



Pacific Pests, Pathogens & Weeds - Fact Sheets

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Bele (Abelmoschus) leafminer (256)



Photo 1. Mines and adjacent damage along veins covering most of the leaves of bele caused by the bele leaf miner, *Acrocercops* sp.



Photo 2. Extensive damage caused by the bele leaf miner, *Acrocercops* sp.



Photo 3. Adult bele leafminers, *Acrocercops patellata* bred from bele, *Abelmoschus manihot*.



Photo 4. Adult bele leafminers, *Acrocercops patellata*, and pupa derived from mines on Malay apple, *Syzygium malaccense*.

Common Name

There is no common name. Here it is called *bele* leafminer.

Scientific Name

Acrocercops panall, a member of the Gracillariidae family. *Acrocercops cathedrae* is recorded from Papua New Guinea¹.

Distribution

World distribution unknown. *Acrocercops* species have been recorded from Australia, Fiji and Samoa.

Hosts

Bele. Swaine (1971)² records the moth on okra, and other members of the Hibiscus family, including the cultivated *Hibiscus rosa-sinensis* and the wild *Hibiscus tiliaceus* in Fiji. It has also been bred from Malay apple, *Syzygium malaccense*.

Symptoms & Life Cycle

The larvae cause extensive mining over large areas of the leaf (Photo 1&2). The mines often run alongside the veins at first. The damaged areas become paper-thin, bronzed and shiny.

The adult moth is about 4 mm long; wings are brown with three white bands across them with black borders. The head is covered with silver scales. The young larvae are yellow; the mature larvae are red and 5 mm long. Pupation occurs in white cocoons in folds of leaves

on weeds (broadleaved or grass) beneath the *bele* plants.

Impact

An important pest of *bele* and okra that is widely found in Fiji. Leaves that are mined are unlikely to be plucked for household use or sale in the market.

Detection & inspection

Look for the brown mines, most obvious on the topside of the leaves, often alongside veins, bordered by irregular paper-thin silvery areas, turning bronzed with age. Look for the damaged patches throughout the leaf rendering the leaves useless for household or market use.

Management

CULTURAL CONTROL

During growth:

- Squash the mines between finger and thumb to kill the larvae if the number of mines is small. Do this as soon as the mines are seen.
- If the number of mines is too large to squash, remove the infested leaves with mines, as soon as they are seen, and burn them.
- Do not plant new gardens next to those with leafminer damage.

After harvest:

- When plants come to the end of their usefulness, pull them out and burn them. Do not leave the plants, otherwise the leafminers will continue to breed on the few remaining leaves and infect nearby healthy plants.

RESISTANT VARIETIES

Differences between varieties has not been reported but it is worth checking if the narrow leaf varieties suffer less damage than those with broad leaves.

CHEMICAL CONTROL

Chemical control is difficult because the larvae are protected inside their mines, and pupae develop on weeds, not on *bele*. Also, insecticides are likely to destroy natural enemies, and this can lead to outbreaks of other insects, and also mites.

- However, if pesticides are required, use white oil (made from vegetable oils), soap solution, or horticultural oil (made from petroleum) (see **Fact Sheet no. 56**).
 - White oil:
 - 3 tablespoons (1/3 cup) cooking oil in 4 litres water.
 - ½ teaspoon detergent soap.
 - Shake well and use
 - Soap:
 - Use soap (pure soap, not detergent).
 - 5 tablespoons of soap in 4 litres water, **OR**
 - 2 tablespoons of dish washing liquid in 4 litres water.
- Commercial horticultural oil can also be used. White oil, soap and horticultural oil sprays work by blocking the breathing holes of insects causing suffocation and death. Spray the undersides of leaves; the oils must contact the insects. A second application of soap or oils may be necessary after 3-4 weeks. It is important to test whether soap, white oil or horticultural oil damage leaves by spraying a single plant before spraying the rest.

Alternatively, use:

- Plant-derived products (PDPs), such as neem, derris, pyrethrum and chilli (with the addition of soap). PDPs are useful here as they are usually broken down by sunlight within 3 days of application.

- 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**).
- Synthetic pyrethroids are likely to be effective against leafminers, as are systemic products such as acephate or imidacloprid.
- If any of these synthetic pesticides are used, it is important to follow the instructions on the label, especially the with-holding period; this is the number of days between last the application of the spray and the harvest of the leaves.

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¹Preston SR (1998) Aibika/Bele. *Abelmoschus manihot* (L.) Medik. Promoting the conservation and use of underutilized and neglected crops. 24. Institute of Plant Genetics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute, Rome; and ²Swaine G (1971) *Agricultural Zoology in Fiji*. Her Majesty's Stationery Office. London, HMSO.

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