



Coconut Research Institute of Sri Lanka



Advisory Circular No B 5

COCONUT SCALE AND ITS CONTROL

The Coconut Scale, scientifically known as *Aspidiotus destructor*, is prevalent in all coconut growing areas of the country and damage the leaves. Considerable damage is caused only when outbreaks occur.

The pest favours dry weather and outbreaks often occur during prolonged periods of drought and diminishes with the onset of rains.

Nature of damage and identification

The damage is caused by females and immature stages of male scale insects feeding on sap of the lower surface of leaflets. The damage initiates from the lower whorl of the leaves and gradually spreads to the upper ones. Infested palms could be easily recognized by the yellow patches on the leaflets.

A closer examination of an affected leaflet would show numerous yellow spots on the laminar of the leaflet (Picture 1). These spots are the feeding marks of scale insects. Scale insects could be seen on the underside of these leaflets as a yellowish white encrustation. When a finger nail is run over this encrustation, a watery matter will be collected. If the insect are dead, a scaly fluff will get collected. In a mild infestation, only a few yellow patches could be seen on the leaves. However, in a severe infestation, entire leaves become yellow and dry off. At this stage, flower spikes and nuts are also liable to be infested. When a large number of fronds are infested it would reduce the yield. Infestation of seedlings may lead to set back of growth.

The yellowing of fronds should not be confused with that caused by mineral deficiency. Yellowing due to scale insect can be easily identified by close examination of an infested leaflet.

Description of the pest

Scale insects on the lower surface of the leaflets can be clearly seen with the aid of a hand lens (Picture 2). They appear just like a collection of fried eggs (bull's eye) with a yellow central area surrounded by a transparent waxy covering.



Picture 1. Yellowing of leaves due to the damage of Scale insect

Underneath the transparent covering of the female scale, it lays eggs which hatch into roundish minute nymphs known as crawlers. They are not visible to the naked eye. The young crawlers have legs and move about briskly until they find a suitable place on the leaf to settle down. After fixing itself into the leaf sheds the legs, forms a waxy covering and becomes a young scale. At this stage, males cannot be distinguished from the females. However, after 30-35 days and further development, male scale insects develop wings, and fly away to mate with a female. The female scale insects are sedentary on the leaves until they die in 34-40 days.



Picture 2. A enlarged view of scale insects

Control measures

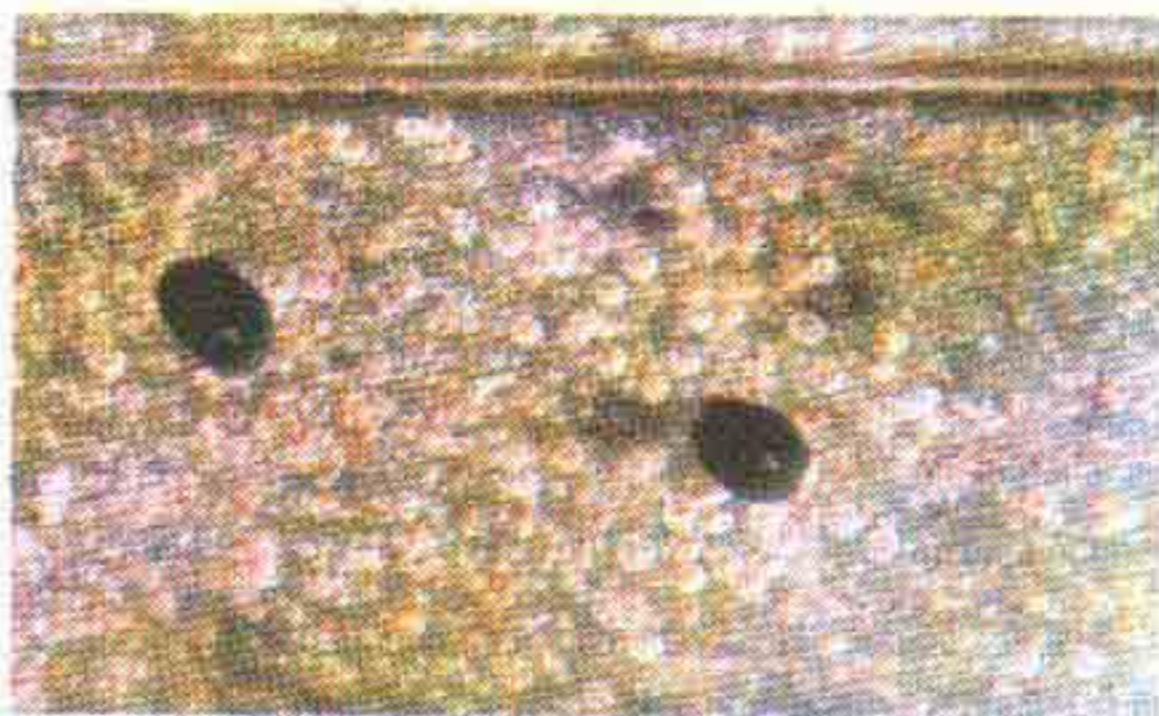
Coconut Development Officer (CDO) of the area should be notified if the presence of this pest is detected. Once the infestation is notified, action will be taken to inspect the plantation and provide advice in managing the pest.

1. Cultural Control

If only a few leaves are infested in a plantation cutting and burning of those leaves will enable to control the pest at early stage. Similarly, in seedlings the insects could be crushed and destroyed or affected parts could be removed.

2. Biological Control

In nature, there are several natural enemies exerting control on the coconut scale. The most important amongst these are the lady bird beetles, which feed



Picture 3. Adult of *Chilocorus nigritus*

on live scale insects. Two species of lady bird beetles are commonly seen. One is a black roundish beetle (*Chilocorus nigritus*) of a size similar to a pepper seed (Picture 3), the larvae of which are brown grubs with spines on the body. The other is slightly smaller, roundish and brown (*Pullus xerampelinus*) (Picture 4). Their larvae are white with finger like projections. Both adult and immature stages of the lady bird beetles prey on scale insects. They

are voracious feeders capable of checking outbreaks. In Sri Lanka, these two predatory lady bird beetles have been found to control scale pest quite effectively. Also, the wasp *Aphytis chrysomphali* is parasitic on the scale insects. The officers of the Coconut Cultivation Board (CCB) will examine the plantation and assess the abundance and effectiveness of the predatory beetles and the parasitic wasp. If sufficiently large numbers of lady bird beetles are present, no control



Picture 4. Adult and larvae of *Pullus xerampelinus*

of lady
measures

are necessary. If lady bird beetle numbers are low checking the plantation every month to determine their increase is essential. If the numbers do not build up chemical control has to be considered. It is however important to bear in mind that the leaves which have turned yellow due to scale attack will not regain green colour. When the infestation is under control, the emerging new leaves will be free of the pests and would be green in colour.

3. Chemical control

Chemical control is recommended only if biological control is not effective. The growers are therefore, requested to seek advice from the Coconut Cultivation Board before attempting any chemical measures.

For seedlings, insecticides such as Dimethoate 40% and Chlorpyrifos 40% at the rate of 20-40 ml in 10 liter of water could be sprayed using a knapsack sprayer to control the pest.

In an outbreak, adult palms can be injected with 8 ml of Monocrotophos 60%. As the insecticide is highly toxic, it is banned for use in the country except in coconut plantations as a trunk injection. Therefore, to avoid any misuse of the insecticide, it is issued to the growers under the supervision of Coconut Development Officer.

Chemical control is rarely necessary for managing scale infestations. If necessary the Coconut Research Institute helps growers with the application of insecticide. The growers are expected to pay for the insecticide and provide fuel and labour while the other services are provided by the Institute.

Note: All insecticides are toxic and should be handled with care.