INTEGRATED PEST MANAGEMENT OF THE MAJOR PESTS OF COCONUT

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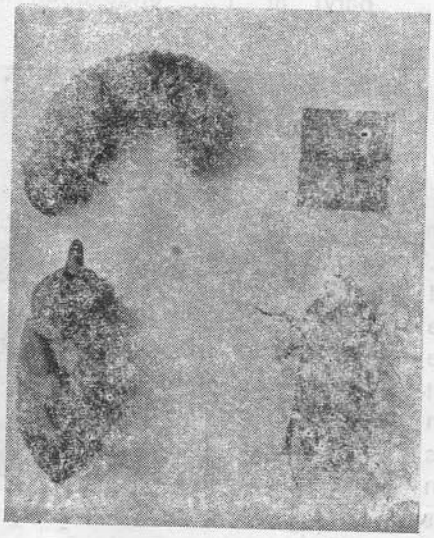
Kurian **et al** (1979) compiled a world list of 830 insect and mite species associated with coconut palm. But of these only a few are responsible for heavy crop losses. In India **Oryctes rhinoceros, Nephantis serinopa, Rhynchophorus ferrugineus and Leucopholis coneophora** are the pests of major importance. Nearly 20% damage to crop is caused by these pests. Pesticides were found useful in bringing these pests under control thereby ensuring better yield. Mechanical and biological methods also keep these pests under check. Trials have shown that integrated pest management incorporating all the known measures of control is the most useful and economical method than any of these methods applied singly. The feasibility of employing this method in the control of the major pests of coconut palm are highlighted below:-



Oryctes rhinoceros—
Life Stages

RHINOCEROS BEETLE, **Oryctes rhinoceros L.**

This ubiquitous pest of coconut bores into unopened fronds and spathes. The bettle breeds in decaying organic debris. Since this pest is a prolific breeder and the host a perennial crop the control of the pest has been very difficult. Integrated control involving mechanical, chemical, bilogical, ecological, and sanitational methods has been recommended for the control of this pest. Treatments included hooking out the beetles from crowns of palms during the peak period of infestation, prophylactic leaf axil filling with BHC 5% dust + sand mixture twice a year, quarterly insecticidal treatment

Coconut Palm damaged
by O. rhinoceros

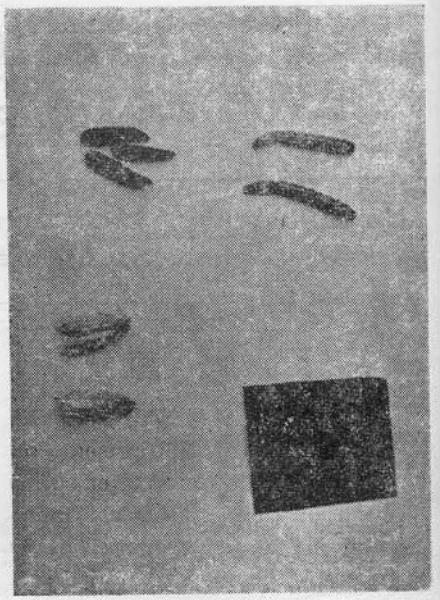
of the breeding sites, setting beetle traps and maintenance of plant and field sanitation. Marked decline in leaf and spathe attack and fresh incidence was observed. The integrated method gave an increased reduction upto 82% leaf attack and a yield increase of 5-8 nuts per tree per year, as compared to 78% reduction in leaf attack and 5-6 nuts per tree per year by treatment of the breeding places only. The exotic reduviid predator **Platymeris laevicollis** can also be included in the integrated control schedule so as to bring down the beetle

The destructive larval stage of Rhynchophorus ferrugineus

population on crowns of palms also.

LEAF EATING CATERPILLAR, **Nephantis serinopa M.**

Nephantis serinopa is another serious pest of the palm. It occurs in the coastal, backwater areas and in certain interior tracts. Voracious feeding by the caterpillars causes the foliage to dry up. Integration of the mechanical, chemical and biological methods would give effective control of these caterpillars. The different methods have to be adopted in phases depending on the intensity of infestation. In mild outbreaks method of cutting and burning of the leaves or biological method by releasing parasites can be adopted. In severe epidemic outbreaks chemical control using BHC 0.2% or malathion 0.05% as spray can bring in quick relief. This can be followed by parasite releases, including indigenous and exotic forms after 3-4 weeks interval and this has to be continued till the pest subsides. Pest control operations have to be carried out in all endemic areas.



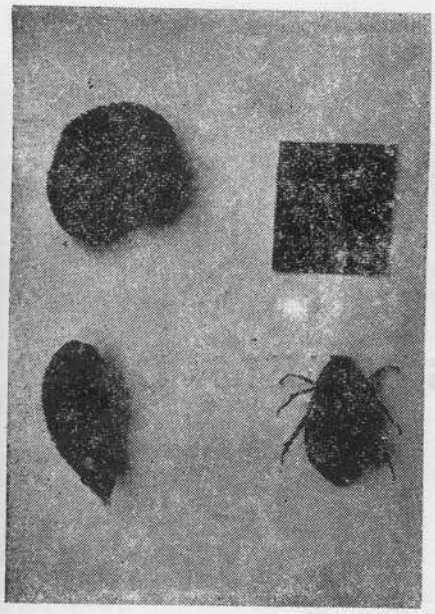
Nephantis serinopa— Life stages

RED PALM WEEVIL, **Rhynchophorus ferrugineus F.**

This destructive tissue borer is a serious threat to the young plantations. In most cases the affected palms die off and serve as a source for further spread of the pest. Early detection of the infested palm is difficult unless all the symptoms are known. The control of this dangerous pest can be a success only if an integrated pest management is adopted. Careful examination of the individual young palms for detection of symptoms of attack; keeping palms free from any injury and treating injury, if any with BHC + tar; treating bud rot/leaf rot affected palm with fungicides and insecticides, prophylactic leaf axil filling using BHC 5% dust + sand; curative treatment using pyrethrins piperonyl butoxide/carbaryl at 1%, endosulfan at

Control of red palm weevil by injection

Insecticidal spray controls N. serinopa

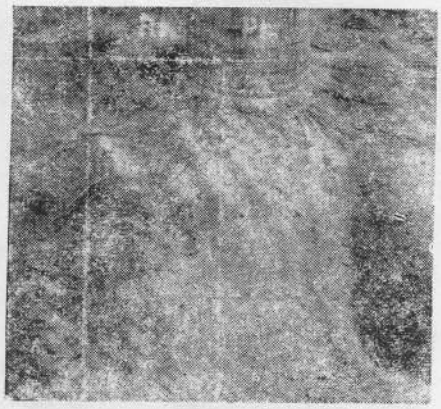


Leucopholis Coneophora - Life stages

0.1% concentration and trapping the adult weevil using log + toddy traps are the different components of the integrated pest management programme which has been proved very efficacious.

COCKCHAFER BEETLE, **Leucopholis coneophora B.**

Cockchafer, especially **Leucopholis coneophora**, damages coconut palms in sandy loam soils. Grubs feed on tender roots. This results in poor nutrient uptake which eventually leads to deterioration in health and reduction in yield. Being a soil pest, control of the grub is difficult and expensive. However, integration of the known methods of control can give maximum reduction in pest population. BHC, Aldrin, Chlordane or Heptachlor 5% dust @ 120 kg/ha incorporated into the soil twice a year in April-May/ August-September reduces the grub population. Ploughing/ digging the soil exposes the grubs to birds and other natural predators. This can also cause mechanical injury and death of grubs. Flooding the field may also kill the pest in some situations. Trap crops can also be provided for collecting and killing the adult beetles.



Grubs of Leucopholis Coneophora feeding on coconut roots