Advisory Circular No. B 1

Coconut Research Institute
Sri Lanka

PROMECOTHECA CUMINGI
THE COCONUT LEAF MINER

Promecotheca cumingi, the coconut leaf miner (or "Cumingi" as it was commonly called) is a beetle pest of coconut first recorded in Sri Lanka in 1970. It was first observed in the Dehiwala area, but soon spread to other areas, in the Western, Southern and North Western Provinces.

Nature of damage and identification

The adult stage of the insect is a beetle (Fig. 1). The young or immature stages, called larvae, are found within the leaf tissue inside "blister-like" formations, which are known as mines (Fig. 2).

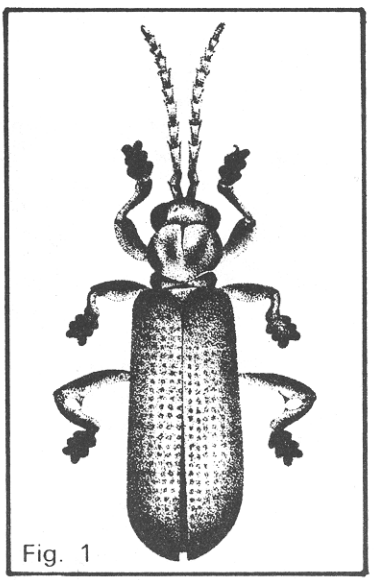

Fig. 1

The leaf tissue over the larval mines die and turn brown. The adult beetle also causes damage by feeding on the leaf tissue, leaving behind characteristic 1—3 cm long streak-like grooves on the under surface of the leaf (Fig. 3).

A severely damaged plantation would appear brown, presenting a burnt-up appearance from a distance. A closer examination would show the presence of elongated brown patches, which are the larval mines.

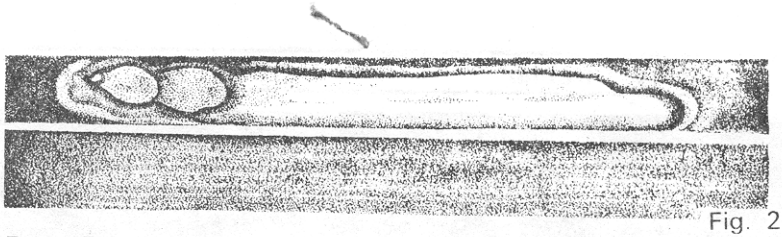

Fig. 2

Pest Description

Adult: The adult beetle which is about 9 mm in length is reddish brown in colour. It is similar in size and appearance to the firefly (Kalamediriya) (Fig. 1). The adult lives for about 2 1/2 months and lays eggs almost throughout this period.

Egg: The eggs are laid in 2 mm long oval cavities on the underside of the leaf. These cavities are then covered with chewed up leaf matter and mucilage to form a capsule. These egg capsules can be seen as small "cyst-like" swellings on the underside of the leaflets. The eggs hatch in about 9—12 days.

Larva: A flattened tiny "worm-like" larva hatches out from the egg. This larva enters the leaf and feeds on the green tissue between the upper and lower surfaces of the leaf, forming a mine. The mine increases in size as the larva feeds and develops. A fully formed mine is about 10 cm long and 1 cm broad and contains a single larva. The larva is always inside the mine and can be seen only if the mine is opened. There are three larval instars (stages of development) and a full grown 3rd instar larva (Fig. 4) is about 12 mm long. The larval period lasts for about 30 days.

Pupa: The full grown 3rd instar larva changes into the next stage of its life, which is a resting stage called a pupa (Fig. 5), which is about 7mm long. The pupa is not as flattened as the larva. Inside the mine the pupa develops into an adult in about 12 days. The adult emerges through the upper surface of the leaf by making a semi-circular cut.

Control Measures:

The original infestation of this introduced pest was controlled by biological means using other insects (parasites). These parasitic insects were multiplied in the laboratories of the Coconut Research Institute and released in large numbers in the infested areas. It has been proved beyond doubt that these parasites were responsible for bringing

the pest under control. One of the introduced parasites is the tiny wasp-like *Dimmockia javanica* which attacks the larvae of the pest. This parasite is now firmly established in the field and keeps the pest under very satisfactory control.

The parasites multiply in the field by using the pest as their food. The adult female parasite lays eggs on the body of the larva. When the eggs hatch, the "worm-like" young parasites emerge and feed on the body of the pest and thereby destroy it. The parasites breed and multiply much faster than the pest because they have a short life cycle when compared to the pest.

In nature, the pest is kept under control by a fine balance between the pest and the parasite. Occasionally, this balance may be disturbed resulting in a pest outbreak.

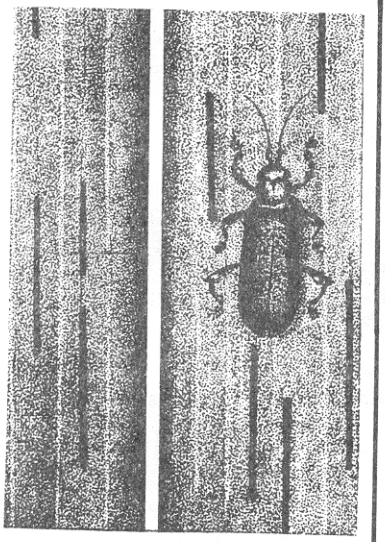

Fig. 3

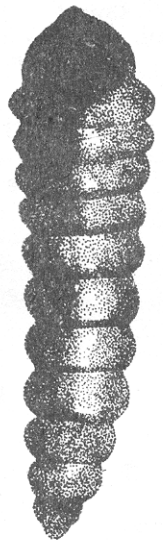

Fig. 4

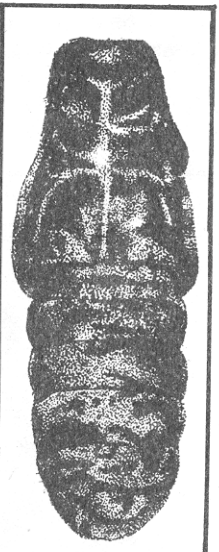

Fig. 5

Ledgends

Fig. 1 — *Adult beetle of the coconut leaf. miner*
Fig. 2 — *Full-formed mine made by the larva' (Note three distinct zones)*
Fig. 3 — *Feeding marks made by the adult beetle*
Fig. 4 — *Fully grown larva (taken out of the mine)*
Fig. 5 — *Fully grown pupa (taken out of the mine)*

IMPORTANT

If the presence of *Promecotheca* is suspected, the Director of the Coconut Research Institute, Lunuwila should be informed immediately and the following information supplied to facilitate speedy action.

Name of land and location
Owner's name and address
Directions to the land
Number of trees or acres affected

An officer of the Institute will then visit the land and advise on the measures to be taken to control the pest.

Prepared by the Coconut Research Institute,
April 1985.