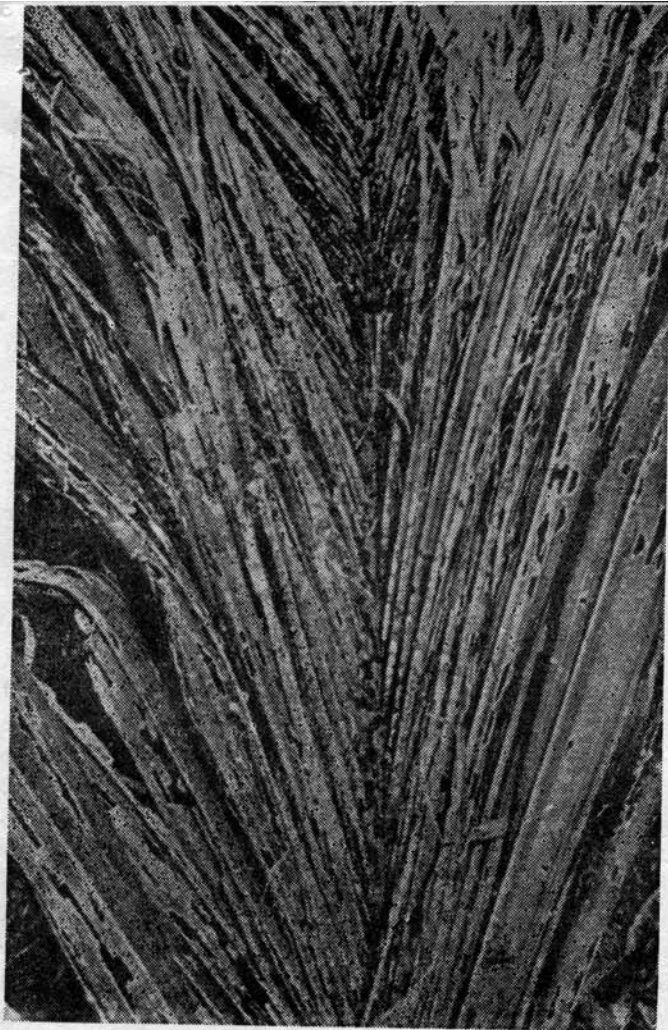


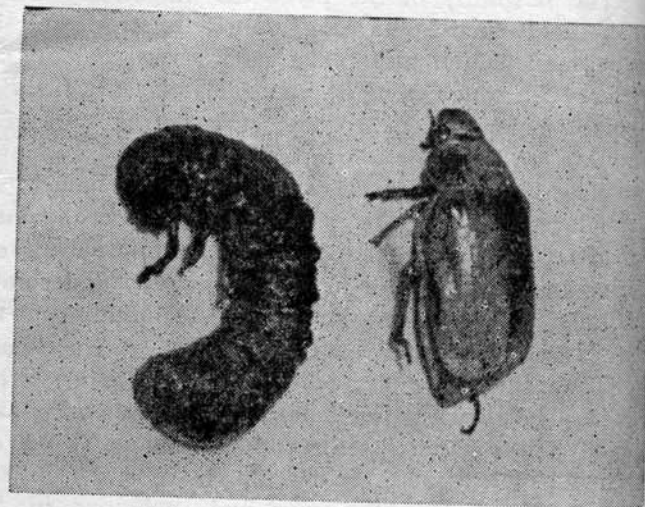


Spindle bug damage on areca leaves

INSECT PEST MANAGEMENT IN ARECANUT

S. DEVASAHAYAM and C.P. RADHAKRISHNAN NAIR
Central Plantation Crops Research Institute Regional Station, Vittal

THE arecanut or betelnut palm is known to be infested by various insect and non-insect pests in India. These pests infest all parts of the palm including the roots, stem, leaves, inflorescence and nuts. Though no precise data are available on the extent of crop loss due to various pests it is well known that infestation by these pests is an important factor that limits the production of arecanut. However, when the nature and extent of damage done by them is taken into consideration the spindle bug, mites, root grub and inflorescence caterpillar could be ranked as major pests of arecanut.



Grub and adult of areca root grub

Spindle bug

The adults and nymphs of this mirid bug are found in the innermost leaf axil at the base of the spindle and suck the sap from the spindle. As a result of the attack the infested portions develop the characteristic linear lesions which later turn into brown necrotic patches. These patches later dry up and manifest themselves as shot holes in the opened leaf. The affected spindle fails to open completely and when the damage is severe it may even break at the base. Severe infestation results in loss of vigour of palms leading to stunted growth and consequent death. The adult bug is red and black in colour and measures about 6 mm in length. The nymphs are pale greenish brown. The eggs are laid into the tissues of unopened leaves. The total life cycle from egg to adult takes about 20-35 days. The incidence of the pest is more in southern and central Kerala and also in Dakshina Kannada in Karnataka. The pest population has been found to increase rapidly during the monsoon and post-monsoon period.

Spraying the crown and spindle region with BHC 0.125 per cent (250 g BHC 50 per cent WP in 100 litres of water) has been found to control the pest. Adequate care should be taken to see that the spray fluid reaches



Spraying the inflorescence of the palm

the base of the spindle. The spraying has to be repeated at monthly intervals if the incidence of the pest continues. The application of granular insecticides is also advantageous against the pest since its population is higher during the monsoon season. The leaf axils around the spindle may be filled in with Phorate (Thimet 10 G) granules at the rate of 10g/palm at 3 month intervals for effective control of the pest.

Mites

Three species of mites infest the arecanut palm. They include the red mite, *Raoiella indica* and the white mite *Oligonychus indicus* which infest the leaves and the calyx mite *Dolichotetranychus* sp. which infests the calyx region of tender nuts. The foliage mites are seen in colonies on the under-surface of leaves and suck the sap. As a result of their feeding the affected leaves lose their green colour, turn yellow and present a bronzed appearance and ultimately dry and wither away. In severe cases of infestation, young seedlings may also die. The mite population increases rapidly during the dry hot summer months and declines with the onset of the monsoon. Poorly irrigated gardens, particularly those in exposed situations are highly prone to mite infestation. A number of indigenous predators have been recorded on mites. Among these a lady bird beetle, *Serthorus keraliensis*, is an important species. Both

adults and larvae feed on all stages of the mites and help in keeping the pest population under check to a certain extent.

The mites could be effectively controlled by spraying the lower surface of the leaves with Dicofol (Kelthane) at a concentration of 186 ml in 100 litres of water. The spraying has to be repeated at an interval of 15 to 20 days if there is a recurrence of the pest. Providing adequate irrigation and shade to the seedlings and younger plants during the summer months would minimise the infestation.

The calyx mite is orange-coloured and is found to harbour inside the inner whorl of calyx of tender nuts. The feeding activity of these mites causes immature nut fall. The pest can be controlled by spraying Dimethoate 0.05 per cent (Rogor 30 EC at a concentration of 1.5 ml per litre of water).

Root Grub

The root grubs or white grubs feed on the roots of arecanut palms and also on the inter crops raised in these gardens. They normally occur in low lying and clayey soils where the water table is high. The grubs feed on the growing roots and in severe cases of infestation the bole of the palm is also eaten by them. The typical symptoms of root grub infestation include yellowing of leaves, tapering of the stem, tender nut fall and reduction in yield of the palm. Since the roots are eaten away the palm becomes unsteady and easily succumbs to wind. The grubs have a U-shaped body and are usually seen at a depth of about 10 cm in the moist layers of the soil. During the dry periods the grubs move further deep into the soil. The life cycle of the pest is of a prolonged nature. The adult beetles are chestnut brown in colour and they emerge in large numbers from pupae during the pre-monsoon period.

The pest has been found to be controlled effectively by the application of soil insecticides. Before application of the insecticides adequate drainage should be provided in the affected garden by digging out channels. Phorate (Thimet 10 G) granules at 8 g/palm applied around the root zone of the palm or Dimethoate (Rogor 5 G) granules at the rate of 30 kg/ha is effective in controlling the pest. The insecticides are to be applied twice a year, once during May just before the onset of the monsoon and later in September-October towards the end of the monsoon. The treatment has to be continued for two or three years to obtain satisfactory control of the pest.

Inflorescence Caterpillar

The caterpillars of this moth feed on the inflorescence causing damage. The female moth lays eggs into the unopened inflorescence through punctures made by slugs and earwigs on the spathe. The caterpillars that hatch out are dull white in colour with a

brown head. They feed on the tender flowers and rechillae and later the whole inflorescence is clumped into a wet mass of frass with the silky threads formed by them. As a result of this webbing, the inflorescence is unable to exert the natural pressure on the spathe necessary for its opening and thus the opening of the spathe is delayed. In severe cases the caterpillars may feed on the tender buttons also. The life cycle of the pest is completed in 25-30 days.

In cases of severe infestation wherein the female flowers are completely damaged the entire inflorescence should be removed and destroyed by burning. If the damage is only partial the spadix may be forced open and sprayed with Malathion 0.1 per cent (Cythion 50 EC at a concentration of 2 ml per litre of water). Since slug damage on the spathe predisposes the attack of inflorescence caterpillar, they should be controlled either by hand picking or by poison baiting. The poison bait is prepared by mixing bran and cement in the ratio 13.2 with one part of metaldehyde.

Apart from the above mentioned major pests the arecanut palm is also occasionally infested with many other pests of less serious nature which may occur sporadically in certain localised tracts.

The shot-hole borer attacks the palms at the basal portion of the stem and bores upwards. The attacked palm shows the presence of numerous holes with extrud-

ing frass on the stem. In severe cases of infestation the leaves become yellow and the palm may also die. Painting the infected stem with BHC is effective in controlling the pest.

The stem weevil attacks the tender portion of the stem especially at the nodal region. If the damage is severe, the stem is weakened and breaks off easily. Application of BHC keeps the weevil under control.

The adults and nymphs of the grape vine thrips occur in colonies on the under-surface of leaves. The feeding activity of the thrips results in pale blotches which turn yellow and dry away. Application of systemic insecticides is effective against this pest.

Infestation by scale insects and mealy bugs is also sometimes noticed on arecanut. They could be controlled effectively by application of systemic insecticides.

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