

## Sweetpotato West Indian weevil (119)

### Common Name

West Indian sweetpotato weevil

### Scientific Name

*Euscepes batatae*; previously *Euscepes postfasciatus*

### Distribution

Asia (Japan), North (California, Hawaii) and South America, Caribbean, South America, Europe (Portugal), Oceania. It is recorded from Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, New Caledonia, New Zealand, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Tonga, Vanuatu, and Wallis & Futuna.

### Hosts

Sweetpotato, and wild relatives in the genus *Ipomoea*.

### Symptoms & Life Cycle

The larvae or grubs do the most damage, and this is similar to that caused by the sweetpotato weevil, *Cylas formicarius*. The larvae tunnel through the base of the stem (crown) and through the storage roots. In the storage roots, tunnelling produces chemicals called terpenes, which give the flesh an unpleasant taste. The adults also feed on the shoots and young stems, but the damage is small compared to that on storage roots and crown.

The eggs are round, yellowish, laid singly in pits in the stems (always at the nodes, the junction of stems and petioles) or in storage roots. After laying the eggs the pits are sealed with a faecal plug. Storage roots are preferred to stems. The eggs hatch in about 10 days, and the legless grubs moult four times over the next 20-30 days, reaching a length of about 8 mm. The pupae are white, about 5 mm long. After another 10 days the adults emerge. They leave the storage roots and stems by chewing exit holes. Adults are 3.5-4 mm long and 1.5 mm wide, reddish brown to greyish black, covered with stiff hairs, with two white patches on the wing cases (Photos 1&2); they are thought to live for about 6 months.

There is no evidence that the weevils spread by flying; however, this needs to be checked. It is more likely that they crawl short distances from weedy borders, and are spread longer distances in cuttings and in storage roots used for planting. Hot and dry weather favours weevil development. At 27-30°C, the life cycle takes about 30 days.

### Impact

There is little information on the damage caused by this weevil, compared to that done by *Cylas formicarius* (**see Fact Sheet no. 29**). However, in Papua New Guinea it appears to be more common in storage roots than *Cylas*, in both highland and lowlands areas. As *Euscepes* is common in other Pacific island countries, the damage done by this weevil needs to be verified to find out which is the more important.

### Detection & inspection

Look at the base of the vine (called the crown) for small holes and damage to the stem. Break the stem to look for tunnels, rots and larvae. Dig up a storage root and look for damage to the skin, and feeding tunnels of the larvae inside. Detection of early infestation is not easy as adults are most active at night, and they pretend to be dead when disturbed.

Use the guide prepared by the Australian Museum to distinguish between the larvae and pupae of *Cylas* and *Euscepes*<sup>1</sup>.



Photo 1. Adult West Indian sweetpotato weevil, *Euscepes postfasciatus*, showing distinctive white patches on the wing case.



Photo 2. Adult West Indian sweetpotato weevil, *Euscepes postfasciatus*, showing typical weevil snout, and part of the distinctive white patch on the wing case. The body is covered in short stiff hairs.

## Management

### QUARANTINE

The unrestricted movement of plant propagating material (cuttings, shoots and storage roots) has the potential of further spreading the weevil, and should be done with caution. The FAO/IBPGR *Technical Guidelines for the Safe Movement of Sweet Potato Germplasm* (<http://www.biodiversityinternational.org/e-library/publications/detail/sweet-potato/>) should be followed. Note, the weevil has not been recorded from Solomon Islands.

### NATURAL ENEMIES

Little is known about natural enemies. Infections from the fungus *Beauveria* sp. are reported from Peru and Japan. However, the weevil causes greatest damage during dry weather, so strains of *Beauveria* are needed that persist and are pathogenic during such times. In Cuba, nests of ants (e.g., *Pheidole*, the big-headed ant) are put in gardens in rolls of banana leaves to control weevils.

### CULTURAL CONTROL

Cultural control methods offer the best chance of reducing populations of the weevil to acceptable levels. Hygiene measures and the use of cuttings free from adults and eggs are two of the most important cultural control strategies:

Before planting:

- Choose short-season varieties, i.e., those that produce a crop early. Note that PT (pathogen-tested) varieties without virus infections are likely to give early and high yields.
- Always choose tip cuttings for planting, 25-30 cm long, taken from young shoots.
- Use varieties which set their roots deep in the soil, and/or plant vines deeply.

During growth:

- Remove alternate hosts, i.e., wild *Ipomoea* species, from around the field.
- Hill-up, i.e., cover exposed storage roots and cracks with soil; it is important to do this. Remember, weevils do not burrow; they reach storage roots through cracks in the soil.
- Ideally, harvest all the storage roots at one time.

After harvest:

- Remove and destroy infested vines and storage roots immediately after harvest.
- Do not plant sweetpotato on the same land continuously; rotate with other crops leaving a gap of at least 3-4 years between crop of sweetpotato on the same land.

### RESISTANT VARIETIES

None have been reported, although germplasm collections, such as that at the International Potato Center (CIP), Peru, have been screened for resistance.

### CHEMICAL CONTROL

- *Before planting:* Treat vine cuttings with insecticide (e.g., bifenthrin) to kill weevils and prevent infestation of new plantings. Inspect the crop regularly, at least once a week: check the base of the vines, looking for damage and holes.
- *After planting:*
  - Spray with insecticide (e.g., bifenthrin or fipronil) when numbers reach a level that is known to result in lower yields. For instance, in Japan, plants are sprayed if 5% of stems are damaged by 75 days. Experience tells that exceeding this level of damage will result in lower yields.
  - Alternatively, spray routinely with bifenthrin or fipronil every 3-4 weeks.

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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.*

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Information from CAB International (2014) *Euscepes postfasciatus* (West Indian sweet potato weevil). Invasive Species Compendium (<https://www.cabi.org/isc/datasheet/23541>); and <sup>1</sup>Reid C (2010) Identification of sweetpotato weevil species in the west Pacific. Australian Museum, Sydney, and Brookes D, et al. (2019) Origins, divergence, and contrasting invasion history of the sweet potato weevil pests *Cylas formicarius* (Coleoptera: Brentidae) and *Euscepes batatae* (Coleoptera: curculionidae) in the Asia-Pacific. *Journal of Economic Entomology* XXX(X): 1-9.

[https://www.researchgate.net/publication/334747037\\_Origins\\_Divergence\\_and\\_Contrasting\\_Invasion\\_History\\_of\\_the\\_Sweet\\_Potato\\_Weevil\\_Pests\\_Cylas\\_formicarius\\_Coleoptera\\_Brentidae\\_and\\_Euscepes\\_batatae\\_Coleoptera\\_Curculionidae\\_in\\_the\\_Asia-Pacific](https://www.researchgate.net/publication/334747037_Origins_Divergence_and_Contrasting_Invasion_History_of_the_Sweet_Potato_Weevil_Pests_Cylas_formicarius_Coleoptera_Brentidae_and_Euscepes_batatae_Coleoptera_Curculionidae_in_the_Asia-Pacific)); and from O'Sullivan J et al. (undated) Sweetpotato DiagNotes: A diagnostic key and information tool for sweetpotato problems. (<https://keys.lucidcentral.org/keys/sweetpotato/key/Sweetpotato%20DiagNotes/Media/Html/FrontPage/FrontPage.htm>); Photos T&2 Gerald McCormack, Cook Islands Biodiversity & Natural Heritage. (<http://cookislands.bishopmuseum.org/>).

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