

SAVE COCONUT FROM THESE PESTS

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In India, nearly 107 species of insects have been identified as pests on coconut palm. In addition, some birds and mammals are also recorded. Mammalian pests are mainly rats, bats, squirrels and porcupines and avian pests are mostly the common wood pecker and the Indian hoopy.

Among the insect pests the key ones are the black beetle, the black headed caterpillar, the red weevil and the root

eating white grubs. Less serious insect pests which are sometimes induced to sporadic occurrence in a very destructive manner are the slug caterpillars, the scale insect and a few species of locusts, in certain areas.

Some other lesser known pests which appear in a very mild form on certain palms in certain localities are the leaf eating caterpillars and the inflorescence caterpillars such as the lesser coconut spike moth and the nut borers. Coccids are also found, often associated with the red ant on the inflorescence and spathe and also on unopened leaves. The lace wing bug is a pest seen on the lower surface of the leaflets. Another bug which is gaining importance is the nut crinkler. Termites commonly known as white ants are also a menace in the coconut nursery.

Control of pests by chemicals alone has been fraught with problems of pesticidal resistance, pest resurgence and elevation of pests of minor importance to major pest status. Most of the pests have demonstrated amazing capacity to defeat man's best effort to suppress them. At this juncture, the only alternative to the farmer as well as the plant protection worker is to resort to integrated control and to adopt safe, effective and economic methods to suppress the pest.

Pests which are of concern to the coconut cultivator are the following.

COCONUT BEETLE

Oryctes rhinoceros (coconut beetle) is one of the key pests of the coconut palm,

Coconut beetle extracted from the palm



occurring almost throughout the coconut growing areas of the world. The beetle attacks and damages the unopened flower bunches and leaves of the palm. When flower bunches are destroyed by the pest, production of nuts is greatly reduced and when large number of leaves are damaged continuously by it, the vigour of the palm is affected, resulting in low yield.

All the stages of the pest including the adult can be found in the breeding sites such as cattle dung, compost, decaying stems and stumps of palms and other soft wood. The adults, a few days after emergence, fly towards the crown of the palm in the near vicinity and start the havoc. In the seriously affected palms one can expect atleast a 10% loss in yield of nuts and 40 to 50% loss in leaves.

To reduce beetle infestation adopt these measures in an integrated manner.

Deny facilities for the breeding of the beetles in coconut gardens and adjoining areas by properly disposing of the organic refuses, cattle manure, etc. and thus keeping the plantation neat and tidy. During the peak period of incidence of the beetle, extraction of the beetle can be combined with the harvest. After extraction of the beetle fill the innermost leaf axils, including the tunnel made by the beetle while chewing through, with a mixture of 5% BHC and sand in equal proportion. Treat the breeding materials like cattle manure, compost etc. with BHC/Carbaryl, the lethal doze for the grubs being 0.01%. The beetle cannot breed in the breeding material like cattle dung, if the dung is stored in too wet or dry a condition.

In extensive plantations set up beetle traps to reduce the incidence of the beetle in the crowns of palms. Cattle dung mixed with decaying organic matter containing 0.1% BHC concentration or split tender coconut stems applied with coconut toddy serve as traps for attracting the beetle. From the latter traps beetles are collected and killed.

Co-habitant insects like Agrypnus, Santalus and Scarites sp. prey on the different stages of the pest and thus sup-

press its population. An exotic reduviid predator, Platymiris laevicollis, is the only insect which subdues the beetle and feeds on them. This also can be released in the crowns of palms as a protection against the beetle.

BLACK HEADED CATERPILLAR

Nephantis sorinopa (Black headed caterpillar) is a pest which eats away the tissues of the lower portion of the green leaves. In endemic areas along the coast and backwater the pest is present throughout the year, but during summer months, when conditions are favourable it breaks out in epidemic proportion. When palms are very severely attacked, the attacked leaves droop, bunches buckle and the immature nuts shed. During the subsequent one or two years also, production of nuts is very much reduced. The potential rate of multiplication of this pest is quite high because in a year four to five generations are completed. The pest is now spreading to the interior also.

In stray cases of infestation, cut and burn the infested portions of the leaves to prevent further spread of the pest. This kind of mechanical control measure can also be adopted when extensive areas are severely infested, cutting only very badly infested and dried leaves followed by the application of an insecticidal spray with 0.2% BHC or 0.05% Malathion. Direct the spray towards the lower surface of the leaves and repeat after an interval of about 30 days.

A complex of parasites and predators are also found attacking the various stages of the pest. By mass breeding and releasing of those parasites which are amenable for laboratory multiplication at the proper time the pest population can be suppressed considerably. Most common parasites which affect a considerable check on the population of the pest are the larval parasites (Perisierola nephantidis, Bracon brevicornis, Elasmus nephantidis) and the pupal parasites (Trichosphilus pupivora and Brachmeria nephantidis). Among the predators the Carabid beetle (Parena latincinetata) in its larval and adult stage is

also considered to be an effective one. The efficacy of biological control can be increased by the introduction of exotic species into the indigenous parasite-cum-predator complex.

RED WEEVIL

Rhynohophorus ferruginous (Red Weevil) is the most destructive pest of the coconut palm because most of the palms attacked by this pest are killed outright. The adult weevil prefers young palms for its breeding. Palms which are subject to the attack of diseases like leaf rot and bud rot are also liable to weevil attack since the rotting portions attract them. All the stages of the pest are generally seen either in the tender tissues of stem, cabbage or the basal portion of the leaf stalk depending upon the area of attack. In cases of severe infestation all the parts are found damaged by the feeding of the grubs. The life-cycle from egg to adult is completed in 2-3 months within the palm. If the stem is infested, reddish-brown viscous fluid oozes out along with chewed out fibres through the small holes present on them. When the lower portion of the crown is attacked leaves become yellow or wilt gradually and finally when the growing point is eaten the central shoot wilts and droops. The feeding sound of the grown-up grubs can also be heard nearby. A red palm weevil infested palm can be cured only when the growing point is uneaten. Hence for saving a palm early detection of the infestation of the pest is of prime importance.

Kill and burn all the palms together with the pest in all its stages. You can check the entry of the weevil into the palm to a considerable extent by avoiding cuts and wounds on the stem and crown and also by cutting green leaves, if needed, farther away from the stem. Preventing leaf rot and bud rot also checks the entry of the weevil. In such cases use as a curative measure a fungicide + insecticide combination, which is compatible. Application of BHC 5% dust and sand in equal proportion in the leaf axils serves as a preventive measure. The attacked tree can be cured of its infestation also by injecting Pyrocon E

or Carbaryl 1% or Trichlorphon 0.2% at the area of attack.

Biological agents like Chelisoche moris and the exotic predator P.laevicollis can also exert a check on the population of the pest.

WHITE GRUBS

Leucopholis coneophora is one among the cockchafers, which are commonly known as the White grubs. They attack the roots of coconuts and other intercultivated crops. When the roots are cut and damaged, the stem towards the crown tapers and leaves become yellow, ultimately resulting in low yield of nuts. The adult is a chestnut coloured beetle which feeds on the foliage of some other plants. It has got an annual life-cycle and the adults appear in large numbers towards dusk with the pre-monsoon showers. For months together the larvae continue feeding.

With the pre-monsoon showers the grubs come up from deeper layers to the surface soil and so deep ploughing or digging of the soil during this period exposes the different stages of the pest to its natural enemies like birds and other animals. Soil application of BHC or Aldrin or Chlordane 5% dust at the rate of 120 kg per hectare, twice a year in April and August is very effective in suppressing the pest population.

SLUG CATERPILLARS

Among the less serious enemies, the slug caterpillars, C. rotunda and M. nararia occur sporadically and at times break out in epidemic proportions. In such cases, cut the badly infested and dried leaves and burn them then and there. This will prevent further spread. Spraying of the crown and leaves with 0.1% BHC or Carbaryl is another effective measure for the suppression of the pest.

COCONUT SCALE

Scale insects are well known pests of many crops. The coconut scale (A. destructor) generally appears on the lower surface of leaves and on the nuts in a milder

form. But, during summer months in certain localities it turns out to be very serious. The attacked leaves with the scales become yellow and then gradually dry up. In cases of stray attack the attacked leaves can be cut and destroyed either by burning or sinking. When the infestation is serious and widespread spray Malathion or Dimethoate at 0.05% concentration.

LOCUST

Locust being a polyphagous insect sometimes turns on to coconut palm also. This can be prevented by spraying the whole vegetation in the infested area with 0.1% Methylparathion.

MINOR PESTS

Some other lesser known insect pests are the caterpillars of P.lepida, S.gremius and G.thyrsis which are voracious feeders of the entire leaf blade. The lesser coconut spike moth (B.arenosella) and the nut borers (C.omma and Euproctes semisignata) are pests of the inflorescence or flower bunches, the former feeding mainly on the male flowers and the latter two on the female flowers or buttons. The nut borers, being very conspicuous, can be collected and killed.

Coccids and the associated ants which colonise the flower bunches cause the shedding of the buttons. These are also seen on the unopened inflorescence and leaves. You can check shedding of buttons/nuts by controlling the coccids and the associated ants. Spray the bunches, after fertilization, with 0.1% BHC or 0.05% Malathion twice or thrice at fortnightly intervals to check coccids and associated ants.

S.typicus attacks mostly younger palms. A large scale control measure has not so far been attempted.

The Coreid bug (Paradasynus sp.) is a new pest on coconut. As a result of its attack buttons do not develop and the tender nuts become barren. Spraying with BHC or Carbaryl suspension at 0.2% or Endosulphan at 0.05% on the bunches except the newly opened inflorescence keeps the pest under check.

Termites (Odontotermes obesus) is a pest of germinating seed nuts and seedlings in nurseries and transplanted ones in the field. Treatment of the seed beds with Aldrin or Heptachlor 50 g or Chlordane 60 g per one hundred square meter wards off termites from the nursery bed.

Birds and mammals, though lesser in number when compared with insect pests play their own part in the destruction of the palm and its produce. Among these the rats are the most important. The house rat (Rattus rattus) bores the immature nut for the water and meat, and the burrowing rat (Bandicota bengalensis) mostly destroys the transplanted seedlings in the field and bores through the crown of the palm for eating the cabbage. For the effective control of rats all methods of control practices in vogue including preventive barriers, all kinds of traps and poison baits should be adopted in an integrated manner. Bait shyness of the rats could be avoided by using different kinds of baits. Similarly trap shyness also should be avoided.

Bats or flying fox (Pteropus edwardsii) attack nuts, only when other fruits are scarce. It attacks from the button stage upto nuts with hard shell. For an effective check locate their roosting places and kill them by shooting. Protection of the crown and bunches with some kind of thorns prevent the bats from attacking nuts.

Similarly birds like woodpecker (D.vagabunda and U.epops indica) pierce the top tender portion of the tender nuts by their long and pointed beaks. In places where the attack of the birds are very serious covering of the bunches with plaited coconut leaves or any other material will prevent their attack.

None of the control measures mentioned here gives hundred per cent control of these pests. An integrated approach should always be preferred which would be more effective and economical. Success in integrating chemical and biological control has been attained mostly by using selective insecticides in ways that minimise their effects on parasites and predators. Timing of spray applications is also important in establishing selective toxicity of the chemical.