SAVE YOUR COCONUT PALMS FROM THE RAVAGES OF WHITE GRUBS

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Root eaters reduce yield of coconut

Coconut white grubs are serious subterranian pests of coconut palm reported from sandy loam tracts of Trivandrum, Alleppey, Quilon, Kottayam, Calicut and Cannanore districts of Kerala State. *Leucopholis coneophora* Burm. and *Anomala marginipennis* Arr. are the common species found in these areas.

The grubs are creamy white in colour and hence the name 'White grubs'. The damage due to these pests is not commonly noticed as they are hidden in the soil. The grubs feed on the apical tender region of the coconut roots especially around the bole region of the palms.

The root cap and the adjacent portion of root-tip are the important portions of the roots engaged in the absorption of nutrients. In the event of any damage to these portions caused by grubs, the normal process of absorption by the root tips would be affected which may lead to nutritional derangements in the palms. Consequently, the leaves turn yellow as in the case of disease or manurial imbalance of the soil. In case of severe attack, shedding of immature nuts results in great loss in yield.

Other crops affected

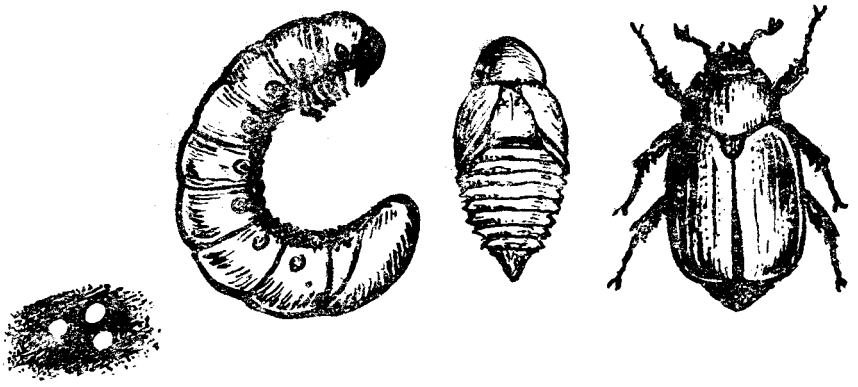
Besides coconut, the pest attacks inter-cultivated crops like tapioca, yam, colocasia, amorphophalus, plantain, etc. Tender roots of sprouting tapioca cuttings are completely eaten up and this causes the destruction of the crop. Grubs feed on the fleshy portions of the tubers and rhizomes of crops. in certain parts of the country, the pest attacks severely, sugarcane also.

Life history and habits

These destructive grubs are the immature stages of Cockchafer beetles. The adults come out of the soil with the onset of pre-South West monsoon showers around May and June and hence called "May and June Beetles". When they emerge from pupae under the soil *en masse* at dusk, perform a nuptial flight.

The females return to soil for egg laying. During day time they rest in the soil. Eggs are laid singly in the soil at a depth of 10–15 cm. The young grubs emerging out from these eggs feed on the humus and other organic decaying matter in the soil. They also feed on the tender roots of grass and other small plants.

After a few days they start feeding on the roots of coconut and



Life-cycle of the Cockchafer

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other intercultivated crops. They continue to damage the coconut roots up to the end of third instar when they acquire about 45 mm. length and 10–12 mm. width.

Full-grown grubs pupate in the soil and adults emerge in the favourable season. The adults feed on vegetation and are, therefore, harmless to coconut cultivation except in that they give rise to a successive generation of harmful immature ones.

Generally there is only one generation in a year. Grubs prefer sandy loam soil with low temperature. As the temperature of the surface soil increases during day time they go deeper into the sub-soil. During favourable period they are seen in the surface soil in abundance.

Control

A long term field experiment was conducted at Vazhuvadi near Mavelikara in Alleppey District of Kerala State, a sandy loam tract, for the control of grubs of the pest. Aldrin, BHC, Chlordane and Heptachlor were tested against the pest. Each insecticide was used at three dosage levels—five per cent Aldrin @ 60,120, 180 kg; five per cent BHC @ 120, 240, 360 kg; ten per cent Chlordane @ 60, 120, 180 kg; and three per cent Heptachlor @ 120, 240, 360 kg. per hectare. The experiment started in 1963 and concluded in 1967. This study revealed that five per cent Aldrin @ 120 kg., five per cent BHC @ 120 kg., three per cent Heptachlor @ 120 kg., and ten per cent Chlordane @ 60 kg , per hectare, twice a year when applied in soil could effectively control the pest in the soil.

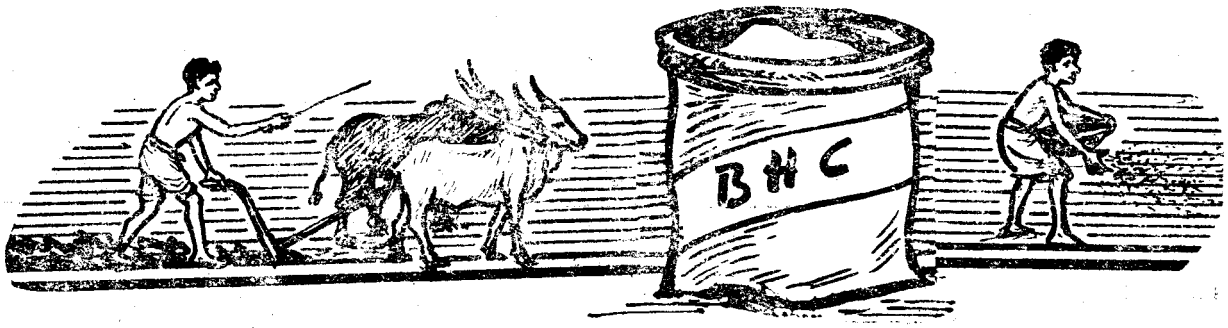
Coconut roots damaged by the grub

Peak period of abundance of the grubs in the upper layer of the soil, according to earlier reports, is during May and September. This synchronises with the onset of the South West and North East monsoons.

Since May and September are the two months when grubs can be easily controlled, the best time for insecticidal application are April and August. The insecticide is mixed with equal quantity of wet sand and broadcast by hand. The soil is ploughed immediately after the application of the insecticide to get it incorporated with the soil wherein it comes in contact with the immature stages of the pest.

Economics

When the cost of the insecticide is taken into consideration, BHC five per cent dust is found to be cheaper than the rest. Cost of 120 kg. BHC (five per cent) is around Rs. 45/- and the labour charges for ploughing are Rs. 20/-. Thus the total cost per application is Rs. 65/- and the annual expenditure will only be Rs 130/- per hectare or Rs. 54/- per acre, which would mean less than a rupee per tree.



Control the pest by soil treatment