

Potato 28-spot ladybird beetle (255)

Common Name

Potato ladybird beetle, 28-spotted ladybird beetle, eggplant ladybird beetle (see **Fact Sheet no. 58**), Philippine ladybeetle.

Scientific Name

Epilachna species. *Epilachna vigintioctopunctata*; previously, *Henosepilachna vigintioctopunctata*.

Distribution

Asia, South America (Brazil), Oceania. The ladybird beetle is recorded from Australia, Fiji, French Polynesia, New Caledonia, Niue, Samoa, Solomon Islands, Tonga, and Vanuatu. On potato, it is recorded from Fiji and Northern Mariana Islands, and is probably present elsewhere.

Hosts

Potato, and many other members of the Solanaceae family, weeds as well as crops.

Symptoms & Life Cycle

The adults are like typical ladybird beetles with wing cases of dull orange and black spots (Photo1); however, close inspection shows that the upper surface is covered in short downy hairs. This distinguishes plant-feeding ladybird beetles from their beneficial bug-feeding relatives.

Adults and larvae strip the surface layers from both sides of the leaves (Photos 2-6). The damage causes loss of water, and the leaves dry, curl and die.

The oval yellow eggs (1 mm by 0.4 mm) are laid upright in batches of 10-20 on the underside of a leaf. They hatch in about 4 days. The pale yellow-whitish larvae have long, dark-tipped branched spines on their backs (Photos 6&7); they grow to 6 mm through three moults in the next 18 days, before attaching themselves to the undersides of the leaves and developing into pupae (Photo 8). This stage lasts another 4 days.

The adults fall to the ground when disturbed, pretending to be dead. They also produce a yellow fluid that wards off predators. Spread occurs when the adults take to the wing.

Impact

A serious pest of potato that destroys the leaves and kills the plants. Infestations in Fiji appear to be particularly damaging, and can result in total crop failure. An unidentified leafminer also occurs on the damaged leaves.

Detection & inspection

Look for the distinctive grazing on one side of the leaf, often leaving the surface of the other side intact. Look for the larvae, mostly on the underside, and the adults on the top of leaves, but always check that the beetles are leaf eating, i.e., they are feeding on the leaf, and are not beneficial species feeding, for instance, on aphids (green flies).



Photo 1. Adult 28-spotted ladybird beetle, *Epilachna vigintioctopunctata*



Photo 2. Planting in Fiji that has been totally destroyed by the ladybird beetle, *Epilachna vigintioctopunctata*.



Photo 3. Severely damaged potato plants showing damage caused by the ladybird beetle, *Epilachna vigintioctopunctata*. Leaf miner damage is also apparent.



Photo 4. Top surface of Photo 1 showing the damage to the leaf caused by the 28-spot potato ladybird beetle, *Epilachna vigintioctopunctata*. Leaf miner symptoms are also present.

Management

NATURAL ENEMIES

There have been no studies of the natural enemies of *Epilachna* species in Pacific island countries. Elsewhere, species of a parasitic wasp (*Pediobius*) have been introduced, achieving successful control of *Epilachna*. There are different species of the beetles, so identification needs to be done carefully. Also, care should be taken to ensure that any *Pediobius* introduced are specific to the pest species, and not likely to attack beneficial members of the family.

RESISTANT VARIETIES

None known.

CULTURAL CONTROL

Before planting:

- Do not plant potato next to crops that are known to be alternative hosts of the ladybird beetle, other members of the Solanaceae, including weeds, and also beans.

During growth

- Handpick the larvae, and perhaps the adults. If attempted, it should be done when the beetles are first seen in the crop.
- Remove weeds in the Solanaceae family from around the crop. However, it has been suggested these might act as trap crops, so some experimentation is needed.

After harvest:

- Collect crop debris after harvest and burn it.

CHEMICAL CONTROL

If chemical control is needed, do the following:

- Ash may be effective against potato ladybird beetles. Apply to the crop as soon as the pests are seen; do not wait until the population is high. (**See Fact Sheet no. 56**).
- Alternatively, add ½ cup of wood ash and ½ cup of lime in 4 L water; leave to stand for some hours; strain; test on a few infested plants first to make adjustment to the strength before large-scale spraying.
- Use plant-derived products, such as derris, pyrethrum or chilli (with the addition of soap).
- Note, a variety of *Derris*, brought many years ago to Solomon Islands from Papua New Guinea, is effective as a spray. It contains rotenone, an insecticide, so it should be used with caution. Check if there are *Derris* species (fish poisons) in your locality that can be used.
- Alternatively, synthetic pyrethroids are likely to be effective, but will also kill natural enemies.

When using a pesticide, always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. **Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate pesticide to use should always be sought from local agricultural authorities.**



Photo 5. Two larvae of the potato ladybird beetle, *Epilachna vigintioctopunctata*, on the underside of a severely damaged leaf (top and centre near stem).



Photo 6. Damage to a nightshade weed by the 28-spot potato ladybird beetle, *Epilachna vigintioctopunctata*.



Photo 7. Larvae of 28-spot potato ladybird beetle, *Epilachna vigintioctopunctata*, on a nightshade weed.



Photo 8. Pupae of 28-spotted ladybird beetle, *Epilachna vigintioctopunctata*.

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Information from CABI (2012) *Epilachna vigintioctopunctata* (hadda beetle) Crop Protection Compendium. (<https://www.cabi.org/cpc/datasheet/21518>); and from Ladybird beetles in World. PotatoPRO. Based on Kroschel J, et al. (2020) Insect pests affecting potatoes in tropical, subtropical, and temperate regions. In: Campos H, Ortiz O (eds.), The Potato Crop. (<https://www.potatopro.com/about/ladybird-beetles>). Photo 1 Merle Shepard, Gerald R. Carner, and P.A.C. Ooi, Insects and their Natural Enemies Associated with Vegetables and Soybean in Southeast Asia, Bugwood.org

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