

Cucumber Beetles in Missouri: Life Cycle, Monitoring and Management

Introduction

Striped and spotted cucumber beetles are two insect pests that damage cucurbit crops. Cucurbits include cucumbers, pumpkins, squash, watermelons and muskmelons. Without the right management, adult beetles can spread bacterial wilt, defoliate (remove the leaves of) plants and cause blemishes to fruits. This fact sheet discusses the cucumber beetle's life cycle. It also provides ways to monitor and use integrated pest management (IPM) to control these pests.

1. Life Cycle

Striped cucumber beetles overwinter as adults. They remain on the edges of fields or in woods under litter or other plant debris. In mid-Missouri, beetles begin to emerge from overwintering in early or mid-May. Then, they start to feed on wild cucurbits and plant blossoms. As soon as cucurbit plants are transplanted, adults begin to feed on the young plants. Female striped cucumber beetles lay eggs into the soil. Upon hatching, the larvae (young) feed on the roots of cucurbit plants. There are usually two to three generations of striped cucumber beetles per season.



Striped and spotted cucumber beetles are very damaging pests of cucurbit crops (such as cucumber, pumpkins, squash, watermelons, and muskmelons). Managing these pests in gardens and small farms can be challenging.

The spotted cucumber beetle is also called the southern corn rootworm. In Missouri, adults appear in cucurbit fields from mid-June to early-July. In the past it was thought that spotted beetles cannot overwinter in northern areas and that they migrate from southern states each year. However, in mild winters, spotted beetles have been active in northern areas as early as February. Adult spotted cucumber beetles are very attracted to cucurbit for feeding purposes. However, they do not reproduce in cucurbits.

2. Types of Damage Caused by Cucumber Beetles

Cucumber beetles can cause major damage to plants in many ways. Adults of both spotted and striped cucumber beetles carry a type of bacteria. It causes bacterial wilt in susceptible cucurbits, such as cantaloupe and cucumber. Zucchini, squash and pumpkin may also be infected when there are large numbers of beetles. Beetles retain the bacteria in their gut over the winter. The bacteria spreads when beetles feed and deposit waste on the plants. The only way to prevent the disease is by controlling the beetles before they transmit the bacteria. By the time the symptoms of bacterial wilt appear on plants, it is too late.

Adult beetles can also defoliate plants and cause cosmetic harm to fruits by feeding on the rind. Larvae of the striped cucumber beetle feed on the roots of cucurbit plants. If there are many larvae, they can also damage the stems. Feeding by larvae and adults also exposes plant leaves, roots and stems to microorganisms (living things that can only be seen with a microscope) that can cause infections.

3. Monitoring and Management Options

Monitoring: Yellow, sticky cards can be used to detect the presence of cucumber beetles. However, these cards seem to be better at monitoring striped cucumber beetles than spotted ones.



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Thus, scouting the fields regularly (two to three times per week when plants are small; then, weekly) is advised. Spray insecticides only when beetle numbers reach the economic threshold. This is defined as one beetle per plant for direct count for muskmelon and cucumber. For zucchini, squash or watermelon, the limit is five beetles per plant. Or, for the yellow sticky card method, the limit is 10 beetles per trap per day.

Cultural control: Several activities can be implemented to reduce pest numbers in the cash crop. Most of the time, cultural control is used as a preventative measure. Field sanitation means removing diseased plants throughout the season and discarding plants and unharvested or unmarketable fruit at the end of the season. This will reduce both beetle numbers and the risk of plants becoming infected with bacterial wilt. Consider using black plastic mulch to raise the soil temperature. Warmer soil helps the transplanted cucurbits to grow. Row covers that keep out cucumber beetles are also useful; however, remember that plants need pollinators to produce good yields.

- **Trap cropping:** Trap cropping means planting very attractive plants at the edge of the garden or field. ‘Blue Hubbard’ squash, a trap crop, pulls cucumber beetles away from the cash crop. Beetles on trap crop plants can be killed more easily with insecticides or by other means. The key is to transplant two-week-old ‘Blue Hubbard’ squash seedlings to the field perimeter or corners when you sow the seeds of your cucurbit cash crop. If you grow your cash crop from transplants, then you will need to transplant the ‘Blue Hubbard’ squash seedlings two weeks before your cash crop.

*Summer squash plant with a bacterial wilt infection caused by *Erwinia tracheiphila* in the field. Bacterial wilt is transmitted by striped and spotted cucumber beetles. Once plants are infected, they cannot recover. The best way to control this disease is by controlling the insect vectors.*



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Behavioral control: The behavior of the insect pest can be manipulated by using traps and lures to bring the pest to specific locations, away from the crop.

Mass trapping: The IPM Program recently developed a simple, mass trapping system. It has proven to be a useful IPM strategy to control cucumber beetles. When set up in a cucurbit field, both striped and spotted cucumber beetles are drawn to the traps and away from the cash crop. When they enter the trap, the beetles are killed by eating a bait laced with insecticide.

Chemical control: Applying a soil insecticide before or during transplant will result in fewer cucumber beetles on plants. This leads to fewer cases of bacterial wilt. Foliar (leaf) insecticides will also be needed later, even if a soil insecticide is used. For a list of insecticides labeled for use on cucumber beetles in cucurbits, you can check the Midwest Vegetable Production Guide for Commercial Growers 2017, available at <https://ag.purdue.edu/btny/midwest-vegetable-guide/Pages/default.aspx> ●

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