Identification and Management of Common Vegetable and Fruit Pests in Iowa

Zach Schumm, Insect Diagnostician
ISU Plant and Insect Diagnostic Clinic
We often get questions about and photos about insects on various plants with concerns over possible pests.

More times than not, you can determine immediate risk by answering the following:

- Am I seeing one or a few individuals, or many?
- If there are many, where on the plant are they located?

If you are only seeing a few individuals, it is likely that the insect is either not plant-feeding, or not problematic (many times they are beneficial!)

If you see many individuals, it it probably plant feeding, but that does not mean it is a pest or at pest status!
Squash Bugs

- All cucurbits
- Most damage to squash, pumpkin
- Adults up to 1”
- Overwinters as adult. Eggs deposited in spring, new adults by end of summer

Squash bugs over winter as adults. In the spring adults will emerge and lay eggs late spring and early summer.

Most eggs are deposited on the underside of leaves but can be deposited on the tops as well.
The egg stage is the easiest stage to manage. Use your fingers to smash the eggs, or use duct tape to rip the eggs off of the leaves.

Nymphs can be managed using insecticides, but squash bugs tend to be somewhat insecticide resistant overall.

Insecticides aren’t recommended for adults. Once you see adults, it is a bit too late for an intense management program. You can still hand remove adults when you see them and it’s best to practice good sanitation in the fall to limit overwintering habitats for adults.
There are two types of cucumber beetles: spotted and striped. Both are about the same size, yellow orange in color, and either have stripes or spots on their hind wings (elytra) as adults.

Cucumber beetles can feed on foliage and fruit.

They can transmit bacterial wilt (which primarily impacts cantaloupe and muskmelon, but others are susceptible as well).

Adults over winter in leaf litter (usually migrate south), emerge in late May and June, mate and lay eggs at the base of host plants.

Larvae feed on plant roots, pupate, and emerge as adults in the summer is adult will then on the foliage.
Check plans early in the season for beetles and larvae and remove when seen.

Keep weeds in the garden at a minimum and remove any plants that are showing signs of bacterial wilt.

Remove garden debris in the fall to reduce overwintering sites for any adults that may try to stick around.

You can plant trap crops on the exterior of the garden a bit earlier than garden crops and treat the trap crops with insecticide once beetle populations of piled up on them.
Hornworms

- Tomato and tobacco hornworms most common
- Often present, but often missed.

Tomato, tobacco, and other hornworms are present in Iowa and surrounding states. Tomato and tobacco hornworms are the most common species found on tomato plants.

Larvae are the damaging stage, both species can be problematic. To identify the species, look at the stripes on the side of the body (works for many stages of development but not all). Tomato hornworm stages have V-shaped stripes while tobacco hornworms only have single stripes on the side of the body.
I recommend hand removal, but they can be hard to find. Scout tomato plants light spring and onward. If the population is low enough, you may not need to manage at all (e.g., if you’re close to harvest and are only seeing a few hornworms).

Many parasitoid wasps are already present in the landscape and assisting with management.
Most of the time, you don’t have to worry about stink bugs on fruits and vegetables, but, as always... it depends. I see most concerns on small fruits/berries (raspberry, for example) where small numbers of bugs can do considerable damage to a fruit.
Scout the underside of leaves for egg masses. You can hand remove egg masses as well, but note you may accidentally remove an egg mass of a beneficial species, or the egg mass could be parasitized (which is a good thing)! It wouldn’t be helpful to remove a parasitized egg mass.

- Consider tolerating
- Hand remove if aggregating on fruits (particularly small/immature fruits)
- Encourage natural enemies
Spider mites tend to be worse in dry conditions, so are more of a concern in the continuing Iowa drought. They feed on a wide variety of plants and can damage foliage and reduce photo synthetic area and cause water loss from the plant.

Scout for spider mites by using a hand lens, searching for small webs going from Leaf to leaf (cannot be used alone to confirm), or by placing a sheet of white paper or something underneath foliage, and tapping a foliage onto the paper to search for crawling mites.
Nothing much more to add here than what is already on the slide 😊

Companion plantings can be helpful to encourage beneficial insects in the landscape.
Aphids can have a wide variety of shapes, sizes, and colors! Not all are going to be harmful to your plants (but all are plant feeding).

They give birth to live young! Not very common in the insect world. Can be winged or not winged (not going to get much into their complicated life histories).
Not much else needed than what is on the slides.

You can use horticultural oils or insecticidal soap when cultural and mechanical control are not effective, but note timing of application. You don’t want to burn plants!

Side note... if you see aphids heavily infesting a landscape tree... don’t worry too much about it!!!
Thrips

- Many species - look for fringed wings.
- (often) jump when disturbed.
- Fecal masses and cosmetic damage to foliage

Can be found feeding on indoor houseplants any time of year, and tend to become active on outdoor fruit and vegetable crops in the spring. Hot and dry conditions can result in more severe outbreaks.

Thrips may damage the shoots, stems, leaves, flowers, and fruits of plants in multiple ways, including feeding on plant material and laying eggs within plant tissue. These activities can result in discoloration, stippling, and stunted growth.

Thrips can also transmit several key plant viruses, including tomato wilt virus, tomato chlorotic spot virus, and iris yellow spot virus.

Some thrips are beneficial (predators).
Thrips are attracted to blue, and can be monitored using sticky traps (blue is best, but yellow is just fine and are more accessible).

- Monitor when foliage is present
- Spray plants with hose
- Encourage beneficial insects
- Insecticides available in severe cases
Apple Maggot

- Fly with striped wings on apple? Probably Apple Maggot…
- Sunken areas on fruit, rotten or discolored areas of flesh

Can attack cherries, plums, crabapples, and pears as well.

Inserts egg beneath the skin, and the larvae feeds on the flesh.

They eventually drop from the fruit and pupate in the soil.

One generation per year.
• Prevention is key!
  • Yellow sticky traps
  • Remove infested fruit as they fall and once the season is over.

• Insecticides for severe cases (but must apply frequently June - September)


One trap for every 100 fruits is usually enough to provide satisfactory control (place early June, replace when no longer sticky or covered with insects).
Scale

**Hard Scales (many species)**
- 2+ generations per year (usually)
- No honeydew production
- Usually not “helmet-like”*

**Soft Scales (many species)**
- One generation per year (usually)
- Produce honeydew
- “helmet-like” or dome-shaped*

Scale are complicated insects. I will just be covering the basics! So I will limit the written notes I have here.
Simply put, scale have “crawler” stages that are the easiest stage to manage because they do not have a protective covering. Their “pupa” isn’t like that of a butterfly or bee, but it is called a “pupa” nonetheless (thanks, entomologists...).
Hard Scale Example: San Jose Scale

- Suck plant sap from fruits.
- Stunted growth and damaged fruits
- Plant death in severe cases

Just showing an example of a hard scale here for reference. Nothing much else needed for written notes but feel free to write more! 😊
Pruning heavily infested branches can be helpful for many species of scale, so long as pruning is otherwise safe for the plant. Otherwise, get help from an entomologist to correctly ID your scale so we can help predict timing of crawler presence or decide on other management strategies.

You can scout for crawlers by surrounding stems with double-sided tape, or looking closely ;)

- Prune infested limbs (winter)
- Dormant oil spray
- Insecticides on crawlers (spring) when needed
Take home:

• Identification is the most important and first step to responding to ANY insect.

• Always seek identification help if you aren’t positive!

• Chemical intervention can be a “last resort” for most home garden situations.
Contact me with questions or ID’s!

Text line (insect ID only):
515-599-1095

Email:
pidc@iastate.edu