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CUCUMBER BEETLES (*Acalymma vittatum* and *Diabrotica undecimpunctata howardi*)

The striped (*Acalymma vittatum*) and spotted (*Diabrotica undecimpunctata howardi*) cucumber beetles are pests of squash, cucumbers, and melons. The adult beetles feed on leaves and may transmit a bacterial wilt disease. The larvae feed at the base of the stem and can cause plants to wilt due to damage to the stem and roots.



Fig. 1: Spotted cucumber beetle

These two species feed on many different crops in the cucurbit family, including cucumber, cantaloupe, summer and winter squashes, gourd, pumpkin, and watermelon. Striped cucumber beetles occasionally feed on other crops such as pea, bean, corn, and in a wide variety of flowers. Spotted cucumber beetles are commonly found on a wider host range, feeding on pea, corn, bean, potato, beet, tomato, eggplant, and cabbage. The adult beetles are usually out of their

overwintering sites, active and ready by the time their preferred host squashes, cucumbers and melons are available in June. They often cause severe damage to newly germinated seedlings as they emerge from the soil. The adults can be seen feeding on foliage, stems, fruit, and especially blossoms of these plants all season long. They lay eggs at the base of host plants, and the larvae feed on the roots and tunnel in stems. The adults spend the winter in leaf litter and hedgerows.



Fig. 2: Striped cucumber beetle

Description

Adults: The adult beetles of both species are about 1/4 inch long and 1/10 inch wide. The spotted cucumber beetle is pale green with a black head and legs, and has 12 black dots on its back, arranged in three rows (Fig. 1). The striped cucumber beetle has a black head and

abdomen, and a yellow back with three long black stripes (Fig. 2).

Larvae: Yellowish-white, wrinkled grubs with brown head and three pairs of brown legs. Up to 1/3 inch long for striped cucumber beetles, up to 2/3 inch long for spotted cucumber beetles.



Fig. 3: Beetles attacking pumpkin flower

Damage: In addition to feeding on leaves, stems, flowers, and fruits (Fig. 3), the adult cucumber beetles also transmit bacterial wilt disease and mosaic virus. The larvae feed on roots and at the base at the stem, and often do severe damage to cucumber plants, causing them to wilt.

Control Methods

Natural: Varieties of squash, cucumbers, and melons vary in their resistance to cucumber beetles. Among squashes, zucchini and caserta types are generally preferred to pumpkins and delicata, acorn, scallop, and yellow straight-neck types of squash. Stono cucumber has also been reported to be resistant to both species. Ashley, Chipper, and Gemini cucumbers are notable for having resistance to spotted cucumber beetles both as seedlings and as mature plants. The melons Super Star, Rising Star, Pulsar, Passport, and Galia are less preferred by the striped cucumber beetles than other varieties of muskmelon.

Cucumber beetles are stimulated to feed by the chemical cucurbitacin, the chemical which can make cucumbers bitter or indigestible to some people. Thus, cucumber varieties advertised as "non-bitter" or "burpless" are not as attractive to the beetles.

Some varieties are not resistant to the beetles, but are resistant to the bacterial wilt disease transmitted by the beetles. Chinese Long and Tokio Long Green cucumbers are resistant to wilt, as are Buttercup squash and Black Beauty zucchini. Connecticut Yellow Field pumpkins are also resistant. All varieties of watermelon tested are resistant once they have grown enough to have 10 leaves.

Damage to seedlings can be avoided by starting the plants indoors and then transplanting them to the field, and by covering the plants with row cover or even with wire screen caps when they are small. Covers must be removed to allow pollination once the plants flower.

Research on trapping striped cucumber beetles is going on at the Connecticut Agricultural Experiment Station and at Cornell University. The beetles are attracted by smell to chemicals found in the odor of squash blossoms, and by sight to yellow-green fluorescent sticky traps. With the addition of squash seedlings, the traps catch beetles in May, before the field plantings are up, and the traps can be used in the field throughout the season.

Chemical: Carbaryl, rotenone, sabadilla, pyrethrum, and methoxychlor are available in formulations labeled for control of cucumber beetles. Follow instructions on the label. During flowering, be careful to avoid harming honey bees and other pollinators. Research on using attractive chemicals mixed with insecticides could increase the effectiveness and reduce the dosage of insecticides needed for control.

Summary

The striped and spotted cucumber beetles are pests of squash, cucumbers, and melons. The adult beetles feed on leaves and may transmit a bacterial wilt disease. The larvae feed at the base of the stem and can cause plants to wilt due to damage to the stem and roots. There are differences among varieties and species in attractiveness to the beetles and susceptibility to bacterial wilt. Damage by beetles can be reduced by starting seedlings in a protected environment and transplanting them to the field and by use of row covers. Row covers must be removed at flowering to permit pollination. Any insecticide applications during flowering should also avoid harming pollinators.