



## Pacific Pests and Pathogens - Fact Sheets

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### Cabbage centre grub (114)



Photo 1. Damage to the centre of a cabbage caused by *Hellula ?undalis* in Samoa boring into the terminal shoot and killing it. The insert shows a mature caterpillar approximately 12 mm long.



Photo 2. The result of damage caused by the cabbage webworm, *Hellula ?undalis*, as shown in Photo 1. The terminal shoot has been destroyed and side shoots have developed producing many small clusters of leaves.

#### Common Name

Cabbage centre grub, cabbage webworm

#### Scientific Name

*Hellula undalis*

#### Distribution

Worldwide. Asia, Africa, Europe, North (Hawaii) and South America (restricted), Europe, Oceania. It is recorded from Australia, Cook Islands, Fiji, French Polynesia, Guam, New Caledonia, New Zealand, Palau, Papua New Guinea, Samoa, Solomon Islands, and Tonga.

#### Hosts

Members of the brassica family, i.e., cabbage, cauliflower, Chinese cabbage and radish, but also amaranth and eggplant.

#### Symptoms & Life Cycle

Seedlings are destroyed by the caterpillars. On older plants, the young larvae make mines in the leaves and bore into the stem; later, the caterpillars tunnel into the heart of the plant destroying the bud (Photo 1) causing the leaves to become distorted and stunted. Frequently, plants have several small clusters of leaves; this is caused by damage to the central bud and the development of side shoots (Photo 2).

The eggs are oval, except they are flattened where attached. At first they are white, but later become brownish-red. They are laid singly or in groups, sometimes in chains. After about 3 days, the eggs hatch. Initially, the caterpillars are whitish-yellow with dark brown to black heads, but when mature, after five development stages, they are greyish-yellow with pinkish-brown longitudinal stripes. At the last stage, the caterpillars are 12-15 mm long.

The caterpillars are mostly found on their own, feeding by grazing the leaf surface from protective silk cocoons. The caterpillar stages take 2-3 weeks to complete, with slight differences depending on the host plants upon which they are reared. The pale brown pupal stage occurs just below the soil surface in a cell containing a cocoon made from silk, soil particles and other matter; the stage lasts 1-2 weeks depending on the temperature and, perhaps, the plants upon which the caterpillars have fed.

The forewings of the adult moth are greyish-brown with wavy lines and a black spot; the hindwings are grey, darkening at the margins. The wingspan is up to 18 mm. After emergence, the moths mate and the females lay upward of 150 eggs over the next 3 to 10 days. The adult moth is capable of flying long distances.

#### Impact

The cabbage webworm is a major pest of cruciferous crops in the tropics and subtropics, especially affecting cabbage and raddish. Major losses are reported from India and the Philippines, if control measure are not applied. It is said to be an important pest in Solomon Islands, ranked in the top ten of the insect pests of the country. It is present in Fiji and important locally. *Hellula* sp. (thought to be *Hellula undalis* ) is present in Samoa, but its importance is unknown.

### **Detection & inspection**

Look for small caterpillars, with dark brown or black heads, up to 15 mm when mature, whitish with pinkish-brown longitudinal stripes, feeding from silken cocoons. Look for the frass (faecal and other material) associated with the cocoons.

### **Management**

This is a difficult pest to manage. Part of the problem is that it occurs in complexes with other cabbage pests, particularly diamondback moth and cabbage cluster caterpillar (LCM). The use of an insecticide against cabbage centre grub may well be effective for that insect, but less so against the others and, in the process, destroy their natural enemies. The other problem is that the caterpillars produce webbing, which is difficult for insecticides to penetrate, and also the caterpillars are protected from chemical sprays by burrowing into the centres of cabbages and other brassicas to feed.

#### NATURAL ENEMIES

Compared to other pests of cabbages, little work has been done on the natural enemies of the cabbage webworm. In many countries, including Papua New Guinea in the Pacific island region, the webworm is present, but is not a serious pest, so there has been little research. Further studies are required.

#### CULTURAL CONTROL

Before planting:

- Check that seedlings taken from the nursery are free from eggs and young caterpillars. Check for frass and silk.
- Use mustard (*Brassica juncea*) or Chinese cabbage (Bok Choy) as trap crops, planting it as a companion between rows of cabbages and other brassica species. Mustard is a preferred host for this insect pest and protects the cabbages from destruction. Plant the first row of mustard about 15 days before transplanting the cabbages, and the second row about 25 days after transplanting
- Do not plant new brassica crops next to those infested with the cabbage webworm.

During growth:

- Keep plots of cabbages and cauliflowers free from weeds.
- Handpick larvae and eggs, and remove infested leaves.

#### RESISTANT VARIETIES

Work on resistance in Chinese cabbage has been on-going at AVRDC (The World Vegetable Center) for a number of years.

#### CHEMICAL CONTROL

The problems associated with the use of insecticides against the cabbage webworm have been stated above. However, trials in Samoa reported successful management of the pest using acephate and permethrin at 8-10 day intervals.

Bt, *Bacillus thuringiensis*, is recommended, and if used should be applied before larvae are protected by their silken webs, and before they have moved into the centre of cabbages and cauliflowers where they are difficult to reach by biopesticides. Weekly applications of neem are also likely to be effective.

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