

PEST CONTROL IN CASHEW

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IN India, cashew is now known to be infested by more than sixty species of insects during different stages of its growth and development. When the overall extent of infestation and the crop losses caused by pests are taken into consideration the most important among them are the stem and root borers which are capable of killing the tree outright, the tea mosquito bug infesting tender shoots, flower bunches, and developing nuts, the leaf miner and the leaf and blossom webber. Besides, there are a few species of insects, considered less serious enemies, such as the flower thrips, apple and nut borers and nut crinkler which are responsible for immature fruit drop in cashew. Among the foliage pests, the leaf thrips, leaf beetle and weevil and defoliating hairy caterpillars also cause considerable damage to cashew in localised tracts particularly when they appear sporadically.

Stem and Root Borer

This is an internal tissue borer pest whose infestation will lead to the death of the tree. The adult longicorn beetle lays eggs deeply inserted into the live tissues in the crevices of loose bark in the trunk region or in the exposed portions of roots. The grubs that hatch out bore into the fresh tissues of the bark and feed on the subepidermal and sapwood tissues and make tunnels in irregular directions. As a result of injury to the cells a resinous material oozes out, which on exposure to air gets hardened as a gummy substance. The symptoms manifested in early stages of infestation include the presence of small holes in the collar region of trees, oozing out of the gum and extrusion of frass, through holes, and during later stages there will be shedding of leaves, drying of twigs and final death of the tree.

Three species of longicorn beetles, *Plocaederus ferrugineus* L., *P. obesus* Gahan and *Batocera rufomaculata* De G. have been observed infesting cashew trees in different cashew growing regions of India.

Field trials on the curative control of stem and root borers using different insecticides revealed that if infestation is detected in the early stage itself, even swabbing with BHC 0.1 per cent suspension after removal of the affected tissues with immature stages of the pest was

quite effective. The trees with medium and advanced stages of infestation could not be saved even with the application of best insecticides available. The dead trees and those which are beyond recovery should be uprooted and removed from the plantation, lest they serve as natural reservoir for multiplication of stem and root borers and other species of bark and sapwood borers infesting cashew.

Tea Mosquito

The tea mosquito *Helopeltis antonii* Sing. is a major menace to cashew. The adults and immature stages of this mirid bug suck sap from tender shoots, leaves, flower bunches, developing nuts and apples and totally damage them. The injury made by the insect causes the tender shoots to exude resinous gummy substance, which on exposure to air gets hardened. Within a short time the tissues around the point of entry of insect stylets become necrotised and brown or black lesions are formed presumably due to the action of the toxic principle present in the saliva of the insect, injected to the plant tissues at time of feeding. Adjacent lesions coalesce and finally the affected shoots or inflorescences dry up. The immature nuts attacked by this pest develop chara-



Fig. 1 Stem borer affected trees

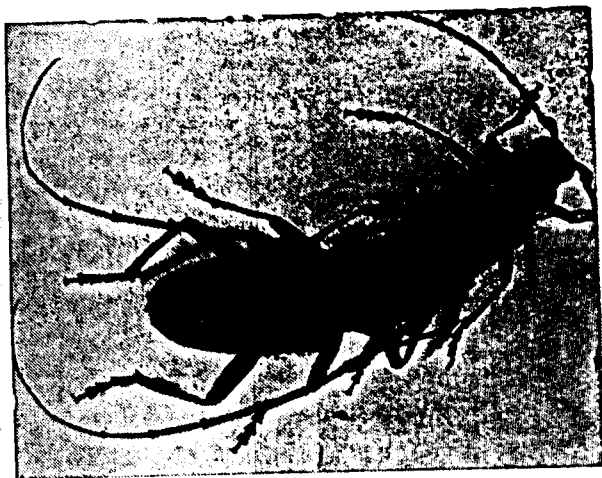


Fig. 2 Adult beetles *P. ferrugineus*—Cashew stem borer

characteristic eruptive spots and finally shrivel and fall off. It is estimated that this pest is responsible for a damage of nearly 25 per cent of shoots, 30 per cent of inflorescences and 15 per cent of tender nuts. The infestation on inflorescences results in blossom blight which is a major factor limiting cashew production in our country.

As inflorescence blight in cashew was considered to be caused by tea mosquito infestation and infection of fungi like *Gloeosporium mangiferae* and *Phomopsis anacardii*, recent studies have shown that tea mosquito infestation alone was primarily responsible for blossom blight in cashew. Field control trials revealed that endosulfan, 0.05 per cent applied as high volume spray, or 0.1 per cent as low volume spray, at the time of emergence of new flushes, inflorescences and fruit set was quite effective in controlling tea mosquito population.

Timely adoption of plant protection measures is very important for the effective control of a pest like tea mosquito. The plant protection treatments are to be done well in advance before the pest population assumes severe proportions and starts inflicting injury to the crop.

Leaf Miner

The leaf miner *Acrocercops syngramma* M. infests tender leaves of the post-harvest and postmonsoon flushes. Nursery seedlings and young plantations are more prone to the infestation of this pest. The injury by caterpillars which mine through tender leaves becomes visible as tortuous markings. When the infested leaves mature the damage will be manifested as big holes. The adult is a silvery grey moth which lays eggs on tender leaves. It is estimated that more than 25 per cent of freshly emerged leaves are damaged by this pest in severely infested tracts. Spraying BHC 0.1 per cent or Phosphamidon or fenitrothion or endosulfan 0.05 per cent at the time of emergence of new flushes would control pest infestation.

Of the two species of leaf and blossom webbers *Macalla moncusalis* Walker and *Orthaga exvinacea* Hamps. recorded as cashew pests the former has attained the status of a major pest, in recent years in the east coast tracts, particularly in the coastal districts of Andhra Pradesh. Presence of webs in the terminal portions of new shoots and blossom and drying of webbed shoots are the important symptoms of infestation. The galleries of silken webs reinforced with castings and scraps of plant parts are indications of the presence of caterpillars inside the webbed leaves. Spraying 0.2 per cent BHC, 0.05 per cent fenitrothion or endosulphan or quinalphos at the time of emergence of new shoots immediately after the monsoon would control the pest effectively.

Among the less serious pests of cashew the flower thrips, apple and nut borers and nut crinkler are responsible for substantial crop losses. The flower thrips *Rhynchothrips racensis* G. infests cashew inflorescences. The rasping and feeding injury made by these thrips results in the formation of scabs on floral branches, apples and nuts. The infestation on developing nuts results in the formation of corky layers on the affected parts, malformation of nuts and even immature fruit drop. Apple and nut borers *Thylocoptila panrosema* M. and *Nephopteryx* sp. cause damage to tender apples and nuts which will shrivel and fall off. The nut crinkler *Paradasynus rostratus* Distant infests tender nuts causing them to shrivel and dry up. The third round of spraying done against tea mosquito at the time fruit set would be effective in controlling immature fruit drop caused by these insects.

The foliage thrips *Selenothrips rubrocinctus* Giard, *Rhipiphorothrips cruentatus* Hood and *Retithrips syriacus* M. cause damage to young plantations particularly during

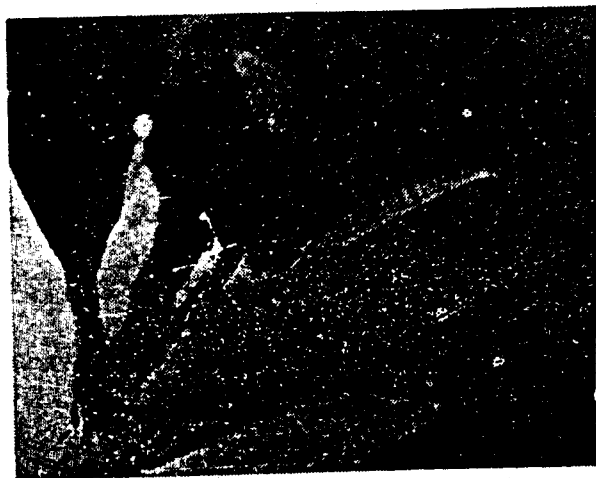


Fig. 3 Adult of tea mosquito *Helopeltis antonii*



Fig. 4 Apple and nut borer

summer months. The adults and immature stages of thrips colonise on the lower surface of leaves. As a result of their rasping and feeding activity the leaves become pale brown and slightly crinkled with roughening of upper surfaces. Spraying endosulfan, fenitrothion or quinalphos 0.05 per cent, so as to give a thorough coverage to the lower surface of leaves will control thrips infestation.

The leaf beetle *Monolepta longitarsus* Jac., and the

weevil *Mylloceris discolor* R. appear in large numbers on cashew foliage particularly during the south-west monsoon period. and cause considerable damage to tender leaves and portions of new shoots. Their incidence will be more severe on nursery seedlings and young plantations. The defoliating caterpillars *Melanastria hyrtaca* Cram. and *Cricula trifenestrata* H. are sporadic pests infesting isolated trees in certain localities. Spraying any contact insecticide would be effective in controlling the pest.

In view of the heavy economic losses caused by different insect pests of cashew it is essential that organised plant protection measures are adopted against them. Though chemical control of various pests with different pesticides has been successful it would be rather difficult to adopt control measures against individual pests, except in cases of sporadic pest outbreaks. Adoption of suitable plant protection schedules to take care of different pests infesting cashew at a particular season would be more feasible and economical. For example, in areas where tea mosquito infestation is quite rampant, three rounds of spraying done at the time of emergence of new flushes, inflorescences and at fruit set would control other pests infesting foliage, shoots, flower bunches and immature nuts as well. Similarly, the treatment schedules adopted against leaf and blossom webber which is quite severe in the east coast tracts would take care of other foliage and inflorescence pests also.

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