



## Pacific Pests and Pathogens - Fact Sheets

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### Shallot *Spodoptera* army worm (178)



Photo 1. Caterpillar damage on onion leaves caused by *Spodoptera* sp. Often the caterpillars are found inside the tubular leaves.



Photo 2. Egg mass of *Spodoptera exigua*. Note the hairs over the eggs taken from the abdomen of the female.



Photo 3. Late stage caterpillar, *Spodoptera exigua*. Note the lines along the side of the body and the one along the back.



Photo 4. Adult moth, *Spodoptera exigua*.

#### Common Name

Common cutworm, beet armyworm. Note that the species on onion has not been identified in Pacific islands where damage to shallots has been seen. In this fact sheet, it is assumed to be *Spodoptera exigua*. However, it is possible that the damage is caused by *Spodoptera litura*, taro cluster caterpillar (see **Fact Sheet no. 31**).

#### Scientific Name

*Spodoptera* spp. The common species on onion in other parts of the world is *Spodoptera exigua* (common or beet armyworm); however, this has not been identified in Pacific island countries, and the species attacking onion is likely to be *Spodoptera litura*.

#### Distribution

Worldwide. South and Southeast Asia, Africa, North and Central America, the Caribbean, Europe, the Middle East, Oceania (Australia).

#### Hosts

Very wide, including onion and relatives, especially shallots, but also food legumes, and members of the potato and cabbage families. Also on cotton and soybean.

#### Symptoms & Life Cycle

The caterpillars eat the leaves - the young ones feed on the outside scraping the surface, the larger ones make irregular holes in the leaves or eat the leaves completely (Photo 1).

The female lays pale greenish or pinkish, striated eggs, in masses that are covered with white, cottony material (bristles from the body of the female) (Photo 2). Each egg mass contains 50-150 eggs, each about 0.7 mm diameter. Larvae stay together after they hatch; later, they spread out and each one stays alone, one or two per plant as the larger stages are cannibalistic. There are five larval stages. They are pale green or yellow at first, and become a dull green with wavy, light coloured stripes down the sides below the breathing holes, and a broader dark brown stripe above (Photo 3). Another stripe runs down the top of the body. When mature they are 30 mm long. Pupation takes place in the ground; the pupae are light brown, 15-20 mm long. After 6-9 days, the adult emerges at night; it is a small, mottled grey or dusky-winged moth (Photo 4).

The life cycle is about 25 days, and during that time the female lays between 300 and 600 eggs. These are laid on the leaves.

The adult is a stronger flyer; in North America there is an annual migration northward. The caterpillars are known to swarm and travel large distances in search of food.

### **Impact**

Usually a minor pest of shallot in the Pacific islands, although very damaging infestations are recorded in Indonesia, where large areas of shallot and onion are grown. There have been major outbreaks of *Spodoptera exigua* on cotton and soybean in the USA.

### **Detection & inspection**

Look for the scrapings on the outside of the leaves of onions or shallots, and irregular but large holes in the leaves. Look for the caterpillars and check the number and colour of the stripes along the body.

### **Management**

#### NATURAL ENEMIES

A large number of predators and parasitoids attack the life stages of the moth, and usually keep it under control. In Indonesia, farmers are trained to collect and use nuclear polyhedrosis virus as a spray. This is used as a control measure together with handpicking the caterpillars.

#### CULTURAL CONTROL

In Indonesia, a number of cultural control measures are practised to keep the moth under control. These include:

During growth:

- Handpick caterpillars; this should be the first control measure tried.
- Remove weeds from within and around plots of onions and shallots.
- Grow shallots in a screened enclosure. The screen can be reused several times.
- Carry out mass trapping using light traps placed in the fields, if electricity is available

After harvest:

- Do not plant one crop of shallots on the same ground, year after year. Leave a break of 1-2 years. Rotations avoid the possibility that pupae in the soil hatch and the moths infest the new crop.

#### CHEMICAL CONTROL

If pesticides are necessary, use botanical (plant-derived pesticides) sprays first, as these cause less harm to natural enemies, and cost less than synthetic commercial products.

- Use neem, derris, pyrethrum or chilli. If these are used, add soap to help the chemical reach the caterpillars within the leaves.
- Alternatively, use commercial biopesticides, e.g., spinosad (the product is called Success) or Bt - *Bacillus thuringiensis* var. *kurstaki*.
- If using Bt, note the following:
  - Ensure that Bt covers the plants; caterpillars will only die if they eat the Bt.
  - Eggs are not susceptible to Bt.

- Bt should be used as soon as damage is seen.
- Small larvae are more susceptible to Bt than fully grown ones.
- Synthetic pyrethroids are likely to be effective, but will also kill natural enemies.

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Photo 1 Ooi P (Image ID 38351). Photos 2-5 *Spodoptera exigua* (Koppert Biological Systems).

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