Tobacco flea beetle (355)

Photo 1. Adult tobacco flea beetle, *Epitrix hirtipennis*. Note the long antennae.


Photo 5. Severe damage on eggplant by the tobacco flea beetle, *Epitrix hirtipennis*.

Photo 6. Severe damage on eggplant by the tobacco flea beetle, *Epitrix hirtipennis*.
Common Name
Tobacco flea beetle

Scientific Name
*Epitrix hirtipennis*

Distribution
Restricted. North, South (Guyana) and Central America, the Caribbean, Europe, Oceania. It is present in Fiji and Guam.

Hosts
Eggplant, and many others in the Solanaceae or nightshade family (capsicum, chilli, potato, tobacco, and tomato). Also, weeds, in the same family, e.g., *Physalis angulata*.

Symptoms & Life Cycle
Both the larvae and adults (Photos 1&2) damage plants: the adults feed on both sides of the leaves, chewing small, irregularly-shaped, holes in the leaves resulting in a 'shot hole' appearance (Photos 3-6&8-10). Usually, seedlings are most damaged. The larvae feed on roots.

Eggs are laid at the base of the stem of hosts. The larvae are slender, white with a brownish head, less than 5 mm long. They remain underground feeding on the small roots and root hairs.

Adults are hard-shelled, brown with black markings, about 1.5-2 mm long, with long, 12-segmented antennae. Wing covers have rows of fine but distinct punctures. The hind legs of adults are relatively large, and they jump like fleas.

Spread occurs on the wing; as flea beetles are strong fliers. Survival between crops occurs on weeds, and in the stalks of tobacco if they are left in the field after cutting off the leaves.

Impact
Large populations can kill or stunt seedlings, but economic damage of mature plants is rare for this species and other *Epitrix* flea beetles. Large numbers are more frequent (in Fiji at least) during periods of prolonged drought (Photo 7).

Although species of *Epitrix* flea beetles have been reported to feed on potato tubers, making tunnels in the flesh, in the US and Portugal, no damage of economic significance has been reported for *Epitrix hirtipennis*. However, analysis of the damage caused in Fiji, especially in times of drought may change this.

**Detection & inspection**

Look for the pits and tiny holes, many less than 1 mm, in leaves of seedlings and mature plants. Look for beetles, shiny brown and black in large numbers, especially during droughts.

**Management**

**CULTURAL METHODS**

Before planting:

- Remove weeds, especially those in the Solanaceae (potato or nightshade) family.
- Do not plant new crops next to those infested by the flea beetle.
- If seedlings are damaged in the field, use transplants produced in a nursery.
- Use mulches; these may interfere with activity of the stages in the soil.

During growth:

- Continue to remove weeds.
- Check for flea beetles twice weekly, especially after planting the transplants.
- Use protective covers over seedlings (e.g., floating row covers, or synthetic materials supported by hoops).

After harvest:

- Collect crop debris and burn or bury it.
- Do not plant consecutive susceptible crops; rotate with maize, brassicas or legumes of at least 2 years.

**CHEMICAL CONTROL**

If pesticides are necessary, use botanical (plant-derived pesticides) sprays first, as these may 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 improve wetting the flea hoppers and covering them with sprays.
- Alternatively, use commercial biopesticides, e.g., spinosad (the product is called Success), or abamectin, derived from different bacteria. Spinosad has been tested against the eggplant flea beetle, *Epithix fuscula* in the US and found effective.
- On tobacco, several foliar insecticides have been recommended for the control of flea beetles. These have included synthetic pyrethroids (e.g. bifenthrin, cypermethrin, deltamethrin), carbamates, and neonicotinoids. On potato, in Europe, the neonicotinoid acetamiprid is used against a flea beetle damaging potato tubers (renewed until 2033).

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