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Striped Cucumber Beetle

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Order: Coleoptera
Family: Chrysomelidiae
Species: *Acalymma vittatum* F.

In Virginia, cucurbits are attacked by two native species of cucumber beetles, the striped cucumber beetle, *A. vittatum*, which is featured in this document, and the spotted cucumber beetle, *Diabrotica decimpunctata howardi* (Mannerheim), which is discussed in a separate fact sheet.

DESCRIPTION: The striped cucumber beetle is approximately 6mm long with 3 black stripes running lengthwise down the back on a yellow body (Fig. 1). The subterranean larvae are white with dark plates on either end of the body (Fig. 2) and reach a size of 9 mm before pupating.

Fig. 1 Striped cucumber beetle adult

PLANTS ATTACKED: The striped cucumber beetle feeds on most cucurbit crops including cucumber, melon, squash, watermelon, and pumpkin, and is considered to be one of the most destructive insect pests of these crops. Striped cucumber beetle also may feed upon plant species in the aster, rose, and legume families particularly when cucurbit plants are unavailable.

DISTRIBUTION: Striped cucumber beetles are native insects and occur throughout the United States from Canada to Mexico. They are most abundant and destructive in the southern range and are usually not a problem in sandy soil. Striped cucumber beetles are widely distributed throughout Virginia.

Fig. 2 Cucumber beetle larva (picture courtesy of M. Hoffmann (Cornell)

LIFE HISTORY AND DAMAGE: Cucumber beetles have one to two generations per year in Virginia. Adults overwinter in leaf litter and in the soil. In spring, adults can colonize crops quickly with the aid of an aggregation pheromone and recruit enough beetles to completely defoliate and destroy young seedlings or cotyledons (Fig. 3). Research has shown that when beetle densities reach or exceed 10 per plant, significant defoliation of young plants can occur,

which leads to economic yield loss. Larger plants typically can better withstand feeding injury without yield loss. Striped cucumber beetle also can transmit the plant pathogen *Erwinia tracheiphila*, which causes bacterial wilt of cucurbits. Cucurbit varieties vary in their susceptibility to bacterial wilt. If a susceptible variety is grown, then there is usually little tolerance for any cucumber beetles on young plants because of the impact of the disease. Once bacterial wilt has been established in the field, beetles can transmit the bacteria from one plant to another. After adults feed and mate (Fig. 4), eggs are laid in the soil around the base of the plant. Larvae emerge from the eggs and burrow through the soil to mine the roots of developing plants. In addition to leaf feeding, adults can chew the stems, flowers and rinds of fruits. When plants are larger, the adults may be found feeding on the underside of fruits and vegetation, out of the sunlight.

Fig. 3 Leaf feeding injury of striped cucumber beetle on pumpkin leaves

CONTROL PRACTICES:

For commercial production, protecting seedlings from beetle attack can be achieved with the use of systemic insecticides such as neonicotinoids, in the form of seed treatments, transplant drenches, or other soil applications. These insecticides provide adequate protection for approximately three weeks after planting, after which time, beetle infestations are reduced and plants have achieved sufficient size to tolerate beetle feeding. If pest densities remain high, foliar applications of insecticides such as pyrethroids will provide control of beetles.

Alternative control tactics: Beetles are highly sensitive to aggregation pheromones and plant kairomones. These chemicals are commercially available and can be used in traps to catch high numbers of beetles to reduce pressure on the crop. Deploying pheromone traps before planting to "trap out" rapid colonizing adults, can reduce numbers in the early season while plants are highly susceptible. Pheromone traps are typically only effective for a few days. Trays of transplants drenched with neonicotinoid insecticides can be used as trap plants before the actual planting of cucurbits. Another strategy that has shown to be effective at controlling cucumber beetles is trap cropping. Research has shown that planting a preferred host plant such as Blue Hubbard squash along the perimeter of fields will attract beetles to

Fig. 4 Male cucumber beetle copulating with a deceased female on the cotyledon of a seed treated pumpkin plant.

these plants where most of them will remain and not attack the primary cucurbit cash crop in the middle of the field. One control method that has been used for over a century is row covers, which are thin light-weight coverings that allow sunlight and moisture through, but provide a physical barrier preventing beetles from damaging young plants.

For home gardeners, the methods described above are all applicable to garden settings. One method that gardeners can use that most commercial growers cannot is to delay the planting date. Doing so will allow the overwintering adults of striped cucumber beetle and other cucurbit pests to emerge and die without their suitable hosts. Smaller plantings of cucurbits are less likely to benefit from trap cropping because the small scale does not provide a large enough barrier of trap crop to protect the more valuable crop. If you suspect or have confirmed bacterial wilt, remove vines from the garden and burn to contain residue. A good rule of thumb is to actively control for striped cucumber beetles if you find one per plant.

USEFUL REFERENCES:

Capinera, J. L. 2001. Handbook of vegetable pests. Academic Press, San Diego, Calif.

Cavanagh, A., R. Hazzard, L. S. Adler, and J. Boucher. 2009. Using Trap Crops for Control of *Acalymma vittatum* (Coleoptera: Chrysomelidae) Reduces Insecticide Use in Butternut Squash. J. Econ. Entomol. 102: 1101-1107.

Pair, S. D. 1997. Evaluation of Systemically Treated Squash Trap Plants and Attracticidal Baits for Early-Season Control of Striped and Spotted Cucumber Beetles (Coleoptera: Chrysomelidae) and Squash Bug (Hemiptera: Coreidae) in Cucurbit Crops. J. Econ. Entomol. 90: 1307-1314.