

Insect Pests of Sweet Potato and Taro in the Territory of Papua and New Guinea: Their Habits and Control.

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Most of the plants grown for food in the Territory are either indigenous or have been grown for a long period of time. Thus most pests are controlled by natural factors in the environment, except for those brief periods when they have favourable conditions, and come into prominence. It is only on these occasions that chemical control measures are required.

The plants covered in this article are sweet potato and taro, and are probably the most widely grown food crops. The most important pests of each crop are discussed and methods of control described. It must be remembered that these food plants are mostly grown in subsistence gardens, and so the use of chemicals is restricted by economic considerations.

SWEET POTATO.

Ipomoea batatas.

THE sweet potato is probably the most important staple crop in the Territory. It was introduced here from the Western Hemisphere, where it originated, but the date or manner of introduction is not known. It has two major pests and several minor ones.

1. The Sweet Potato weevil, *Cylas formicarius* F.

This weevil is sometimes known as the "Sweet potato Ant weevil", because of the adults' ant-like appearance. It is a small slender insect, less than $\frac{1}{4}$ inch long, metallic blue and reddish brown in colour, and can fly.

Life History.

The eggs are laid in cavities which have been chewed by the female in the surface of the stem or tuber. After hatching, the larvae bore into the plant. These larvae are stout, legless and white in colour, and grow to about one-third of an inch in length. The larvae take about three weeks to reach full size and then pupate in small cavities at the end of their tunnels in the tuber or stem. The adult may live for several months and there may be as many as eight generations in a year.

Host Plants.

The sweet potato weevil can breed in a number of plants which are related to the sweet potato, e.g., Morning Glory (*Convolvulus*). Some of these are indigenous.

Damage.

The adult weevils damage the plants by feeding on leaves, vines and roots, and pit the tubers with feeding and egg-deposition cavities. The larvae feed in both stems and tubers and do the most damage. They can cause complete loss of the crop in a particularly severe infestation.

Control.

The most effective way to control this weevil is by preventing an infestation from building up to serious proportions. This is best done by crop rotation, having at least 12 months between crops of sweet potato. Long dry seasons tend to allow a greater incidence of weevil damage, as cracks develop in the soil, allowing the weevils to reach the tubers more easily. This can be minimized by mulching and working the soil to improve the soil condition.

Once a serious infestation has developed, the following steps should be taken :

- (a) Make sure that no planting material is taken from the infested area.

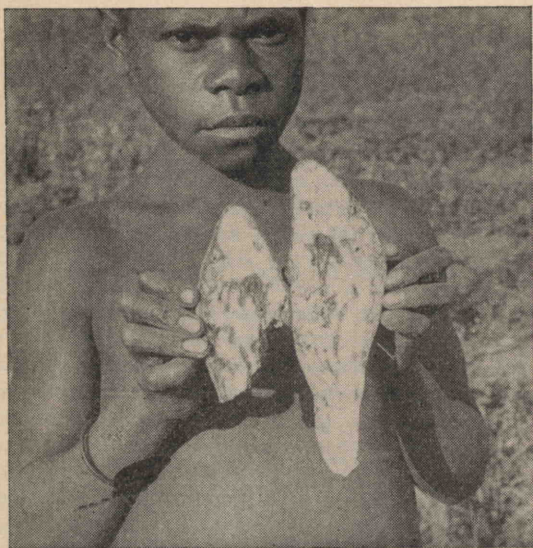


Plate 1.—Sweet Potato Tuber damaged by Sweet Potato Weevil.

[Photograph : J. J. H. Szent-Ivany.]

- (b) Only healthy tubers should be taken away from the field; if desired pigs can be allowed to feed on tubers remaining.
- (c) All remaining plant material should be destroyed, and volunteer plants as well as Morning Glory should be kept under control in the proximity of the field.
- (d) The land should not be used for sweet potato again for at least twelve months.
- (e) New planting should be as far as possible from the infested area.

2. Sweet Potato Hawkmoth, *Agrius convolvuli* (L.).

This is a typical large hawkmoth, with a robust, streamlined body and strong slender wings, spanning 4-5 inches. The forewings are grey, with various shades and with black markings. The hindwing is a lighter grey with four black bands which may be indistinct.

Life History.

The eggs are laid on the stem or leaves, on which the caterpillars feed once they have hatched. These caterpillars are green or

yellowish-brown with brownish-yellow oblique stripes on the sides and with a prominent brown horn (or "tail")—on the dorsal surface at the end of the body. When fully grown they reach a length of 4 to 4½ inches, and pupate in the soil.

Host Plants.

The only alternate host plant recorded from New Guinea, is taro.

Damage.

The caterpillars of this moth can cause severe damage to sweet potato, completely defoliating it.

Control.

The use of an 0.25 per cent. DDT emulsion is recommended for the control of this insect, when chemical control is required. It is used as a high volume spray. A 2.5 per cent. DDT mist would also be suitable.

3. Minor Pests of Sweet Potato.

The less important pests include the "Tortoise Shell Beetle", *Aspidomorpha adhaerens* Weber, the "Spiny Weevil", *Apirocalus cornutus* Pasc. and several small weevils in the genus *Oribius*, as well as a number of caterpillars. These insects all feed on the foliage of the sweet potato and can be controlled by the use of DDT.

TARO.

Alocasia sp., *Colocasia* sp., *Xanthosoma* sp.

There is only one genus of insects that would be considered major pests of taro. These are the beetles known as "Taro beetles". A number of other species of insects attacking taro are considered to be of minor importance.

1. Taro Beetles. *Papuana* spp.

The most important species of *Papuana* are *P. laevipennis* Arrow and *P. huebneri*, other species (some possibly new), have not been identified, or they are of minor importance.

The Taro beetles are related to the insects known as Rhinoceros beetles, which are pests of palms (particularly coconuts), but are much smaller. They vary in size from $\frac{3}{4}$ in. to 1 in., have small horns on their heads and are usually black to dark brown in colour.

Life History.

The larvae are typical white "curl grubs", found usually in decomposing plant material in the soil around the plants, where it feeds. The life cycle of this insect varies from three to four months.

Host Plants.

Papuana sp. have not been recorded from other plants.

Damage.

The adult beetle damages taro by feeding in the stems and roots.

Control.

0.15 per cent. Dieldrin sprayed on the ground around the taro plants, or Aldrin dust mixed in the soil will give good control.

Scoliid wasps are common parasites of the Taro beetles (they also parasitize Rhinoceros beetle). These wasps are not very efficient

parasites and sometimes allow the beetle population to build up to the point where chemicals must be used to control them.

2. Minor Pests.

The most important of the minor pests include a brightly coloured small grasshopper called *Gesonía sanguinolenta* Kraus, two small bugs *Astacops villicus* Stal. and *Astacops flavicollis* Walk. and hawkmoth caterpillars (particularly *Hippotion celerio* (L) and *Agrius convolvuli* (L)).

A. convolvuli is a major pest of sweet potato. The grasshopper and caterpillars can severely defoliate the taro plants, while the bugs cause wilting of the leaves.

These insects can be controlled by 0.25 per cent. DDT or 0.05 per cent. applied as a high volume spray.

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* Bananas.

Potato (Irish)

Xanthosome sp

Colocasia sp

Coconuts

O.V. Palm 2

Tea

Tea cann / Louis