

Control of Arecanut Spindle Bug *Carvalhoia arecae* M. and C. using Granular Insecticides in the Field

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Abstract

Granular formulations of phorate, lindane and quinalphos were tested under field conditions in demonstration cum trial plots at CPCRI, Research Centre, Palode during 1977-1980. Trials proved that granular formulations of lindane and phorate, applied to the innermost two or three leaf axils @ 10 g per palm at quarterly intervals, in March, June, September and December effected significant control of the spindle bug population in the field. The cost of the insecticide granule+labour for treatment of 100 palms worked out to Rs. 30/- for lindane and Rs. 38/- for phorate.

Introduction

The spindle bug *Carvalhoia arecae* Miller and China (Heteroptera: Miridae) is one of the major pests of arecanut palm, infesting nearly 80% of areca gardens in the west coast of Kerala. It causes about 25% loss in yields. The nymphs and adults of the bug congregate in the leaf axils surrounding the spindle and suck the sap from the tender leaf tissues. The infested patches develop dark brown necrotic lesions which later dry up leaving shot holes on the opened leaves. Severely damaged spindle fails to open fully and usually gets dried up.

Wettable and granular formulations of different insecticides were recommended for the control of *C. arecae*. Spraying BHC at 0.25% or endrin at 0.125% concentration was recommended for the control of spindle bug on infested palms (Nair and Das, 1962; Nair, 1964). Leaf axil filling with granular formulations of endrin 2 G, heptachlor 3 G and lindane 6 G could be effectively employed in the control of the bugs (Abraham et al., 1972). Abraham et al., (1976) observed that phorate 10G, thiodemeton 5G and carbaryl 4 G applied @ 10g per palm, at quarterly intervals, could bring down the pest below the economic injury level. Subsequent trials revealed that quinalphos 5 G, mephosfolan 10G, thiodemeton 5G, lindane 6G, lindane+carbaryl 4:4 G and carbaryl 4 G applied @ 10 g per palm, at quarterly intervals, effected significant control of the pest (Abdulla Koya et al., 1979). Small scale tests with phorate 10G, lindane 6G and

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quinalphos 5 G proved to be very effective and best suited for the control of the arecanut spindle bug. These formulations were further tested in demonstration *cum* trial plots during the period 1977 - 1980 and the results are presented in this paper.

Materials and Methods

The trial was conducted in the farm of Central Plantation Crops Research Institute, Research Centre, Palode, Trivandrum district, Kerala. One hundred and twenty five areca palms per treatment were selected for the experiment. Twenty per cent of palms were marked as sample palms for periodic observations. A control plot was also maintained with equal number of palms. Observations were made on the total number of leaves and infested leaves at half yearly intervals. Phorate 10G, lindane 6G and quinalphos 5G were applied @ 10g per palm, at quarterly intervals, by filling the innermost two or three leaf axils surrounding the spindle. Observations on nymph and adult populations were recorded at quarterly intervals in March, June, September and December prior to insecticide application. Data were analysed statistically and the results are presented in Table 1.

Results and Discussion

The granular formulations of phorate, lindane and quinalphos effected significant control of the pest as compared to the untreated control. Significant difference in the total pest population was observed between treatments. The difference between treatments was highly significant in the case of leaf infestation and fresh incidence. Leaf damage was comparatively less in lindane treatment (27%), whereas it was more in quinalphos (38.8%) and control (41.9%). Minimum pest population was recorded in the phorate and lindane treatments (9.8 and 11.4 respectively). Quinalphos treated palms showed high population of the pest (47.5), which was higher than that of the untreated control (33.9). Taking into account the fresh incidence of the bug on newly emerged spindle leaf, lindane followed by phorate treated palms showed the minimum incidence (3.6 and 4.2 respectively). Phorate and lindane were observed to be superior to quinalphos.

For treatment of 100 palms lindane costs Rs. 10/- and phorate Rs. 18/-. The total cost including insecticide and labour requirement for treatment of 100 palms at a time works out to Rs. 30/- and Rs. 38/- for lindane and phorate respectively.

Table 1. Summary of observations on demonstration *cum* trial for the control of *Carvalhoia arecae* (Data for the period 1977-1980)

Observations	Treatments				CD (P=0.05)
	Quinalphos 5G	Phorate 10G	Lindane 6G	Untreated control	
Leaf infestation (%)	38.8	29.5	27.0	41.9	7.8**
Total pest population	47.5	9.8	11.4	33.9	26.7*
Fresh incidence	8.5	4.2	3.6	10.5	3.4**

** Highly significant

* Significant

Considering the efficacy and cost, lindane 6G or phorate 10G is recommended for the control of *C. arecae* in the field.

Wettable formulations such as BHC 0.25% and endrin 0.125% were hitherto recommended for the control of the spindle bug in the field. They have to be sprayed at 30-35 days interval for effecting satisfactory control of the pest and protecting the newly emerging spindle leaf from pest infestation. The pest normally occurs in abundance during the rainy seasons and in high rainfall tracts. The insecticide spray gets washed away during the rains and quite often the spraying treatment leads to unsatisfactory control of the pest. Tests proved that the granular insecticides could maintain the palms free of infestation for

more than three months. The treatment by way of filling the innermost leaf axils surrounding the spindle, need be done only at quarterly intervals in March, June, September and December synchronising with the abundance of the spindle bug population.

The present finding of leaf axil filling with granular insecticides overcomes the difficulties in the control of the pest.

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