

## Eggplant 28-spot ladybird beetle (058)

### Common Name

28-spotted ladybird beetles

### Scientific Name

*Epilachna* (*Henosepilachna*) species. Note, 28-spotted ladybird beetles are a complex of species. Note, too, the number of spots is variable, and cannot be used to identify ladybird beetles. Waterhouse lists five species that are recorded from Oceania: *Epilachna vigintioctopunctata pardalis*; *Epilachna vigintiseypunctata*; *Epilachna vigintiseypunctata doryca*; *Epilachna cucurbitae*; and *Epilachna guttatopustulata*.

### Distribution

Asia, South America (Brazil), Oceania. The five species of ladybird beetles are recorded as follows:

***Epilachna vigintioctopunctata pardalis*** is recorded from Australia, Fiji, French Polynesia, New Caledonia, Niue, Samoa, Solomon Islands, Tonga, and Vanuatu.

***Epilachna vigintiseypunctata*** is recorded from Australia.

***Epilachna vigintiseypunctata doryca*** is recorded from Australia, Papua New Guinea, and Solomon Islands.

***Epilachna cucurbitae*** is recorded from Australia, American Samoa, Papua New Guinea, New Caledonia, Samoa, Solomon Islands, and Tonga; and

***Epilachna guttatopustulata*** is recorded from Australia, Papua New Guinea, Solomon Islands, and Vanuatu.

### Hosts

*Epilachna vigintioctopunctata pardalis* feeds on Solonaceae; *Epilachna vigintiseypunctata* on Solanaceae; *Epilachna vigintiseypunctata doryca* on Solanaceae; *Epilachna cucurbitae* on Curcubitaceae; and *Epilachna guttatopustulata* is destructive on potato.

Another species, *Epilachna signatipennis*, has been identified from yard long beans, and most likely can be found on other legumes. All have similar life cycles.

### Symptoms & Life Cycle

The adults and larvae eat the surface of the leaves (Photo 1); the larvae graze the under surface, leaving the upper surface intact (Photo 2), whereas the adults feed on both sides of the leaf, often making holes as they chew (Photos 3-7). Attacks cause death of seedlings.

The adults are like typical ladybird beetles with wing cases of dull orange and black spots; 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.

The oval yellow eggs (1 mm x 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; 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. 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.

### Impact

Seedlings may be killed by the attack, and growth and yield of more mature plants reduced. *Epilachna* species are serious pests of potato in Fiji, and cucurbits are attacked as well. They are major pests in French Polynesia, New Caledonia, and Samoa, too, with *Epilachna vigintioctopunctata pardalis* and *Epilachna cucurbitae* the most likely cause.

Many Pacific island countries have rate 28-spotted ladybirds as among their worst pests, of great importance locally.



Photo 1. Adults and larvae of 28-spotted ladybird beetles, *Epilachna* species.



Photo 2. Larvae of ladybird beetles, possibly, *Epilachna signatipennis*, stripping the leaf surface of yard long bean.



Photo 3. Grazing and small holes in eggplant leaves caused by the 28-spotted ladybird beetle, *Epilachna* species.



Photo 4. Holes on leaves of eggplant made by adult eggplant or 28-spotted ladybird beetle, *Epilachna* species.

## 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). Look at the upper surface to see the short downy hairs, which distinguishes leaf-eating from beneficial ladybird beetles.

Note, the taxonomy of these beetles has been confused in the past, and specimens should be examined by experts to obtain correct identification. Note, too that *Epilachna guttatopustulata* on potato has different colours from the others: few spots - orange-red on top, and yellow on the sides - on a dark background. The others have many black spots on a dull yellow background.

## Management

### NATURAL ENEMIES

The parasitic wasp (*Pediobius foceolatus*) was introduced into Fiji from India in 1971, but it is not known whether it established. Documented success was achieved with this wasp when introduced into Guam to control *Epilachna vigintisepunctata philippinensis*. However, as there are different species of the beetles, 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 ladybird beetle family.

### RESISTANT VARIETIES

None known, although comparative resistance of varieties of eggplant is known in India.

### CULTURAL CONTROL

Before planting:

- Do not plant eggplants next to those that are infested with ladybird beetles.

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 (especially *Solanum nigrum*) 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 eggplant 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. Check that the mixture does not "burn" the leaves.
- 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. There may be varieties of *Derris* (fish poisons) in your country that can be tried (**see Fact Sheet no. 56**).
- Alternatively, synthetic pyrethroids are likely to be effective, but will also kill natural enemies.

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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. Larvae of eggplant or 28-spotted ladybird beetles, *Epilachna*

species, grazing on eggplant, whereas the adults chew through, making large holes.



Photo 6. 28-spotted ladybird beetle, *Epilachna* species, on potato.

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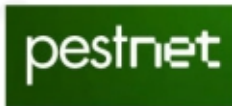
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Information from Waterhouse DF, Norris KR (1987) *Epilachna* species *Biological Control Pacific Prospects*. Inkata Press. Assistance; and Wilco Liebrechts, Eco-Consult Pacific, Fiji (pers. comm); and from Epilachna (2007) CSIRO, ABRIS. (<https://www.ento.csiro.au/biology/ladybirds/lucid/key/LucidKey/Media/Html/epilachna1.htm>). Photo 1 Gerald McCormack, Cook Islands Biodiversity & Natural Heritage. (<http://cookislands.bishopmuseum.org/>). Photos 2&4 Graham Teakle, Canberra.

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