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PROTECTION OF SEEDLINGS FROM CUTWORM DAMAGE

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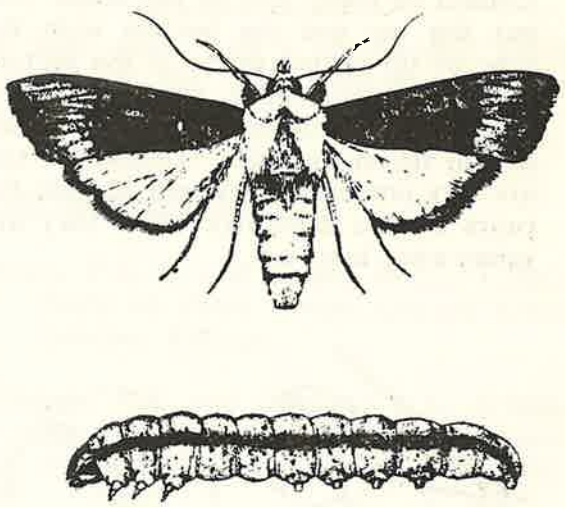
INTRODUCTION

Cutworms are the larvae (young stages) of a moth called *Agrotis ipsilon*. They live in the soil where they feed on a wide range of plant material during the night. Often, they chew through the stems of young seedlings at, or just below, the soil surface. When they are present in large numbers, they can cause a considerable amount of damage, and control measures are often necessary.



Cutworm adult (top) and larva (bottom) shown about 1.5 times their natural size

DESCRIPTION AND BIOLOGY

The adult moth is about 22 mm long. It has a dark grey body, forewings of mid-brown to black with paler outer margins, and hindwings of a pale to creamy brown with well-marked dark veins. The eggs are creamy white, changing to reddish yellow and then blackish before hatching. They are dome-shaped, about 0.5 mm in diameter, with 30-40 vertical ribs. They are laid singly or in small groups at the base of the stems of plants or on the soil surface.

On hatching, the larvae remain in the soil during the day and come out onto the surface to feed at night. Here they chew the bases of the stems of plants, particularly young seedlings. Often the stem is completely chewed through and the seedling appears as if it has been cut off at ground level.

The length of the larval stage varies from a few weeks to several months depending on the food supply. The mature larva is about 45 mm long, slate-grey or dark green in colour with a shiny, greasy looking skin. When disturbed, it usually curls up quickly to form a circle. Pupation occurs in cells in the soil from which the adult moth finally emerges.

ECONOMIC IMPORTANCE

Cutworms feed on a large variety of seedlings, often causing considerable losses. They are widely distributed in Papua New Guinea occurring both in the lowlands and in the highlands.

CONTROL

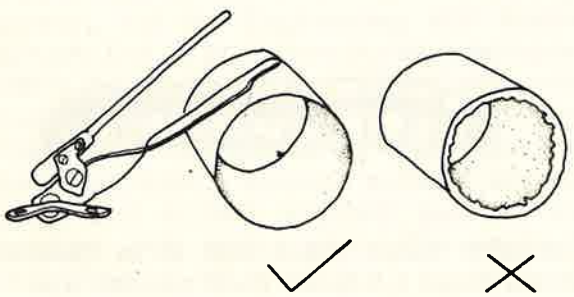
Physical control

Seedlings can be protected against cutworms by placing a barrier around them. The method is useful for people with small gardens, or those who live a long way from town and cannot get chemicals easily.

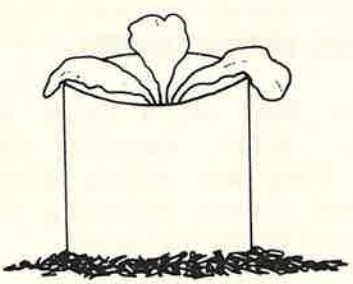
The barriers are made by cutting off the tops and bottoms of old (fish or meat) tins; or by cutting the bottoms out of old plastic cups. Bamboo can also be used to make barriers.

Barriers using old tins

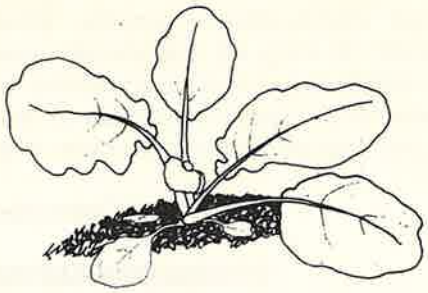
1. Collect as many tins as you need. Cut out the top and the bottom with the type of tin opener shown in the picture below. This gives a clean cut. the wrong type of tin opener has been used on the tin on the right. Unless the tins are cut properly, they will disturb the roots of the seedlings when they are taken away later on.



2. Place a tin around each seedling at planting time and push it into the soil about 5-7 cm deep If you wait a day or two, it may be too late as the cutworms will start eating your seedlings almost straight away.



3. When the seedlings are strong, the tins should be removed gently, without disturbing the roots.

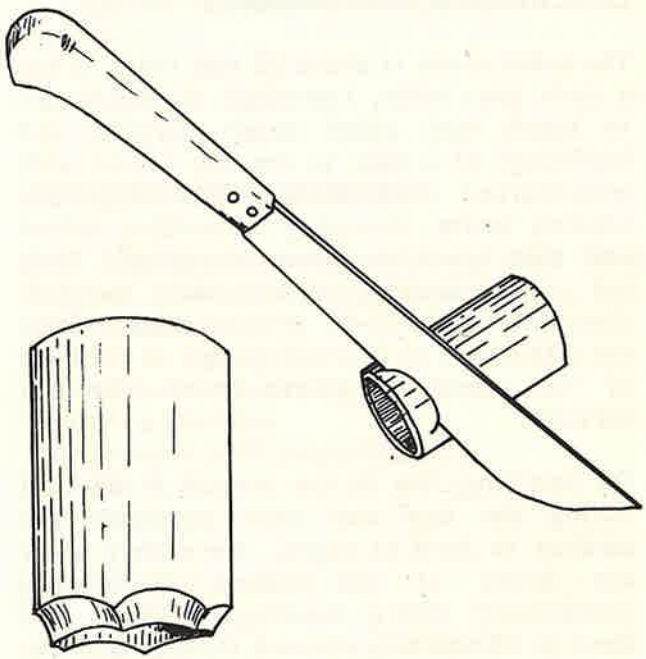


Barriers using bamboo

1. Look for a piece of bamboo which is about as wide as your hand.

2. Cut the bamboo into sections about 15 cm long, (as long as a fish tin).

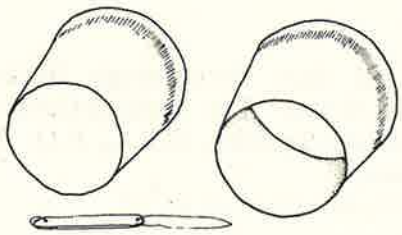
3. If you cut the bamboo with a bush knife you will get a sharp edge at one end. This will help you to push the bamboo barrier into the ground 5-7 cm deep. If you wait a day or two, it may be too late, as the cutworms will start eating your seedlings almost straight away.



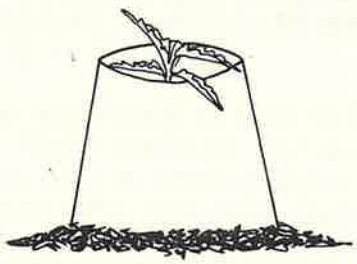
4. When the seedlings are strong, pull the bamboo out. Do this very carefully and slowly because it is very easy to break the roots of the seedling.

Barriers using plastic cups

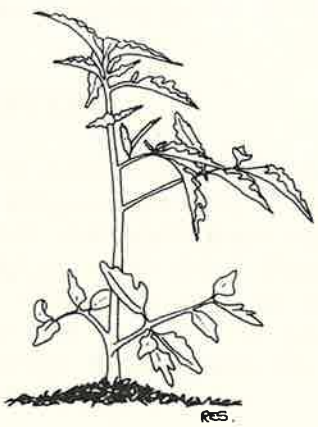
1. Use a knife to cut the bottom out of the plastic cup.



2. Place a plastic cup over each seedling at planting time. Then push it 5-7 cm into the ground. If you wait a day or two it may be too late.



3. When the plants are strong remove the plastic cups. You will find that they come out easily, but take care not to disturb the roots.



Chemical control

If physical control of cutworms using barriers is not practical, for example, there are too many seedlings, then spraying with the insecticide permethrin (Ambush) is recommended. Spray 0.01% permethrin at 100 g ai (active ingredient) per hectare (which is 1000 litres of spray per hectare), at the base of seedlings at emergence or transplanting.

To prepare a 0.01 solution of permethrin, mix together:

EITHER

10 ml Ambush 10 10 litres water

OR

2 ml Ambush 50 10 litres water

In both cases, add a commercial wetting agent at the rate specified on the container.

FURTHER READING

Jones, F.G.W. and Jones, M.G., (1966). *Pests of Field Crops.* Edward Arnold: London. 406 pp.

Kimber, A.J. and Calcinai, B. L. (1980). *An Easy Way to Control Cutworms.* Aiyura Bulletin No. 13. October 1980.

Kranz, J., Schmutterer, H. and Koch, W. (1977). *Diseases, Pests and Weeds in Tropical Crops.* Verlag Paul Parey: Berlin and Hamburg. 666 pp.

Metcalf, C.L. and Flint, W.P. (1962). *Destructive and Useful Insects, Their Habits and Control.* McGraw-Hill: New York, San Francisco, Toronto and London. 1087 pp.

Swaine, G. (1971). *Agricultural Zoology in Fiji.* H.M.S.O.: London. 424 pp.

FURTHER INFORMATION

Further information on the control of cutworms can be obtained from your nearest D.P.I. entomologist. Entomologists are based at:

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

LAE
Agriculture Research Centre
Bubia, P O Box 1639
LAE
Tel: 424933

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

KIMBE
Dami Oil Palm Research Station
P O Box 165, KIMBE
Tel: 926351 or 926252

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

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The Physical control recommendations in this Entomology Bulletin are based on information previously published in Aiyura Bulletin No. 13.