

A NOTE ON MAJOR PEST PROBLEMS OF CASHEW,
COCONUT AND ARECANUT AND THEIR CONTROL
IN GOA

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ABSTRACT

In Goa, the major pests affecting cashew, coconut and arecanut have been surveyed and enlisted. In cashew, the major pests are tea mosquito bug, root and stem borer, leaf miner, leaf and blossom webber, shoot tip caterpillar and apple and nut borer; while in coconut, red palm weevil, rhinoceros beetle and leaf eating caterpillar are of major importance and in case of arecanut, palm mite and grape vine thrips are found to be serious pests. The nature and extent of damage, seasonal abundance, control measures and the natural enemies of these pests are discussed in detail.

INTRODUCTION

Among plantation crops, cashew occupies major area (68,400 ha) followed by coconut (18,700 ha) and arecanut (1700 ha) and their production is mainly affected due to various pest problems.

Some of the major pests of cashew, coconut and arecanut already described by different research workers (Menon and Pandali, 1957, Daniel and Kumar, 1976, Pillai, 1979) were also found in different parts of Goa; but no detailed records are available to assess the intensity and extent of damage caused by various pests infesting these plantation crops. Hence, attempts have been made to survey systematically on these aspects and to suggest suitable control measures.

Major Pests of Cashew

Tea mosquito bug, *Helopeltis antonii* Sign.

(Heteroptera : Miridae)

This is a serious pest in South Goa Region. Observations in 1978—1979 revealed that the tea mosquito bug infestation was

as high as 86% on new flushes and panicles resulting in drying and scorched appearance of the panicles and tender shoots. The build up of the population commences from October onwards after the recede of monsoon, synchronising with emergence of new flushes. The population reaches its peak in January when the emerged shoots and inflorescence are succulent. It has been estimated that the severe infestation of tea mosquito bug causes loss of production to the extent of 30 to 40% in this Territory (Desai *et al.*, 1977).

As suggested by Pillai and Abraham (1975), spraying of endosulfan 0.05% as high volume spray was done at the time of emergence of shoots, panicles and as fruits set in a Field Evaluation (Minikit) trial was conducted and found very effective.

Stem and root borer

Plocaederus ferrugineus L. (Coleoptera : Cerambycidae)

This is the most dreadful enemy of cashew, locally known as 'Roto' which is capable of killing the tree out right. The attack is found to be severe in both young and old plantations and more than 23% of well grown bearing trees are being attacked in some of the ill-managed plantations where the trees died due to stem borer attack were not removed.

The grubs that hatch out of eggs after 4 to 6 days of incubation bore into the fresh tissues of the bark and feed on the sub-epidermal and sap wood tissues and make tunnels in irregular directions for 6 to 7 months (April—October). In this territory, the monsoon starts by end of May and continues upto end of September with a total precipitation of more than 3000 mm in a short span of time. These grubs mostly damage the trees during this rainy season.

The symptoms of infestation include presence of small holes in the collar region, gummosis, extrusion of frass through holes, yellowing and shedding of leaves, drying of twigs and final death of the tree.

Since it is being an internal feeder, adopting one particular method of pest control is not sufficient to combat this problem. But the infestation can be completely minimised by adopting the following integrated approach.

- 1) The dead trees and those which are beyond the recovery were completely uprooted and destroyed.
- 2) The reddish adult beetle starts laying eggs mostly during March or April in the live tissues in the crevices of loose bark and exposed portions of roots of cashew trees. These eggs were crushed mechanically with the help of big needle.
- 3) Since it is difficult to apply any insecticide during heavy rainy season, curative control measures were adopted at the early stage of infestation during April-May. During this period, most of grubs extracted by scrapping the bark region were killed and swabbing with BHC 0.1% on the trunk region was done. Further 500 g of BHC 10% was mixed in the soil around the trunk to get complete cure.

Leaf miner, *Acrocercops syngramma* M. (Lepidoptera: Gracillariidae)

The mining injury by caterpillars was noticed both in the tender leaf as well as in tender shoots; but this did not threat much to cashew production. However, 10—20% infestation by this pest has been recorded in post monsoon flushes (Oct.—Nov.). During the period of observation, one hymenopterous species had been recorded as larval parasite of this pest. Peak emergence of this parasite was noticed during the month of December and January.

Leaf and blossom webber, *Lamida (Macalla) moncusalis* Walker (Lepidoptera : Pyralidae)

This pest was found to be sporadic in certain pockets and maximum infestation of 26% was noticed in one of the affected areas. During post monsoon period, the caterpillars feed on the terminal leaves of new shoots and blossoms after webbing them.

Shoot tip caterpillar

Hypatima (Chelaria) haligramma M. (Lepidoptera : Gelechiidae)

It has been noticed that the new flushes which emerged during January—February were mostly attacked by shoot tip caterpillar. As a result, growing tip becomes stunted and dries up.

Apple and nut borer, *Thylocaptia panrosema* M.
(Lepidoptera : Pyralidae)

This pinkish dark, actively moving caterpillar bores into tender apples and nuts during the month of February—March and maximum of 18% infestation was recorded at this region. One species of Braconid (unidentified) has been recorded as larval parasite of this pest.

Endosulfan spray (0.05%) which controls tea mosquito bug was also found to be effective in minimising the incidence of leaf miner, webber, shoot tip caterpillar and apple and nut borer.

Major Pests of Coconut

Red Palm Weevil, *Rhynchophorus ferrugineus* F.
(Coleoptera : Curculionidae)

The growing coconut palms especially in the age group of 5 to 20 years are being severely affected by this pest. The trees dying due to bud rot and stem bleeding disease were also found to be vulnerable for breeding of this pest. During preliminary survey in two taluks, it has been estimated that 5—7% of trees were dead in some of badly infested gardens. This becomes a chronic problem in most of the ill-managed gardens. One species of mite was found as external parasite on immature and adult stages of the weevil.

As suggested by Mathen *et al* (1977) sanitary measures and injection of carbaryl 1.0% through funnel in the infested trees were done and the incidence has been successfully minimised.

Rhinoceros beetle, *Oryctes rhinoceros* L.**(Coleoptera : Dynastidae)**

The beetle causes damage by boring into the unopened tender fronds and spathes. It has been observed that at least one spathe in each tree was damaged in every year and the damage of leaves was ranged from 10 to 30%. Farm yard manure, compost heaps and dead trunks of coconut trees were appeared to be favourite breeding places of the rhinoceros beetle. In one of the farms, while removing the standing dead trunks of coconut trees as many as 200 grown up grubs have been collected from each tree.

The general recommendation of periodically hooking out the beetle from the crown of palms and filling the innermost leaf axils with BHC 10% + sand were adopted and these recommended practices were found to be very effective in reducing the incidence.

Leaf eating caterpillar, *Nephantis serinopa* Meyer.**(Lepidoptera : Xylonyctidae)**

This is also a serious pest of coconut in the coastal tracts. After the recede of monsoon, the infestation starts by Oct.—Nov. and peak infestation was noticed during March—April. During 1977—78, maximum of 60% of leaves were found to be infested in several coastal villages. The infested trees appeared with dried up patches in the fronds and gradual drying of these parts.

Considering the enormous practical problems for controlling this voracious feeding caterpillars on very tall trees which are scatterly planted in this territory, the suggested curative chemical control measures were found to be inconvenient and difficult to implement. Hence as per the suggestion of Coconut Development Council, one Parasite Breeding Station has been planned to establish in this Territory to control this serious insect pest.

Major Pests of Arecanut**Palm mite, *Raoiella indica* Hirst (Acarina : Tenuipalpidae)**

During summer period (March - May) it assumes serious proportions. Unirrigated and completely exposed gardens were very much vulnerable to this pest. They infest the lower surface of areca leaves and the yellow speckles later coalesce, become bronze coloured and completely dries up. Maximum mite population of 100-300/cm² was noticed in the severely infested garden. One species of thrips and one species of coccinellid (unidentified) were found preying on this pest. Immature and adult predators feed on 2-8 mites/h. The mite population declines after the onset of monsoon.

As suggested by Daniel and Kumar (1976) spraying with dicofol (Kelthane, 186 ml in 100 lts. water) was found to be effective in controlling this pest.

Grapevine thrips, *Rhipiphorothrips cruentatus* Hood**(Thysanoptera : Thripidae)**

This is also found to be severe in certain pockets of Goa during summer season. The dark brown adults and pinkish nymphs were found in colonies (10-15 thrips/cm²) on the lower surface of areca leaves and sucking the sap resulting in silvery blotches. These blotches turn yellow and dry up under severe infestation. The intensity of this pests is also negligible after onset of monsoon.

This bench mark survey will be the tool to evolve suitable control measures of various pests of cashew, coconut and arecanut under Goa condition.

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