

AG FACTS

Cucumber, Melon, Squash and Pumpkin Insect Pests

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Seed corn maggots injure seeds of a variety of crops, including cucurbits, corn, and beans. They overwinter as small, brown pupae in the soil. Adult flies (fig. 1) emerge in late April to May. They are attracted for egg laying to soils that are high in decomposing organic matter, including plowed-down cover crops and animal manure. Eggs are laid on or beneath the soil surface. Larvae feed on decomposing plant material in the soil and especially on seeds of corn, beans, cucurbits, etc. (fig. 2). Seeds may be attacked before or shortly after germination. Injury may kill seeds. If sprouting seeds are attacked, cotyledons and new leaves may show injury above ground. Damage is especially common in cool weather, because the seed corn maggot is well adapted to cool temperatures and seeds germinate slowly and are exposed longer to injury. There may be three or more generations per year. Monitoring for this insect is not practical, so seed treatment is generally recommended.

Cutworms may overwinter as 1/2- to 1-inch-long larvae or as eggs in the soil. They often cut plants off at the soil surface. Cutworms may be most abundant in weedy areas of a field or adjacent to cover crop strips after the cover crops are killed or tilled down. They pupate in the soil, and adult moths emerge in June or July. They may have from 1 - 3 generations per year, but typical cutworm injury occurs only early in the season when plants are small. New transplants should be checked regularly during the first few days after transplanting.

Onion thrips (fig. 3) can be a serious foliar pest of cucurbits, especially watermelons, and also attack many other crops and weeds. Thrips feed by scraping away the leaf surface. Heavy feeding can reduce crop growth and yields. They overwinter as eggs in weeds and small grains. During the season, thrips eggs are laid in the plant tissue and hatch in 4 to 8 days, depending on temperature. Larvae feed on the leaves. They require 4 to 6 days to develop and enter the soil for pupation. Pupation takes approximately 4 days. The adults emerge from the soil and continue to feed on the foliage.

Thrips can be monitored visually. They may be resistant to some commonly used insecticides and are also protected from insecticides by their location; larvae and adults on the undersides of leaves, eggs in the plant tissue and pupae in the soil. They are most common in hot, dry years because larvae and adults are washed off the plants by heavy rainstorms and may also be subject to fungal disease.

The **spotted cucumber beetle** (fig. 4) is a general feeder on over 200 plants, including weeds and crops such as corn. It can transmit bacterial wilt disease, but rarely occurs in high numbers in Michigan. The **striped cucumber beetle** (fig. 5, bright yellow or tan with black stripes) attacks only cucurbits. It is the most serious pest and transmitter of bacterial wilt disease. Adults overwinter in fence rows, ditch banks, etc. They emerge in the spring and feed on foliage of new plants and transplants and lay eggs near the bases of the plants. Larvae feed on the plant roots. Adults can cause moderate to severe foliar injury, especially to new seedlings (fig. 6). Also, bacterial wilt disease overwinters only in the gut of cucumber beetles and is transmitted only by feeding of these beetles (fig. 7). Striped cucumber beetle larvae can be numerous enough to injure

plant roots and reduce yields in extreme situations. Larvae pupate in the soil and emerge as adults in late July or August. At this time of year, western corn rootworm adults are also very common in cucurbit fields, visiting the flowers for pollen. The western corn rootworm beetles are very similar in appearance to striped cucumber beetles, but do not transmit bacterial wilt disease or cause injury to cucurbits, so it is important to be able to distinguish between the two beetles. The corn rootworm beetles are less brightly colored and the tibia (last long leg segment) is black compared to yellow or tan for the striped cucumber beetles.

Cucumber beetles can be monitored visually, checking fields at least twice per week for new seedlings and transplants. Use of a systemic insecticide at planting (see bulletin E-312) reduces the number of insecticide sprays required and reduces risk to honey bees and other beneficial insects.

Aphids (fig. 8) can occasionally be problems in cucurbits, especially during hot, dry years. They can injure plants by feeding on plant juices and can also transmit cucumber mosaic (fig. 9) and other virus diseases. All aphids during the summer are females and give birth to large numbers of young, born as tiny aphids rather than as eggs. Eggs are produced only to overwinter. Aphids have an extremely high reproductive rate, but are usually held in check by natural enemies (lady beetles, hover fly larvae, lacewing larvae, fungal diseases and tiny wasps). Insecticide or fungicide sprays can sometimes disrupt this natural control and result in aphid outbreaks.

Aphids can be monitored by careful inspection of plant foliage. Insecticides can be used to control aphids, but may not be effective at preventing the transmission of virus diseases by new aphids arriving in the field.

Honey bees and other pollinators are critical for pollination of cucurbits, especially in highly gynoecious varieties (varieties with primarily female flowers). Yield and fruit shape depend on the presence of numerous pollinating insects. Moving bee colonies into cucurbit fields may increase yields and result in a more uniform fruit set. To be sure that proper pollination is occurring, watch flowers during the middle of the day when bees are most active. High numbers of flower visits indicate effective pollination. For machine harvested cucumbers use the table on the reverse side. Locate 10 flowers and count the number of bees seen on the flowers for 10 minutes. Repeat twice more for a total of 30 flowers/30 min. The number of bees should equal, or exceed, the number in the table to have adequate pollination. For other cucurbit crops, a single large fruit set may not be as important and less bee activity and pollination may be acceptable. Except in extreme cases, do not spray insecticides during pollination. If insecticides must be used, consult Extension bulletin E-312 for precautions to reduce bee kill.

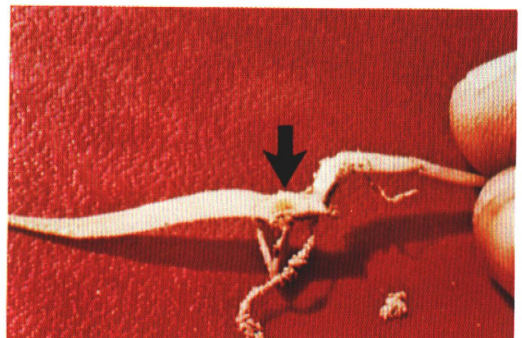
For insecticide recommendations, commercial growers should consult MSU Extension bulletin E-312, *Control of Insects, Diseases and Nematodes on Commercial Vegetables*. Home gardeners, consult bulletin HYG-001, *Home Insect Pest Management Guide*.

Thanks to Art Wells and Don Cress for their contributions to earlier versions of this bulletin.

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1. Seed corn maggot adult



2. Seed corn maggot (left: maggot in seed; right: maggot in stem)



3. Onion thrips (left: close-up; right: on cucumber leaf)



4. Spotted cucumber beetles



5. Striped cucumber beetles



6. Cucumber beetle damage (left: mature plant; right: seedling plant)



7. Bacterial wilt disease transmitted by cucumber beetles



8. Green peach aphids



9. Cucumber mosaic disease

EDT Time of Count	Minimum No. Bees/ 30 Flowers/30 Min.
8:00-9:00	1
9:00-10:00	3
10:00-11:00	9
11:00-12:00	13
12:00-1:00	16
1:00-2:00	13
2:00-3:00	11
3:00-4:00	7
4:00-5:00	5