaz (1963) observed that the potato crop was protected from the Colorado potato beetle when Brestan was used as an antifeedant. Different triphenyl tin compounds have also been found to be effective against the caterpillars of potato tuber moth (Ascher and Nissim 1964).

The objective of the present study was to assess the effectiveness of three antifeedants against the caterpillars of *Pericallia ricini* F., a pest of cacao.

MATERIALS AND METHODS

P. ricini is a polyphagous pest that feeds on the tender foliage of cacao. Fourth instar caterpillars were obtained from the culture maintained in the laboratory on cacao leaves. The antifeedants used were triphenyl tin

acetate or TTA (Brestan), triphenyl tin chloride or TTC (Brestanol) and AC 24055 at five concentrations 0.0125%, 0.025%, 0.05%, 0.1% and 0.2%. The experiment was replicated four times. The cacao leaf bits were preweighed, treated with different concentrations of the chemicals and air dried. The leaves were then placed in petri dishes over a wet padding of cotton and filter paper. Four weighed caterpillars were released into each petri dish for 60 hr. Leaves sprayed with water served as control. The final weight of the leaves as well as the mortality counts of caterpillar were recorded after the experiment. The weight of leaf consumed, the mean percentage of leaf weight protected over control and the percentage of mortality of caterpillars in different treatments were recorded. Loss of weight of the leaf during the experimental period was also considered when the data on leaf consumption was analysed.

RESULTS AND DISCUSSION

The results (Table I) revealed that all the chemicals were effective in reducing the leaf consumption.

The differences between doses were highly significant in all the chemicals, the 0.2% dose recording the least leaf consumption.

The percentage protection of leaves was 66.3-95.2% in TTA, 46.6-89.6% in TTC and 43.7-73.3% in AC 24055. The higher concentrations of all the chemicals gave increased protection.

TABLE I
Table of means for leaf consumption

Chemical	TTA	TTC	AC 24055
Dose			
0.0125%	0.313	0.491	0.518
0.025%	0.163	0.424	0.406
0.05%	0.118	0.265	0.342
0.1%	0.045	0.159	0.299
0.2%	0.025	0.077	0.233
Control	0.974	0.944	0.934
Mean for chemical	0.273	0.393	0.455
C.D. for chemical		0.025	
C.D. for doses within chemical		0.062	

TABLE II
Table of means for mortality**

Chemical	TTA	TTC	AC 24055
Dose			
0.0125%	33.75 (30.9)	0 (0)	0 (0)
0.025%	45.00 (50.0)	0 (0)	0 (0)
0.05%	56.25 (69.1)	18.75 (10.3)	7.50 (1.7)
0.1%	67.50 (85.4)	48.75 (56.6)	30.25 (25.0)
0.2%	75.00 (93.3)	60.00 (75.0)	41.25 (43.5)
Control	0 (0)	0 (0)	0 (0)
Mean for chemical	46.25 (52.2)	21.25 (13.2)	13.13 (5.2)
CD for comparing doses P=0.05	15.3	14.3	10.2
CD for comparing means of chemicals P=0.05		5.25	
CD for comparing doses within the chemicals P=0.05		12.85	

** Transformed into angular values. Figures in parenthesis are actual percentages of mortality got back after retransformation. Differences between chemicals were highly significant. Among them, TTA was most effective recording significantly higher mortality than control in all the concentrations tried. The other chemicals were effective at 0.05% concentration and above only.

The antifeedant property of the chemicals was also shown by the mortality of larvae resulting from starvation (Table II).

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