

FLEA BEETLES IN HOME GARDENS

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Flea beetles are common pests on many vegetable crops. You can also find them on flowers, and occasionally on ornamental shrubs and trees. The most common flea beetles in Minnesota gardens include the crucifer flea beetle, *Phyllotreta cruciferae*, striped flea beetle, *P. striolata*, western black flea beetle, *P. pusilla*, potato flea beetle, *Epitrix cucumeris*, and the spinach flea beetle, *Disonycha xanthomelas*. Most flea beetles feed on a fairly narrow range of plants, although the palestriped flea beetle, *Systena blanda*, has a wide host range which includes squash, beans, corn, sunflowers, lettuce, potatoes and many weeds. Flea beetles are a type of leaf beetle in the family Chrysomelidae.

Identification

Most adult flea beetles are very small ranging in size from 1/16–1/8th inch long (figs 1, 2 3). The spinach flea beetle, an exception to this, is 1/4 inch long. They vary in color from black, bronze, bluish, or brown to metallic gray, while some species have stripes. All flea beetles have large back legs which they use for jumping, especially when disturbed.

Life Cycle

Flea beetles overwinter as adults in leaf litter, hedgerows, windbreaks, and wooded areas. In early spring, the adults become active and, depending on the species, females will lay single or clusters of eggs in small holes in roots, soil, or leaves of many different plants. In home gardens, they are common on crucifers, including radishes, broccoli, cabbage, and turnips, eggplant, peppers, tomatoes, potatoes, spinach, and melons. Following egg hatch, small white larvae feed on the roots of the newly planted seedlings, usually causing little to no damage to the plants (with the exception of potato flea beetle larvae). Larvae then pupate in the ground. There are usually one to two generations per year.

Damage

Adult flea beetles cause the most damage by feeding on foliage, cotyledons, and stems. As flea beetles feed, they create shallow pits and small rounded, irregular, holes



Figure 1. Crucifer flea beetle, closeup



Figure 2. Potato flea beetle on potato

(usually < 1/8th inch) in the leaves, resulting in a shot hole appearance (Figs. 1, 2, 3, 4). The damage is unique and similar for nearly all species. A heavy flea beetle attack can result in wilted or stunted plants. Transplants can generally withstand more damage than plants started from seed, although both can be severely injured if flea beetle numbers are high.

Management

Because flea beetles are most damaging in spring, it is important to begin monitoring your garden for their activity as soon as seedlings have emerged. You can monitor for them using yellow sticky traps, which you can purchase in



Figure 3. Crucifer flea beetle on broccoli



Figure 4. Crucifer flea beetle damage on turnips

garden centers. Sticky traps will tell you if flea beetles are present in your garden.

In addition to sticky cards, it is important to scout your plants for flea beetles and their damage. When inspecting for flea beetles, be careful not to disturb the leaves so you can get an accurate count. Seedlings do not tolerate many flea beetles with a threshold of only one to five flea beetles/plant. Cole crops, such as cabbage, are less tolerant of flea beetle damage than other crops. Treat if your seedlings reach this threshold to prevent significant damage to your plants.

Also be prepared to protect your crops if you find 10% - 30% defoliation on seedlings or transplants. Again, seedlings, cole crops and plants grown for edible greens are the least tolerant to flea beetle feeding.

Once crops reach the 4- or 5-leaf stage, the plants are usually well established and can easily tolerate feeding damage. Also, the number of adult flea beetles often begins to decline throughout the summer. It is generally not necessary to treat flea beetles during summer, especially at the end of the season. It is possible that cole crops and other plants grown for greens can be damaged later in the summer. Continue to monitor these plants throughout the season and treat if you reach damaging levels.

Cultural

- Proper weed control in and around planting sites will deprive flea beetle larvae of food sources needed for

successful development, and may help to lessen the flea beetle population.

- Remove old crop debris and other surface trash to deprive overwintering beetles of protective cover.
- If possible, plant crops as late as possible, when warmer temperatures will help plants outgrow flea beetle feeding damage.

Physical

- Floating row covers or other screening can exclude the beetles during seedling establishment. However, remove row covers before the flowering stage to allow pollinating insects access to the plants.
- Planting a trap crop may be successful in some situations. Plant a highly favored crop (e.g., radish) before you plant your main crop, in an effort to attract flea beetles away from the main crop. Adult flea beetles will be attracted to the tallest, earliest crops available. Once beetles are actively feeding in the trap crop, they can be sprayed with a labeled insecticide, or simply harvested.

Biological

Microctonus vittatae is a native braconid wasp found more commonly in the eastern half of the U.S. *M. vittatae* not only kills the adult flea beetle as the wasp emerges, but the larval wasp sterilizes the female flea beetle while developing in her body.

Insecticidal

There are many insecticides labeled for treating flea beetles. Below are common names of active ingredients that are commonly available. Most flea beetle treatments are applied as foliar sprays to protect the foliage against the feeding of the adult beetle.

| Common name | Residual* | Notes |
|----------------------|-------------|---------|
| pyrethrins/pyrethrum | short | contact |
| carbaryl | medium | contact |
| malathion | medium | contact |
| spinosad | medium | contact |
| permethrin | medium-long | contact |
| bifenthrin | medium-long | contact |
| esfenvalerate | long | contact |

* Short residual persists less than one day. Medium residual can persist as long as 10–14 days. Long residual can persist as long as four weeks. However, length of residual activity may be shortened by various weather conditions, such as rainfall.

CAUTION: Read all insecticide labels very carefully before buying and again before using to ensure proper application. It is especially important that the label specify recommended use on the specific vegetable you wish to treat, or generally on vegetables. Also be sure to observe the number of days between pesticide application and when you can harvest your crop. The label is the final authority on how you may legally use any pesticide.

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