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PESTS OF COCOA - MIRIDS

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INTRODUCTION

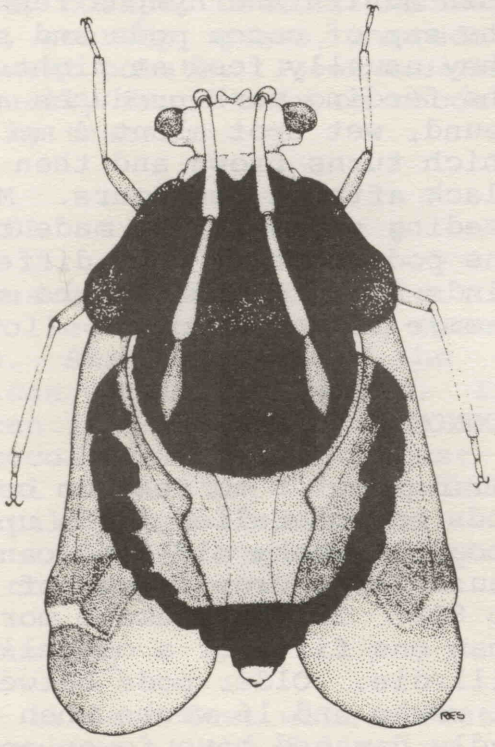
Mirids, also known as capsids and podsuckers, are a major pest of cocoa in Papua New Guinea. The insects pierce cocoa pods and feed on the sap causing the pods to die or to become reduced in size. They also feed on cocoa shoots. Large numbers may damage the growing points of young seedlings.

DESCRIPTION

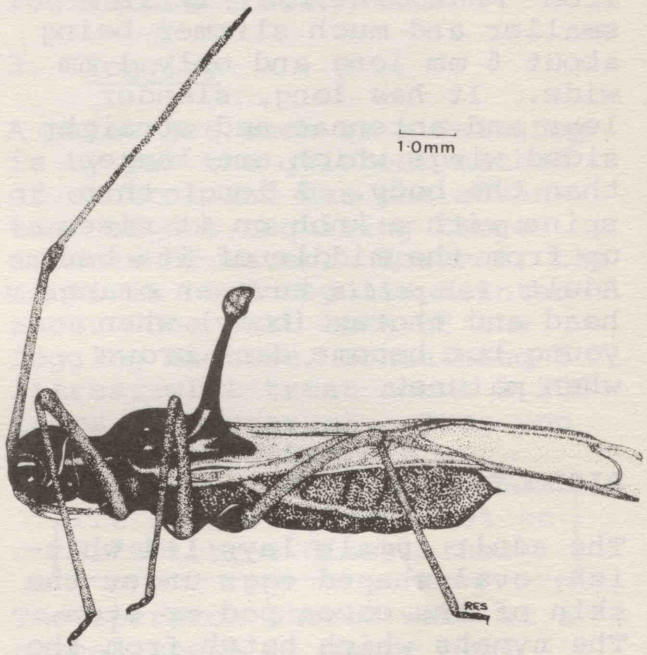
There are four different mirids that commonly attack cocoa in Papua New Guinea. These are:

Helopeltis clavifer	widespread
Pseudodoniella laensis	on the mainland.
Pseudodoniella typica	found mainly
Pseudodoniella pacifica	in the islands region.

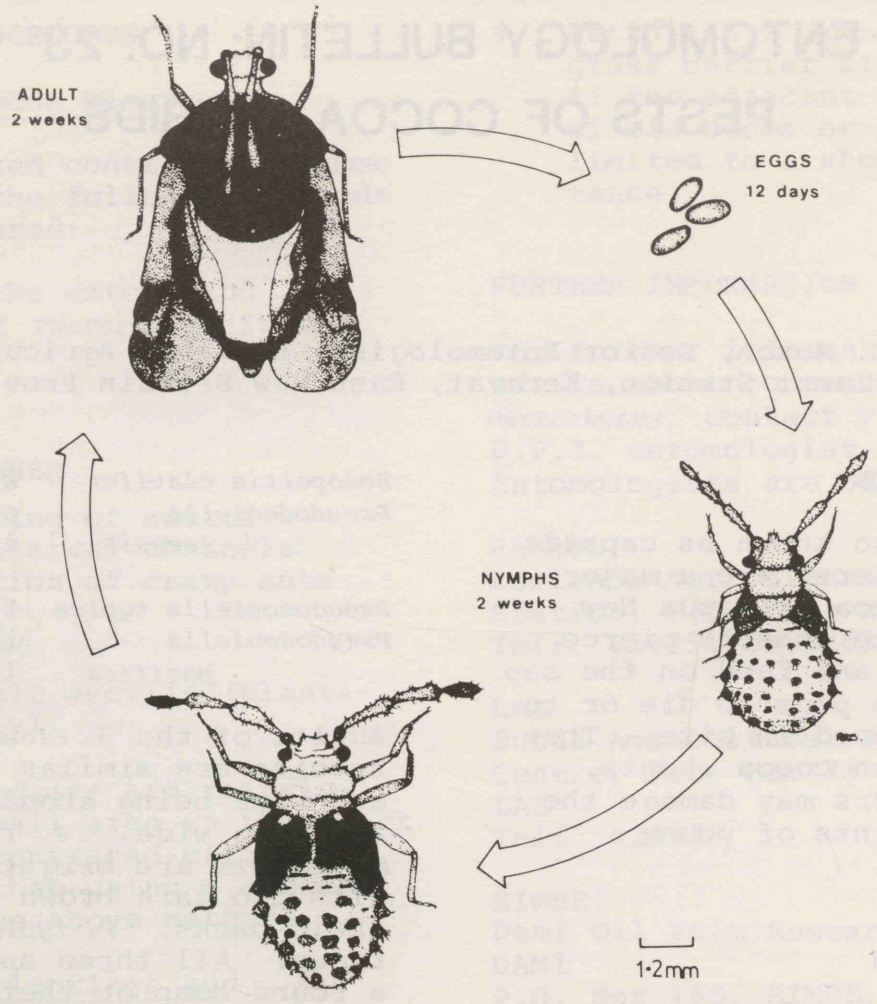
Adults of the 3 *Pseudodoniella* species are similar in shape and size being about 8 mm long and 4 mm wide. *P. laensis* and *P. pacifica* are bright orange with two dark brown spots on their backs. *P. typica* is dark brown. All three species have a round hump on their back, well developed prominent eyes and strong wings enabling them to fly from one area to another.



Pseudodoniella *adult, about 12 times natural size.*



Helopeltis *adult, about 15 times natural size*



Life cycle of the mirid, Pseudodoniella

Helopeltis looks very different from *Pseudodoniella.* It is smaller and much slimmer being about 6 mm long and only 1 mm wide. It has long, slender legs and antennae and straight sided wings which are longer than the body. A long, thin spine with a knob on it rises up from the middle of its back. Adult *Helopeltis* have an orange head and thorax (body) when young but become dark brown when mature.

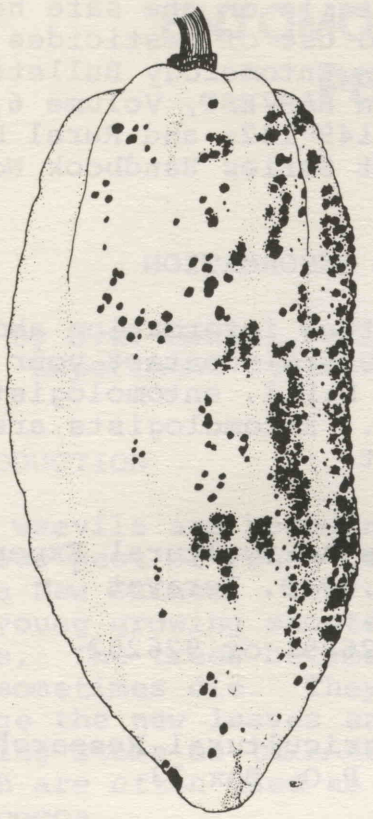
BIOLOGY

The adult female lays 1-4 whitish, oval shaped eggs under the skin of the cocoa pod or stem. The nymphs which hatch from the eggs grow and change their skins 5 times before they become adult.

Both adults and nymphs feed on the sap of cocoa pods and stems. They usually feed at night. The feeding mark produces a round, wet spot about 4 mm wide which turns brown and then black after a few hours. Many feeding scars can be made on one pod or stem. The different kinds of mirids cause the same damage to cocoa pods.

ECONOMIC IMPORTANCE

Mirids prefer to feed on cocoa pods and cherelles (pods up to about 11 weeks old) and can cause large crop losses of up to 80%. If they damage more than one fifth of a cherelle it will die. Older pods between 11 weeks and 16 weeks when badly damaged have fewer and smaller beans. Mirid attack



Mirid damage on a cocoa pod

has no effect on yield from large pods more than 16 weeks old.

The mirid *Helopeltis* also feeds on tea, coffee, cotton, cashew, mango, soursop, guava, avocado and sweet potato. *Pseudodoniella* is usually found only on cocoa and fig trees.

CONTROL

Serious mirid attack can be controlled on cocoa using chemicals. Small numbers of the pest can cause much damage. If you can find 10 live mirids on 100 cocoa trees then you must control them. The recommended chemical to use is lindane. There are three ways to apply this chemical:

1. Dusting

Apply lindane dust with a dusting machine at the following rate per hectare (625 trees):

8 kg of Lindane 1.3% dust

OR

4 kg of Lindane 2.6% dust

You should apply dust in the early morning when the dew helps it to stick onto the cocoa trees. Dusting is probably the best method of control for villagers and smallholders because there is no mixing of concentrated chemicals and dusting machines are cheap and require little maintenance.

A face mask must be worn to prevent the dangerous dust being inhaled.

2. Spraying

Spray the chemical using a mistblower onto the trunk and main branches of the affected cocoa trees. For this method you must mix together:

200 ml Lindane 16% ec 10 litres water 5 ml washing up liquid

You must set the nozzle on the mistblower so that this 10 litres of chemical sprays about 100 mature trees.

3. Fogging

A pulse jet such as a Swingfog is by far the quickest method of control and has the advantage of not requiring large amounts of water. However, the machines need regular maintenance. One full tank of the fogging machine, containing 5 litres, will treat about 1,200 trees (2 hectares). Thus you must mix together:

1.2 litres Lindane 16% ec 3.75 litres diesel fuel

The operator should walk at a normal speed (1 metre per second) with the fogger pointing behind him. The smoky chemical will then drift onto the cocoa

trees. You need only apply the chemical to alternate (every second) rows because it spreads through the air.

NOTE:

1. IN ALL THESE METHODS YOU MUST MAKE A SECOND TREATMENT 14 DAYS AFTER THE FIRST ONE. This is to kill mirids that were protected inside the eggs when you applied the first treatment.

2. SPOT SPRAY ONLY THOSE PARTS OF THE COCOA BLOCK WHERE MIRIDS ARE A SERIOUS PROBLEM. If you spray large areas with chemicals then you will kill the natural enemies of other cocoa pests and so create more pest problems.

3. Regular prophylactic (protective) spraying will also kill crazy ants. Crazy ants which control *Pantorhytes*, the most serious pest of cocoa in Papua New Guinea can also sometimes control mirids.

4. Only use the recommended chemical - others may be too poisonous or ineffective in killing the mirids. Do not smoke or eat when using insecticides. 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 you skin, and when you have finished spraying for the day. If you feel sick after using the chemical 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 mirid control contact your nearest D.P.I. entomologist or didiman. Entomologists are based at:

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Lowlands Agricultural Experiment Station, P.O. Keravat
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LAE
Bubia Agricultural Research Centre, P.O. Box 73
LAE
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KIMBE
Dami Oil Palm Research Station
P.O. Box 165, KIMBE
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