



Flea Beetles Attacking Eggplant in Virginia

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Classification: Order: Coleoptera, Family: Chrysomelidae, Subfamily: Galerucinae, Genus: *Epitrix*

Identification: Small beetles ranging from 1.8-2.5mm in length. All flea beetles exhibit an enlarged hind femur that enables their characteristic flea-like jump (Fig. 1A). In Virginia, two species are most common, the eggplant flea beetle (EFB), *Epitrix fuscula* Crotch, which has a dull black oval shaped body covered in small indents, and tobacco flea beetle (TFB), *Epitrix hirtipennis* Melshimer, which has a yellowish-brown body that features a brown band across the hard outer wing cover (Fig. 1).

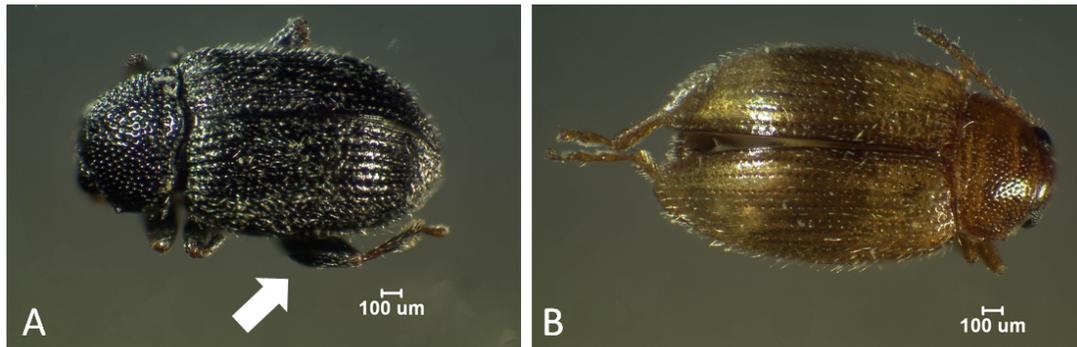


Fig. 1 A) Eggplant flea beetle (*Epitrix fuscula*), and B) tobacco flea beetle (*Epitrix hirtipennis*). The arrow shows the enlarged hind femur.

Life History: EFB has at least two generations per year in Virginia, and can complete its life cycle from egg to adult in 30–45 days (Capinera 2001). TFB has three to four generations per year in Virginia, and requires only 23-30 days to complete its life cycle (Capinera 2001). Both species lay their eggs at the base of solanaceous plants, typically the same plants the adults are feeding on. The eggs are laid in the spring as soon as the adults emerge from overwintering and are laid throughout the season. For both EFB and TFB, eggs require 6 to 8 days to hatch (Capinera 2001). The larva of both species burrow into the ground and feed on root hairs. EFB spends 20 days as a larva, and TFB spends 16 to 20 days in this stage (Capinera 2001). The pupal stage lasts 1-4 days for both. The adults emerge from the soil after pupation and seek host plants. Both flea beetles overwinter as adults in leaf litter, soil, or debris near their host plants. During the season, both beetles are often found feeding together on the same host plants.

Hosts: EFB feeds primarily on eggplant and potato, though it can likely feed on other solanaceous plants. TFB feeds on tobacco and many other plants in the nightshade family. Both species can feed on common solanaceous weeds such as nettle, nightshade and jimsonweed.

Distribution: EFB is widely distributed across the U.S., except the northern states (Capinera 2001). TFB is common in the southeast U.S. and ranges as far north as Maryland and Michigan (Capinera 2001). These beetles can be found all over Virginia, but typically do not thrive in sandy soils.

Description of Damage: Both flea beetles injure eggplant leaves by chewing small shot holes in them (Fig 2), which reduces the photosynthetic capability of the plant, which, in turn, can reduce the size, weight, and overall yield. This injury can also stunt the growth of the plant or even kill seedlings.

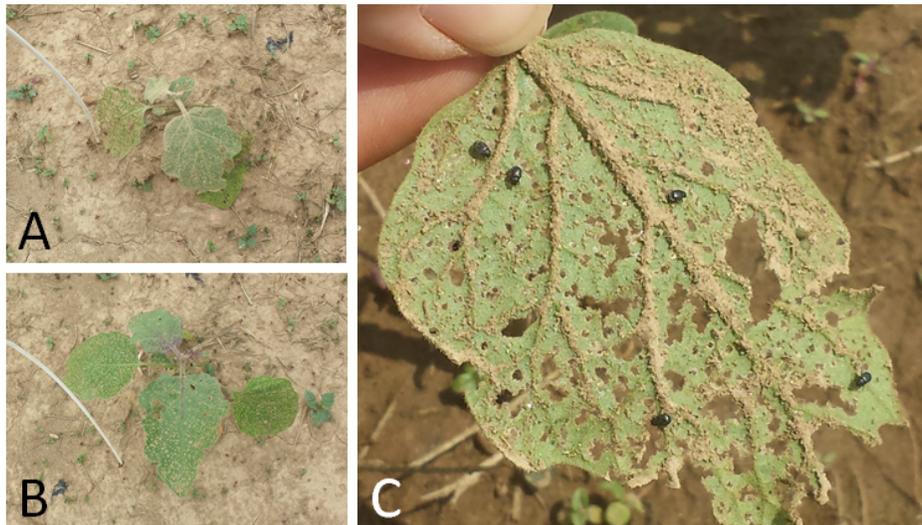


Fig. 2 Examples of flea beetle damage to eggplant leaves.

Control: *Chemical control:* The primary control method for flea beetles involves using insecticides. Systemic neonicotinoids, such as Venom (dinotefuran) or Admire Pro (imidacloprid) can be applied to transplants before or at-planting (Mason and Kuhar 2015). These insecticides can protect the plant up to 5 wk during the early vulnerable seedling stages, when flea beetles cause most of their damage. Also, foliar sprays of insecticide such as pyrethroids also can control these beetles. They should be applied only if beetle densities are high.

Non-chemical control: Early planting may help avoid peak beetle populations, which emerge in the end of May and early June. Larger stronger transplants can outgrow much of the feeding injury period that comes toward the end of June. Polyester row covers can be used to protect smaller plants, but should be removed over a few weeks in order to not impact plant growth. There is no effective biological control for flea beetles.

References

Capinera, J. 200). *Handbook of vegetable pests*. Elsevier.

James A.C. Mason, Thomas P. Kuhar, 2016. Evaluation of Insecticides for the Control of Flea Beetles in Eggplant. *Arthropod Management Tests* (2016) 41 (1): tsw053. doi: 10.1093/amt/tsw053