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OCCASIONAL PESTS OF SWEET POTATO

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INTRODUCTION

The most serious insect pest of sweet potato (kaukau) is the sweet potato weevil (see Entomology Bulletin No. 17 on pp. 90-93 of this issue.), but several other insects are found on the leaves and in the vines. These 'occasional pests' can sometimes cause damage. The most common of these are described in this article, with short notes on their biology (where it is known), the damage they cause and where necessary, suitable control measures.

Chemical control of these occasional pests should be avoided. If you are in any doubt about what to do, consult the nearest D.P.I. Entomologist or your Didiman.

The insects can be divided into two groups:

1. The leaf and vine eaters.
2. The plant juice feeders.

1. LEAF AND VINE EATERS

All the insects in this group have chewing mouthparts which they use to attack the leaves and vines of sweet potato. There are two kinds of insects in the group:

(a) Caterpillars, which are the larval stages of moths.

(b) Beetles: both the larval and adult stages may cause damage.

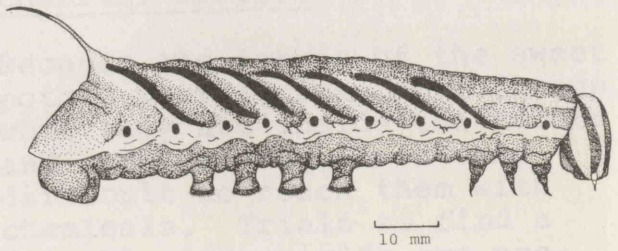
1(a) Caterpillars

The sweet potato hawkmoth *(Agrius convolvuli)*

This is probably the most common of the occasional pests.

When it hatches from the egg, the caterpillar is about 5 mm long and pale green with a distinct yellow tail. The colour of the fully grown caterpillar varies but it is usually dark brown with seven brown diagonal stripes, and a wavy white line along the length of the body.

The caterpillars feed on sweet potato leaves. If there are many caterpillars, they can eat



The sweet potato hawkmoth caterpillar

a lot of leaves and slow down the rate of tuber formation.

The pupal (resting) stage, during which the adult develops, takes place in the ground.

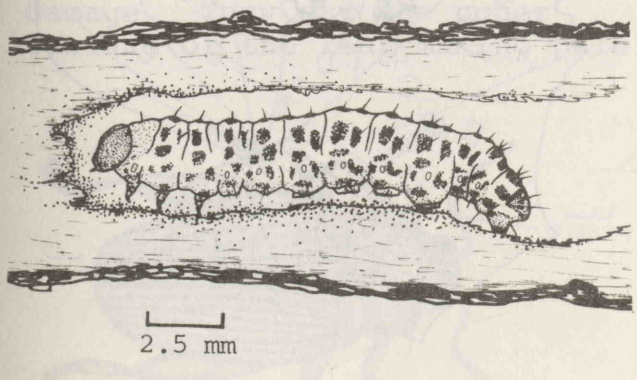
The adult moth is about 50 mm long. The female lays eggs on sweet potato leaves. The eggs are pale blue and about the size of a pinhead. One moth may lay many eggs, but usually not more than one per leaf.

In small gardens the caterpillars can be removed by hand and killed by squashing them, or fed to chickens. If there are very many caterpillars, or on large blocks, insecticides can be used.

The sweet potato vine borer *(Omphisia anastomosalis)*

This caterpillar has so far been found only in the Gulf, Central and East New Britain Provinces. However, it is probably present elsewhere in Papua New Guinea.

After hatching from the egg the young caterpillars chew into the vines of sweet potato where a leaf stalk joins the main vine. The caterpillars are pinkish-brown and about 12-15 mm long. They feed inside the vine for 28 to 50 days.



A sweet potato vine borer feeding inside a vine.

If vine borers are present, lumps of powdery frass (waste products) can be seen around the base of the vines. Young vines infested by the vine borer show poor growth and poor tuber formation. The vine borer has been known to attack tubers when present in very large numbers.

Pupation occurs inside the vine and lasts for about 14 days. The adult is about 15 mm long and lives only 7 days.

Eggs are laid at the base of vines close to the ground. The length of the life cycle from egg to adult is about 57 days in Malaysia, and will be similar for Papua New Guinea.

This pest is not yet a serious problem in Papua New Guinea. Recommended control measures are: crop rotation, removal of alternative host plants (wild convolvulus and wild *Ipomoea* spp.) and destroying infested vines by burning where possible.

Sweet potato leaf miner *(Bedellia somnulentella)*

This has been recorded as a pest in the highlands where it can sometimes severely damage crops.

After hatching, the larvae eat the inside of the leaves causing them to go brown and hard, and the plant to die back. When the fully grown larvae come out of the leaves they spin a thread behind them. Pupation occurs at the end of the threads. The adults are very small moths about 3 mm long. The female lays its eggs on sweet potato leaves. The life cycle from egg to adult takes 21 to 28 days.

Normally it is not necessary to control the leaf miner. Its

natural enemies usually prevent it from becoming a serious pest. Sometimes chemical control may be necessary.

Other caterpillars

Other caterpillars may sometimes be seen eating the leaves of sweet potato. These usually do not do any serious damage.

1(b) Beetles

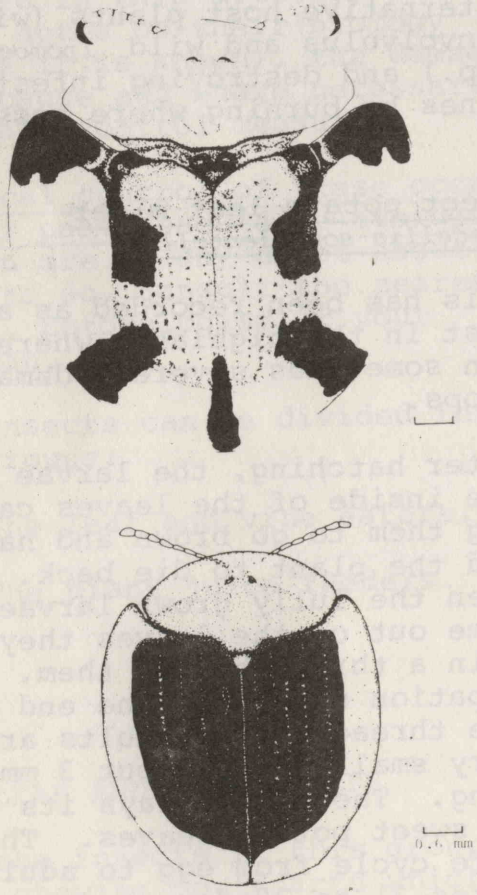
The large tortoise beetle *(Aspidomorpha)* and the small tortoise beetle *(Cassida)*

There are several species of both the large and small tortoise beetle. The two most common are shown in the illustration. The eggs of the large tortoise beetle are laid in clumps on the underside of sweet potato leaves. The small tortoise beetle lays its eggs singly, also on the underside of the leaves.

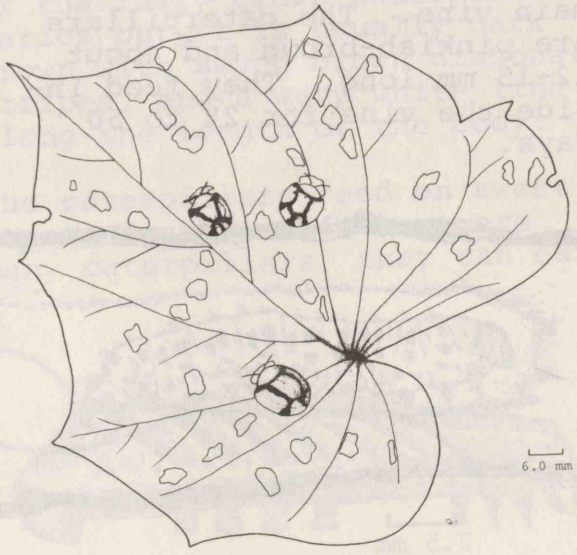
When they hatch from the egg the larvae feed on the leaves causing typical damage (see illustration below). The larvae can be recognised because they carry their old skins above their backs. Pupation takes place with the pupa (resting stage) attached to the underside of the leaf. The adults when they emerge also feed on the leaves and make large holes.

The life cycle of the large tortoise beetle takes 30 days from egg to adult. The life cycle of the small tortoise beetle takes about 20 days.

If there are very many tortoise beetles they can greatly reduce the leaf cover. Damage may be worst during the rainiest time of the year. Control measures are not required.



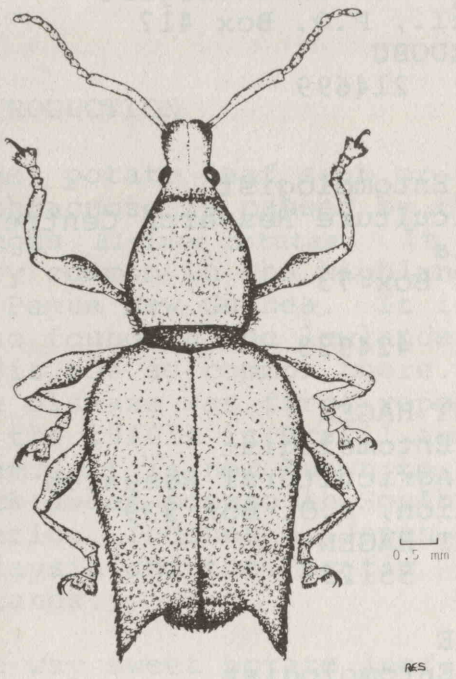
The large tortoise beetle (above) and the small tortoise beetle (below).



Damage made to a sweet potato leaf by large tortoise beetles.

Horned weevil *(Apirocalus ebrius)*

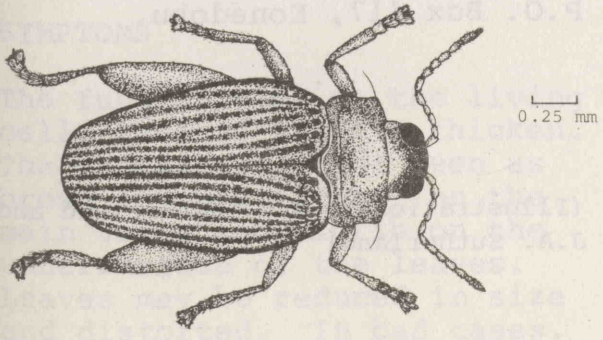
The adult of this weevil can be recognised by the horns on the back end of the elytra (wing cases). It is grey and about 8 mm long. The adult eats holes in the leaves of sweet potato but is rarely a problem.



Horned weevil

Black flea beetle
(Arsipoda tenimberensis)

This is a small black beetle about 2 mm long which jumps suddenly, like a flea, when disturbed. The adults are often found on leaves of sweet potato. Only the adults cause damage. They eat the upper surface of the leaf making pale green patches. No control measures are necessary.



Black flea beetle

Other beetles

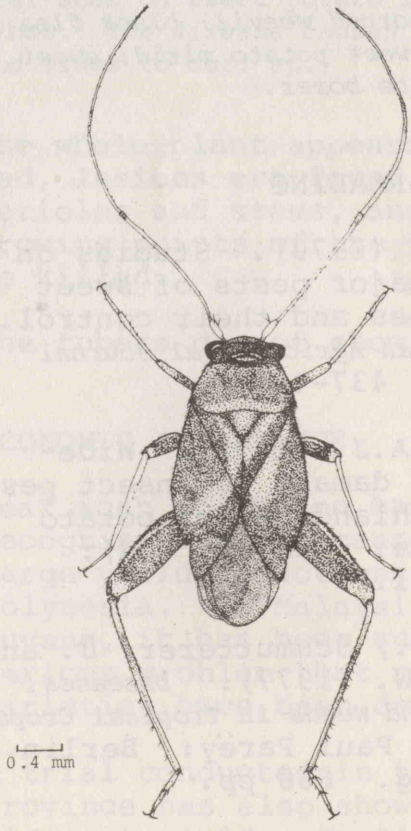
Sometimes other beetles may be found feeding on the leaves of sweet potatoes. If a beetle not described here appears to be causing severe leaf damage, consult your nearest D.P.I. Entomologist, or Didiman for advice.

2. PLANT JUICE FEEDERS

These insects have special piercing mouthparts for sucking plant sap. There are two insects in this group which may cause damage.

Sweet potato mirid
(Halticus tibialis)

This is a small black insect, 2

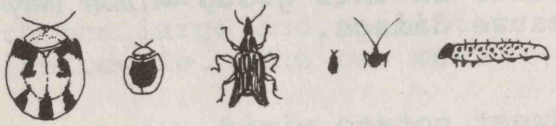


Sweet potato mirid

mm long, which feeds on both the upper and lower surfaces of the leaves. It is easily confused with the black flea beetle. However it has longer antennae, is rounded, and the hind pair of legs project out from the side of the body. It jumps like the black flea beetle especially when disturbed. It appears to cause little direct damage to sweet potato.

Sweet potato planthopper

This is a whitish insect about 5 mm long. It generally feeds on the undersides of the leaves. It hops when disturbed. When there are many present they can cause some stunting of the crop.



This diagram shows the actual size of some of the insects mentioned in this article. From left to right: Large tortoise beetle; small tortoise beetle; horned weevil; black flea beetle; sweet potato mirid; sweet potato vine borer.

FURTHER READING

Ho, J.H. (1970). Studies on some major pests of sweet potatoes and their control. *Malaysian Agricultural Journal* 47(4): 437-452.

Kimber, A.J. (1972). Widespread damage by insect pests in highlands sweet potato gardens. *Harvest* 2(4): 117-121.

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

FURTHER INFORMATION

Further information on insect pests of sweet potato can be obtained by contacting the D.P.I. entomologist nearest to you. The addresses and telephone numbers are:

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