

**PERSISTENT TOXICITY OF SOME SYSTEMIC INSECTICIDES
SPRAYED ON COCONUT PALMS TO THE ADULTS OF
*TRICHOSPILUS PUPIVORA***

Nephantis serinopa Meyric is one of the major pests of coconut in Kerala and it is effectively checked by applied biological control. But sporadic outbreaks of this pest occurs in summer, since the hot climate which is congenial for the multiplication of the pest adversely affect the parasite population. Thus the suppression of the pest with the insecticides occasionally becomes unavoidable. A judicious integration of the chemical and biological methods of control against this pest will be feasible only if selective and nonpersistent insecticides, which will reduce the pest population with least disturbance of the parasitic fauna are known. No information is available on the persistence of the newer insecticides on coconut palms under field condition in Kerala, and hence studies were undertaken to evaluate the persistent toxicity of some of the systemic insecticides on coconut palms to *Trichospilus pupivora*, the most important parasite of *Nephantis serinopa*.

The insecticides at standard doses (vide. Table 1) were uniformly sprayed on the fronds of five year old coconut palms with a knapsack sprayer. Each insecticide was sprayed on one palm. Leaflets were collected from sprayed trees at daily intervals. From each leaflet a 10 cm. long piece was cut out and it was made into a cage by closing the lateral margins and one tip with cellophane tape. Fifteen numbers of one day old adult *T. pupivora* were introduced in to each cage and then the open end also was closed with cellophane tape. The mortality of the parasites, 24 hours after exposure was recorded. Persistent toxicity of the insecticides was determined in terms of P T index, calculated following the method of Pradhan (1967) where P is the period for which the toxicity persisted and T the sum of corrected mortalities divided by the number of observations.

The results are presented in Table 1. The persistence of various insecticides as shown by P T index was in the following descending order: phorate > monocrotophos > methyl demeton > dimethoate > thiometon >

phosphamidon > formothion. Even systemic insecticides, which disappear from treated plant materials at a fast rate due to absorption into the tissues, persist on coconut leaves at a level toxic to *T. Pupaivora* for a period of 10 to 14 days after spraying.

REFERENCES

Pradhan, S. 1967. Strategy of integrated pest control. *Indian J. Ent.*, 29 : 105-122

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Table 1

Corrected percentage mortality of adult *T. pupivora* exposed to coconut leaves sprayed with insecticides and collected at various intervals after spraying; with P T values and order of relative persistence

Insecticides	Days															P	T	PT	ORE	
	0.04	1	2	3	4	5	6	7	8	9	10	11	12	13	14					15
Formothion 0.05%	100.00	100.00	96.20	93.37	69.00	68.10	72.20	65.00	50.30	46.40	10.90	6.60				11	64.87	713.57	7	
Phospamidán 0.04%	100.00	100.00	100.00	100.00	100.00	76.40	50.90	48.50	46.40	36.00	16.60	14.20	5.5	2.5	2.5	14	53.26	745.64	6	
Thiometon 0.1%	100.00	100.00	100.00	89.00	87.00	83.00	65.25	61.00	57.60	57.50	20.00	9.00				11	69.11	760.21	5	
Methyl demeton 0.1%	100.00	100.00	100.00	100.00	100.00	93.40	81.80	77.10	72.00	64.70	33.30	16.60				11	78.24	860.64	3	
Monocrotophos 0.03%	100.00	100.00	100.00	100.00	100.00	100.00	87.00	83.80	72.00	64.30	55.60	48.50	25.0				12	79.70	956.40	2
Dimethoate 0.05%	100.00	100.00	100.00	100.00	91.00	87.40	78.50	68.10	66.30	49.00	32.00	—	—				10	79.30	793.00	4
Phorate 0.04%	100.00	100.00	100.00	100.00	89.00	90.00	83.00	79.10	78.50	69.60	65.50	12.50				11	87.92	957.12	1	

P = Period for which the toxicity persisted

T = Average residual toxicity

ORP = Order of relative persistence

Minimum

Maximum

Temperature during the experiment

21.6 to 23.3° C

31.7 to 32.5° C

Humidity 85 to 95%

Rainfall Nil

TWO VIRUS DISEASES IN *P. RICINI*

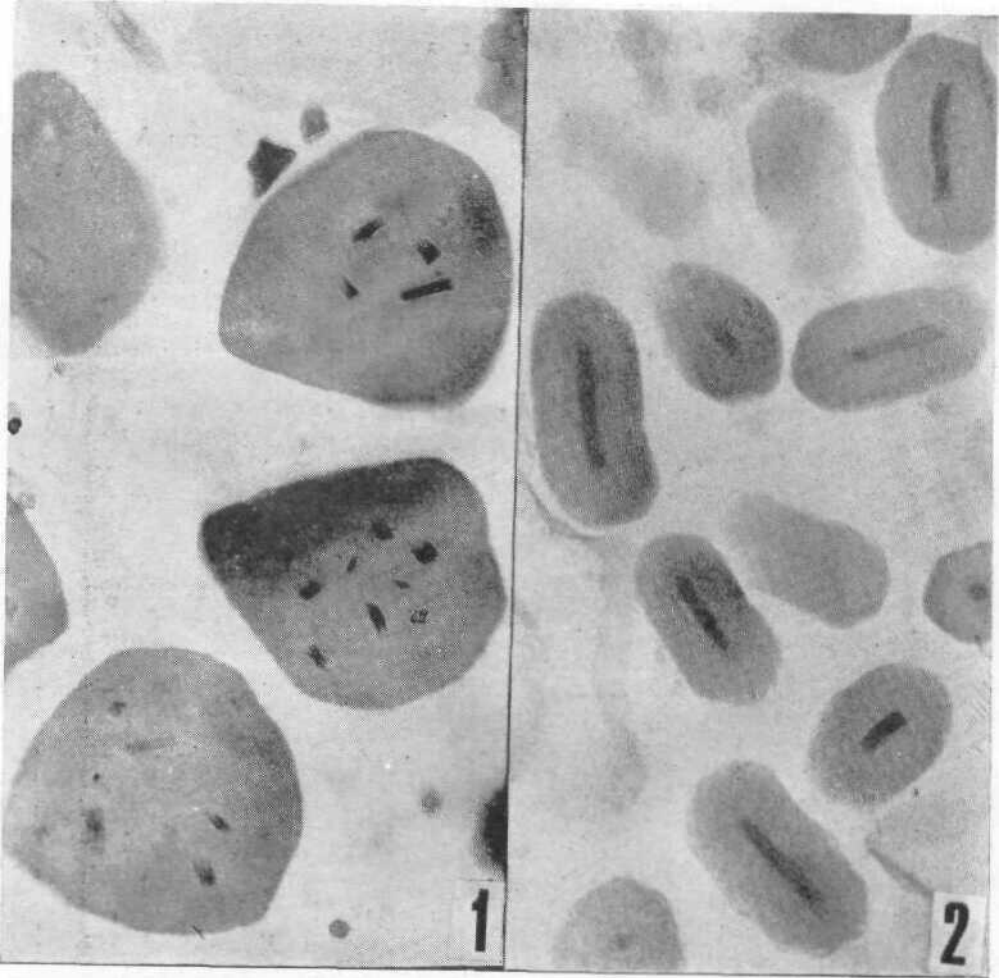


Fig. 1

Fig. 2

Fig. 1 Electron micrograph of sectioned polyhedra from *P. ricini* showing the occluded virus rods, x 29675.

Fig. 2 Electron micrograph of sectioned granules from *P. ricini* showing the occluded virus rods, x 7417S.