ENTOMOLOGY BULLETIN: NO. 25
PESTS OF COCOA - LEAF EATING INSECTS

By J.E. Moxon, Senior Entomologist, Lowlands Agricultural Experiment Station, Keravat, East New Britain Province

INTRODUCTION

Many different kinds of insect eat the leaves of cocoa. However, most of them rarely cause serious economic damage and control is usually not necessary. This bulletin describes the two most common leaf eating pests of cocoa in Papua New Guinea, caterpillars and rhyparids, and recommends when and how you should control them.

1. CATERPILLARS

Description

Caterpillars are the young stages of butterflies and moths. They have soft, often brightly coloured bodies and may grow up to several centimetres in length. A number of moth caterpillars eat cocoa leaves. These include the loopers *Ectropis* and *Hyposidra*, the false looper *Achaea*, the armyworm *Tiracola* and the nettle caterpillars *Pinzulenza* and *Mambara*.

Biology

Moths lay their eggs in groups both on cocoa trees and shade trees. The eggs hatch after a few days to produce caterpillars. The caterpillars feed almost continuously on young cocoa leaves. They grow and change their skins about 5 times. They then pupate either on the cocoa trees or in the ground. After about 8 days the adult moths emerge.

Caterpillars also eat *Leucaena* and so damage to cocoa is often bad when *Leucaena* is used as the shade tree.

Economic importance

Caterpillars are usually kept at low levels on cocoa by their natural insect enemies, and their feeding has little effect on the trees. Occasionally, however, large numbers of caterpillars may build up and most of the flush leaves may be eaten. This reduces yield on mature cocoa. The trees soon recover and produce new leaves once the pests have again been controlled by their natural enemies. This usually takes a few weeks.

Young trees are more seriously damaged. Continuous attack can slow down the growth or even kill the trees if it occurs during a period of dry weather.

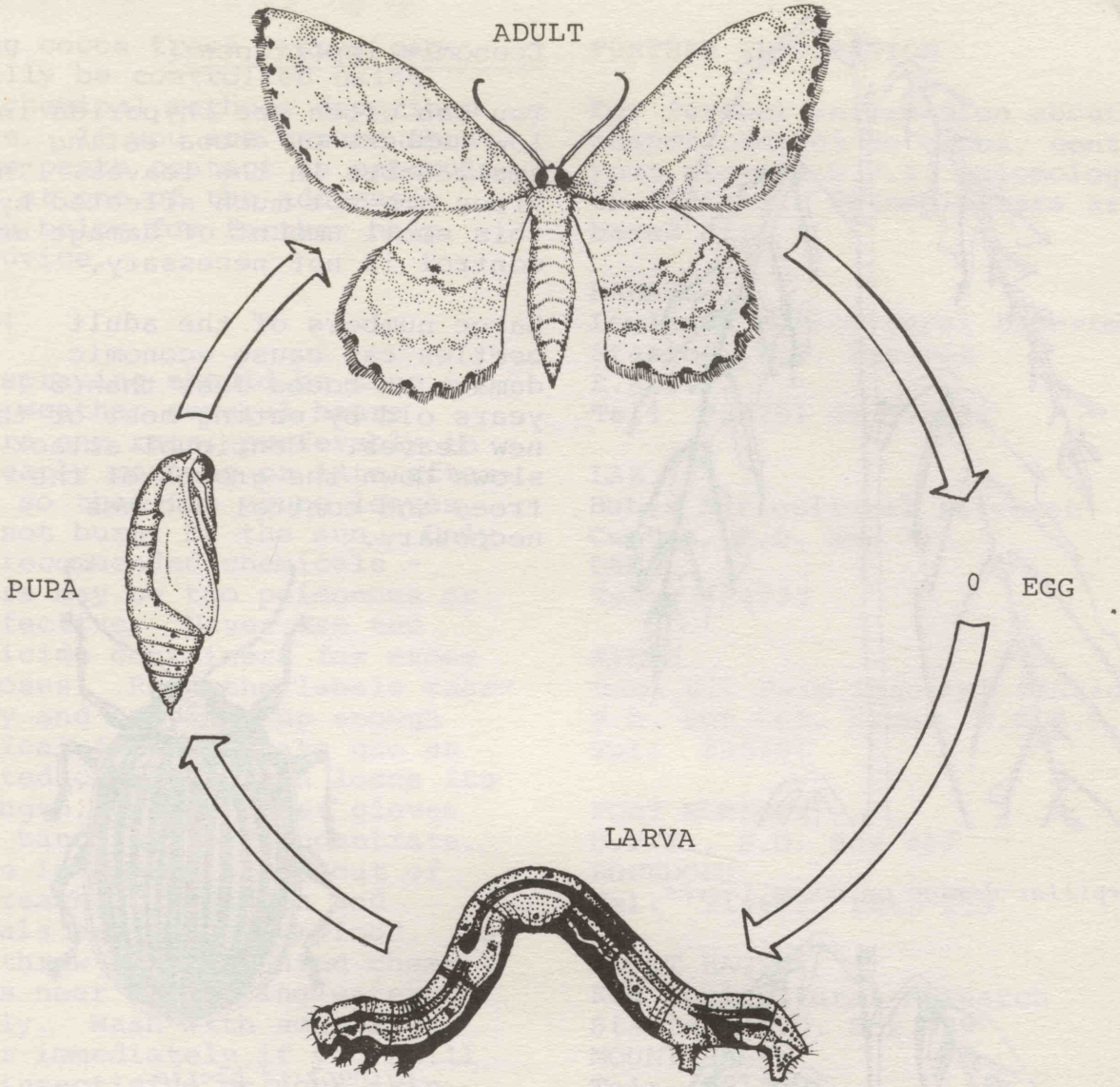
Control

a. Cultural control

If you live in an area where caterpillars are often a serious problem you should use coconut or *Gliricidia* shade instead of *Leucaena*.

b. Chemical control

Caterpillars seriously damaging cocoa less than 3 years old should be controlled using insecticide sprays; on trees older than this, spraying be-



Life cycle of the cocoa looper, Ectropis

comes too expensive and difficult.

Use a knapsack sprayer or mist-blower to 'spot spray' trees in the affected area. The best chemicals to use are a 0.1% solution of acephate (Orthene) or a 0.2% solution of carbaryl (Septene). To obtain the correct solution mix together:

13 g 'Orthene 75' 5 ml washing up liquid 10 litres water

OR

25 g 'Septene 80' 5 ml washing up liquid 10 litres water

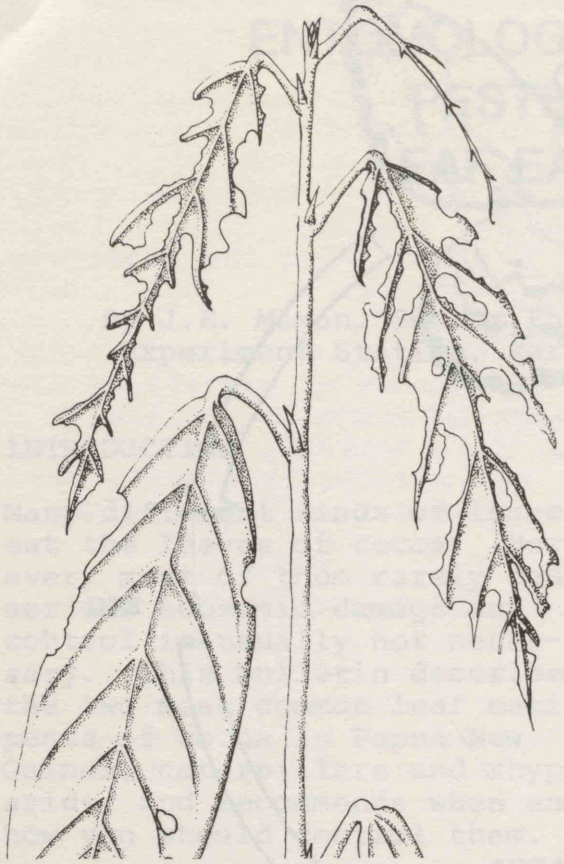
2. RHYPARIDS

Description

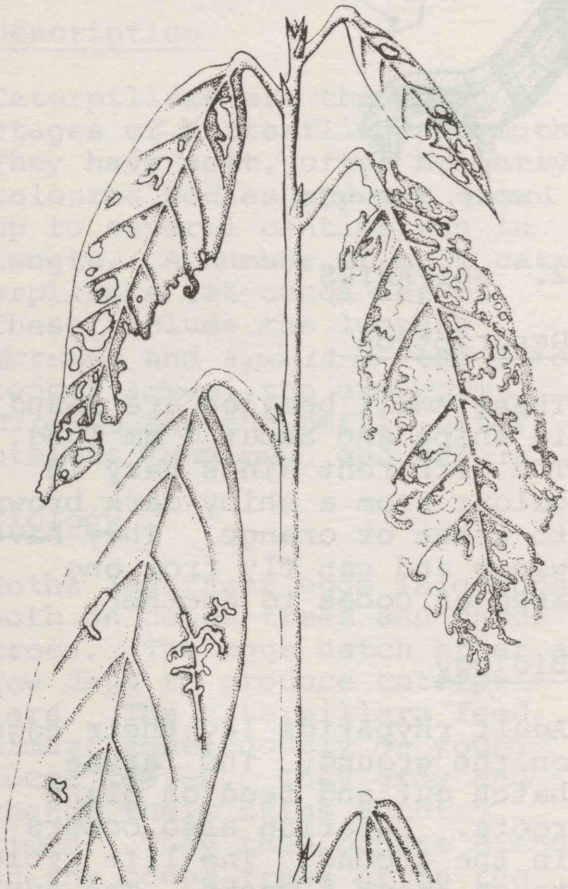
These small beetles are round in shape and about 7 mm long. The different kinds vary in colour from a shiny dark brown to green or orange. They have wings and can fly from one area of cocoa to another.

Biology

Adult rhyparids lay their eggs on the ground. The larvae hatch out and feed on plant roots. Pupation also occurs in the ground. The life cycle takes about 6 weeks. The adults feed on young cocoa leaves.



Caterpillar damage on cocoa leaves

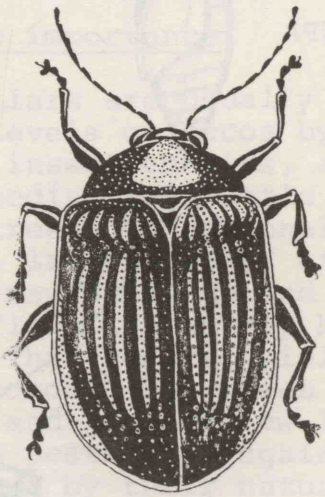


Rhyparid damage on cocoa leaves

Economic importance

You can often see rhyparids in low numbers on cocoa eating small holes in the leaves. The trees are not much affected by this small amount of damage and control is not necessary.

Large numbers of the adult beetles can cause economic damage on cocoa less than 3 years old by eating most of the new leaves. Continual attack slows down the growth of the trees and control becomes necessary.



A rhyparid beetle

Control

Rhyparids can be controlled by spraying them with the chemicals used for caterpillars as described earlier. They should only be controlled on young cocoa less than 3 years old when large numbers are starting to cause serious damage. Rhyparids prefer to eat some kinds of cocoa more than others so that not all trees in a cocoa block will be attacked. You should, therefore, spot spray only where necessary.

3. OTHER LEAF EATING PESTS

Occasionally, other kinds of insects may build up to large numbers and eat the leaves of

young cocoa trees. They can usually be controlled using the chemical methods described above. If you are unsure about these pests contact an entomologist at one of the addresses given below for further help or advice.

NOTE:

All spraying should be done in fine weather several hours before any rain, preferably in the early morning or late afternoon so that the young leaves are not burnt by the sun. Only use recommended chemicals - others may be too poisonous or ineffective. Never use the pesticide containers for other purposes. Read the labels carefully and only mix up enough chemical for immediate use as diluted chemical soon loses its strength. Wear rubber gloves when handling the concentrate. Store in a safe place out of the reach of children and animals and away from food. Do not throw away unwanted chemicals near a drinking water supply. Wash with soap and water immediately if you spill any insecticide on your skin, and after you have finished spraying for the day. If you feel sick after using the chemicals see a doctor.

Full details on the safe handling and use of pesticides are given in Entomology Bulletin No.9, in HARVEST, Volume 6, No. 3, pp. 149-152; and Rural Development Series Handbook No. 18.

FURTHER INFORMATION

For further information about insect control on cocoa, contact your nearest D.P.I. entomologist or didiman. Entomologists are based at:

RABAUL
Lowlands Agricultural Experiment Station, P.O. Keravat
E.N.B.P.
Tel: 926251 or 926252

LAE
Bubia Agricultural Research Centre, P.O. Box 73
LAE
Tel: 424933

KIMBE
Dami Oil Palm Research Station
P.O. Box 165, KIMBE, W.N.B.P.
Tel: 935204

PORT MORESBY
D.P.I., P.O. Box 417
KONEDOBU
Tel: 214699 Ext. 255

MOUNT HAGEN
Kuk Agricultural Research Station, P.O. Box 339
MOUNT HAGEN
Tel: 551377

Copies of this Entomology Bulletin can be obtained from:
The Publications Officer
Publications Section, D.P.I.,
P.O. Box 417, KONEDOBU.

(Illustrations: Jane Leng)