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Evaluation of six granular insecticides for the control of arecanut spindle bug, Carvalhoia arecae Miller and China in the field

ABSTRACT

SIX granular insecticides viz. lindane 6G, carbaryl+ lindane 4 : 4G, carbaryl 4G, mephosfolan 5G, thiodemeton 5G and quinalphos 5G were tested in the field against the spindle bug, *Carvalhoia arecae* Miller and China on arecanut palm. All the insecticides effected control of the pest. However, quinalphos was superior to mephosfolan and thiodemeton.

INTRODUCTION

THE spindle bug, *Carvalhoia arecae* Miller and China (Heteroptera : Miridae), is a major pest of arecanut palm, *Arecae catechu* Linn. in Kerala and Karnataka States. The nymphs and adults of this bug colonise the innermost two leaf axils just around the unopened spindle. These bugs suck sap from the tender portions of both newly opened leaves as well as the unopened spindle. They insert the probosis into tender tissues and suck the sap. The tissues around the point of insertion of stylets develop necrotic patches which coalesce and the affected tissues eventually dry up. When such infested leaves unfurl, the necrotised portions appear as linear patches. Severe infestation results in loss of vigour of the palms and such palms present a sickly appearance. Abraham *et al.* (1976) found that the granular formulations of phorate, thiodemeton and carbaryl filled into the leaf axils of palms controlled the pest. With a view to screening a few more granular formulations of available insecticides against this pest, the present study was undertaken. The results are presented in this paper.

MATERIALS AND METHOD

A field trial was laid out at CPCRI, Research Centre, Palode, Trivandrum District, Kerala State during December 1974 in a randomised block design with seven treatments and a plot size of nine palms per treatment, replicated thrice. The treatments were (1) lindane 6G, (2) carbaryl+landane 4 : 4G, (3) carbaryl 4G, (4) mephosfolan 5G, (5) thiodemeton 5G, (6) quinalphos 5G and (7) control (untreated). Two rows of palms were maintained as guard rows around each treatment plot. The insecticide granules were applied into the two innermost leaf axils (around the spindle) by hand @ 10 g per palm. The does was standardised at 10 g as the same dose was found to be adequate to treat two inner leaf axils of a palm. Insecticides were applied at quarterly intervals. The pest population (adults and immature stages) was recorded prior to the treatment and subsequently at monthly intervals. The total number of leaves present and the number of leaves infested by the pest were recorded at the commencement of the experiment and later at half yearly intervals. The experiment was concluded in December 1976.

RESULTS AND DISCUSSION

The data on population density of bugs are presented in Table 1. All the insecticides effected control of the pest in varying degrees. However, quinalphos was superior to mephosfolan and thiodemeton. The percentage of leaf attack was progressively reduced in all treatments as compared to that in the control (Table 2). However, there was an over-all increase in the intensity of leaf attack after the first round of post treatment observation in all the plots. In another study on seasonal fluctuations of the pest, November was found to be the peak period of pest abundance. The increase in percentage leaf attack recorded during the second round of post treatment observations (January 1976) can therefore be presumably due to the cumulative effect of the injury inflicted by the adults

TABLE: 1 POPULATION COUNT OF SPINDLE BUG ON PALMS UNDER DIFFERENT TREATMENTS

Treatments	*Mean no. of spindle bug/palm*
1. Lindane 6G	8.3741
2. Carbaryl + lindane 4 : 4G	8.2586
3. Carbaryl 4G	10.6108
4. Mephosfolan 5G	11.9660
5. Thiodemeton 5G	11.4570
6. Quinalphos 5G	6.9235
7. Control (untreated)	18.5745
SE/Mean = 1.2820	
CD = 3.9509	
Conclusion T_6 T_2 T_1 T_3 T_5 T_4 T_7	

TABLE: 2 DATA ON PERCENTAGE LEAF ATTACK IN DIFFERENT TREATMENTS

Treatments	*Percentage leaf attack*				
	Pretreatment	*Post treatment*			
		1	*2*	*3*	*4*
Lindane 6G	81.4	31.9	47.2	30.6	24.7
Carbaryl + lindane 4 : 4G	75.5	28.2	48.8	24.6	21.2
Carbaryl 4G	80.2	38.8	47.9	31.1	25.6
Mephosfolan 5G	96.4	40.5	44.9	32.4	27.4
Thiodemeton 5G	75.0	33.8	39.4	21.7	23.6
Quinalphos 5G	78.1	34.5	39.6	19.6	13.3
Control (untreated)	66.0	58.2	78.3	43.1	50.2

and immature stages of bugs during the peak period of pest abundance which preceded the second round of post treatment observation. The increase in percentage of leaf attack in the control was much higher, even exceeding that of the pretreatment level. This is indicative of the necessity of adoption of insecticidal treatment for the control of the pest to coincide with the peak period of pest abundance. Quinalphos was comparable in efficacy statistically with that of carbaryl + lindane, lindane and carbaryl of which carbaryl + lindane came nearer to quinalphos. The combination of carbaryl + lindane was superior to carbaryl alone. This may be due to the higher retentive toxicity of lindane in the formulation

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