CONTROL OF THE RED PALM WEEVIL ON COCONUT*

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ABSTRACT

Three trials were carried out in Coimbatore District during 1971–72 for the control of the red palm weevil, *Rhynchophorus ferrugineus* L., attacking coconut trees. The results of the first trial indicated that fenthion 0·2% and carbaryl 1% suspension, and Phostoxin at 1 tablet and 2 tablets per tree were effective against the larval, pupal, and adult stages of the pest. Further trials confirmed that Phostoxin could be used at half to one tablet per tree for the control of the pest.

INTRODUCTION

THE red palm weevil, *Rhynchophorus ferrugineus* L., is one of the serious pests of coconut causing considerable damage and often killing the palm in its prime of life. The adult is a reddish-brown weevil with a prominent snout which measures about 35 mm in length. Eggs are inserted into exposed tissues in the trunk portion or laid at the cut ends of leaf-stalk, or in crevices in the bole region. The hatched out grubs burrow into the trunk and feed on the tissues of the stem. The grubs pupate inside in fibrous cocoons and emerge as adults. The presence of small holes at the leaf scars and oozing out of a reddish-brown fluid and extrusion of fibres from these holes and slightly audible sound of the feeding activity of the grubs within the stem are some of the general symptoms of attack by this pest.

For the control of this insect, Nirula (1956) recommended injection of 1% Pyrocon-E (Pyrethrin + piperonyl butoxide) at 1000 to 1500 ml per tree. Menon and Pandalai (1958) suggested filling of the leaf axils with a mixture of BHC or chlordane dust and sand as a prophylactic measure. Kurian (1959) reported the reaction of the grubs and adults of the weevil in the laboratory to dieldrin, endrin, diazinon, parathion, and pedix-bade emulsion. Mathen and Kurian (1966) found that BHC and chlordane 5% dust mixed with sand and filled into all leaf axils of young palms, thrice a year in the pre- and post-monsoon months, were effective in reducing the infestation by the pest. But only injection of 1% Pyrocon-E was being adopted widely by the farmers. The high cost of the chemical as well as its non-availability in sufficient quantities for large scale use led towards the search for other cheaper and easily available insecticides for the control of the pest. Among such insecticides tested, carbaryl was reported to give encouraging results (Mathen and Kurian, 1967).

Recently, this weevil has appeared in a serious proportions in some of the coconut gardens in and around Coimbatore causing death of a number of trees and the opportunity was availed off to test a few new insecticides for its control.

MATERIALS AND METHODS

Three sets of trials were conducted in Tamil Nadu, India, during 1971–72, one at Mettupalayam, another at Perur, and the third one at Kottur and Ammapalayam, near Pollachi. In the first trial, three insecticides, *viz.*, fenthion 0·2%, methyl demeton 0·2% and aluminium phosphide (Phostoxin) at one and two tablets per tree were tested and compared with carbaryl 1% suspension that has already been reported to be effective. Three affected trees were selected for each treatment. One or two holes were drilled with an auger in the trunk and the insecticide suspensions were poured at the concentrations mentioned above at one litre per tree

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with the help of a funnel. In respect of Phostoxin, the tablets were pushed inside the trunk through the hole. The holes inclusive of those already existing on the trunk of the tree were plugged thereafter with sticky mud. Out of three trees treated, one tree was examined by cutting open the stem to find out the efficacy of the chemicals on the various stages of the pest, while the remaining two trees were left for further observations on the recovery of the trees.

In the second trial, five affected trees were selected and treated with Phostoxin tablets at the rate of one tablet per tree and observations were made on the recovery of the trees and development of further symptoms.

In the third trial, eight affected trees were selected and treated with half a tablet per tree and observations were made on the recovery of the trees.

Results

The data gathered in the first trial on the efficacy of the insecticides on the various stages of the weevils are furnished in Table I.

Table I

Efficacy of insecticides on the various stages of the red palm weevil on coconut

Sl. No.	Treatment	Grubs		Pupae		Adults	
		Live	Dead	Live	Dead	Live	Dead
1	Phostoxin 2 tablets/ tree	..	26	..	7	..	3
2	Phostoxin 1 tablet/ tree	..	18	..	8	..	2
3	Methyl demeton 0·2%	18	..	3	..	3	..
4	Fenthion 0·2%	..	16	..	2	..	3
5	Carbaryl 1%	..	17	..	3	2	2

All the insecticides tested, excepting methyl demeton, were effective in killing the larval, pupal, and adult stages of the pest. During the subsequent observations on the remaining two treated trees in each treatment, it was found that the trees treated with carbaryl, Phostoxin and fenthion recovered within a month while the trees treated with methyl demeton succumbed to the injury caused by the pest. There was no phytotoxic symptom in any of the treatments excepting in the higher dosage of Phostoxin in which browning of the leaf base was noticed. However, this symptom also disappeared after a month.

In the second and third trials, the trees treated with Phostoxin at one tablet and half tablet per tree did not show further symptoms of damage and recovered from the attack of the weevil. Hence, it is proposed that Phostoxin could be used at half to one tablet per tree.

Discussion

Though any one of the above chemicals can be used successfully for the control of red palm weevil, the advantages with Phostoxin are (1) the fumigant action will permeate to all the portions of the stem and kill the stages of the insect; and (2) the ease of application of the material. The cost of chemical for treating a tree with carbaryl, fenthion and Phostoxin half tablet works out to 20 paise, 15 paise, and 15 paise, respectively.

References

MATHEN, K. AND KURIAN, C. 1959. Comparative efficacy of different insecticides on *Rhynchophorus ferrugineus* Fabr. *Proc. I. Conf. Coconut Res. Workers, India*, pp. 391–401, Indian Central Coconut Committee, Ernakulam, India.

MATHEN, K. AND KURIAN, C. 1966. Prophylactic control of *Rhynchophorus ferrugineus* Fabr. the coconut weevil. *Indian J. Agric. Sci.* **36**: 285–286.

MATHEN, K. AND KURIAN, C. 1967. Insecticidal trials against *Rhynchophorus ferrugineus* Fabr. (Curculionidae, Coleoptera), the red weevil of coconut. *Indian J. Agric. Sci.* **37**: 521–525.

MENON, K. P. V. AND PANDALAI, K. M. 1958. *The Coconut Palm, A Monograph*. p. 65. Indian Central Coconut Committee, Ernakulam, India.

NIRULA, K. K. 1956. Investigations on the pests of coconut palm. IV. *Rhynchophorus ferrugineus* Fabr. *Indian Coconut J.* **10**: 28–44.