ENTOMOLOGY BULLETINS: NO. 3
CONTROL OF TRUNK LONGICORNS IN COCOA

By E.S.C. Smith, Entomologist
Lowlands Agricultural Experiment Station, Keravat

It is the larvae (or grubs) of longicorn beetles which cause damage to cocoa trees. Although many species of longicorns have been recorded as attacking cocoa in Papua New Guinea, only two species (types), *Glenea aluensis* and *Glenea lefebueri* cause economic concern. *Glenea aluensis* is found in all the cocoa growing areas of the Islands Region, but is replaced on the mainland by *Glenea lefebueri*.

The adult beetle lays a single egg on the lower part of the trunk or, occasionally, of the branches. After hatching, the young larvae tunnel in the bark and later move deeper into the sap wood.

Longicorn infestations are often most severe in over shaded or poorly drained cocoa blocks. In this bulletin, descriptions of damage and control measures are given based on *Glenea* control. Other trunk boring species can also be controlled using the insecticide mixtures recommended here.

DAMAGE BY LONGICORNS

Longicorn larvae tunnel under the bark of the lower trunk or main branches of cocoa trees. The main branches of clonal cuttings can be heavily attacked and, since the larvae move under the bark in a horizontal or spiral direction, young trees may be ringbarked. A combined attack by several larvae may either kill a tree or branch, or severely weaken it so that it breaks in wind or heavy rain. In some small areas, damage to trees may be very severe if infestations are not noticed and treated.

The channels are easy to notice because a mass of fibrous wood chips, in foamy, rusty-coloured lumps, is pushed out of ventilation holes at the edge of the channels. There are also dark, moist areas on the bark caused by sap coming out of smaller holes.

It seems that longicorn channels provide a point of entry for the fungus which causes bark canker in cocoa. This canker disease may become very important in neglected plantations or in trees older than 12-15 years, and may result in many tree deaths.

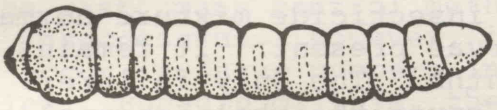
DESCRIPTION OF THE PEST INSECT

If the channels are cut open, the larvae are found to be 24-28 mm (about an inch) long and a whitish to creamy yellow colour. These grubs are tapering (thinner at one end) have dark heads with large cutting jaws, and have an enlarged area behind the head (the thoracic region). The main body is composed of 8 distinct segments.

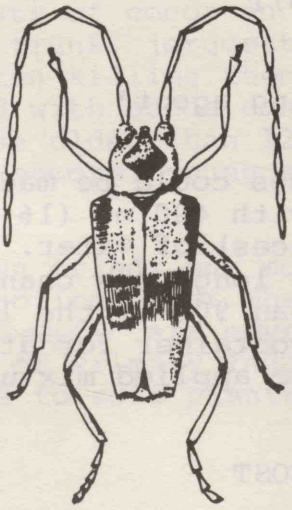
This bulletin was first published as LAES Information Bulletin No. 18.

Adult longicorns are often seen in infested blocks, usually resting on a leaf. These beetles have steel blue to purple wings, marked with a darker coloured cross band toward the rear. The head and thorax are yellow with a round blue-black spot in the centre of the thorax.

The life cycle of these insects is about three months.



Longicorn larva



Longicorn adult

CONTROL METHODS

A 1.5% solution of dichlorvos or fenthion insecticide in 25% white oil is recommended for treating the larval channels. After removing the dried wood chips from the channel openings, the bark over the channels should be scrubbed with a stiff brush and the insecticide mix should be applied with a paint brush. The roughening of the bark and the addition of the white oil will help these insecticides to penetrate into the channels.

The old method of cutting out larvae should not be used since the mechanical damage caused by knives is often greater than that caused by the insect.

It is suggested that growers with large blocks could train two or three labourers to detect and treat longicorn channels. The labourers should be equipped with elbow length rubber gloves and, possibly, with rubber boots. The danger of using insecticides and the necessary precautions should be explained to them. These include factors such as not eating or smoking while handling insecticides and thorough washing of hands and clothes.

The treatment should be repeated every 6-8 weeks until control is complete (this usually takes 2-3 rounds). After that, the treatment can be repeated again when necessary.

INSECTICIDE MIXTURE

To make up the insecticide solutions, the concentrated insecticides 50% dichlorvos (trade names Vapona or Nuvan) and 55% fenthion (trade names Lebaycid or Mercaptophos) should be diluted 33 times. The solutions could be made as follows:

0.5 *l*	dichlorvos or fenthion	1 pint dichlorvos or fenthion
4 *l*	white oil	8 pints white oil
12 *l*	water OR	3 gallons water
16.5 ml	wetting agent*	0.5 fluid ounces wetting agent*

Smaller volumes could be made by diluting 50 ml (2 fluid ounces) of insecticide with 400 ml (16 fluid ounces) of white oil and 1200 ml (48 fluid ounces) of water. These amounts would be sufficient to treat 300-400 longicorn channels. This insecticide mixture normally kills more than 90% of the longicorn larvae present. It remains active in a container for at least 2 months. The only failures occur when the applied mixture does not cover the whole channel.

INSECTICIDE COST

Dichlorvos can be bought in Rabaul at a cost of between K8.25 and K9.70 per litre, depending on quantity purchased. Fenthion is generally slightly more expensive. White oil is available at a cost of K1.25 to K1.65 per litre. Thus the cost of ingredients for a mix of 50 ml insecticide and 400 ml white oil, which would be sufficient to treat more than 300 channels, would be about 92 toea or less than 1 toea per tree containing 3 longicorn channels.

Any queries on this or any other insect problems in cocoa should be addressed to: The Agronomist-in-Charge, Lowlands Agricultural Experiment Station, KERAVAT, East New Britain Province.

Copies of this Entomology Bulletin are available from: Publications Officer, Publication Section, D.P.I., P.O. Box 2417, Konedobu.

**Any liquid detergent can be used as a wetting agent*