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*GARDENS SCOUTED FOR THIS REPORT: Morris County Park Commission's Community Garden in Morristown, ValleVue Preserve Community Garden in Morris Township, and Madison Community Garden.*

**GENERAL OBSERVATIONS AND TIPS**

**Tip: Harvest your produce frequently**

It is peak season for summer produce and gardeners are enjoying the fruits of their labors. Be sure to pick your produce frequently so you can enjoy it at its peak. If overripe fruit is left on vegetable plants, the plants will slow down producing new fruit. Rotting fruits can also be attractive to pests.



Some summer produce  
Photo: M. Albright, NJAES

**Tip: Last dates to plant crops for fall harvest**

The prior IPM Team report (#7) discussed planning and planting a fall garden. Gardeners sometimes want to know the last dates they can plant crops. Two references that can help are:

- Rutgers Fact Sheet FS129 "Planning a Vegetable Garden": <https://njaes.rutgers.edu/fs129/>
- Cornell University, "Last Planting Dates": [Cornell Cooperative Extension | Last Planting Dates](#). For our area, you should add two weeks to the dates in this publication since our average last frost date is October 15<sup>th</sup> rather than October 1<sup>st</sup>.

For example, turnips, beets, swiss chard, radishes, and mustard greens can be planted from seed in August. Cole crop seedlings (such as kale, bok choy, napa cabbage, and broccoli) and lettuce seedlings can be transplanted into the garden in late August / early September. Carrots and early maturing varieties of bush beans can be planted from seed in early August.

## **NOTABLE NEW STAGES OF PESTS PREVIOUSLY SEEN**

### **Squash vine borers**

Squash vine borers were included in the prior IPM Team Report (#7) after squash vine borer adults and their eggs were spotted. The greenish / yellow frass (excrement) of squash vine borer larvae, has now been seen indicating that borers are feeding and tunneling inside the stems of the plants. If the borers are not removed, they will cause the plant to wilt and later die. Gardeners can try cutting a longitudinal slit halfway through the vine above the frass to find and remove

the borer. See report #7 for more information on managing squash vine borers.





Frass (excrement) from a squash vine borer on squash plant stem  
Photo: M. Albright, NJAES



Squash vine borer inside a stem  
Photo: P. Nitzsche, NJAES

## REPORTS ON NEW PROBLEMS

<p><b>Problem: Cross-striped cabbageworm caterpillars and eggs</b> <i>(Evergestis rimosalis)</i></p>	<p><b>Where: Morris Township Community Garden 7/18</b></p>
<p><b>Description:</b> The larvae (caterpillars) of Cross-striped cabbageworm moths eat brassica plants such as cabbage, broccoli, kale, cauliflower and collards. Leaves, buds, and small heads can quickly become riddled with holes. Cross-striped cabbageworm can be a significant problem in the home or community garden, where a limited number of plants are grown, as damage is frequently severe on several consecutive plants within a row. Eggs are light yellow and deposited in flattened masses on the undersides of leaves. The newly hatched larva is a small gray caterpillar. Mature larvae are about 3/4 inch long, bluish gray above with tiny distinct transverse black stripes. On each side of the body there is a black stripe with a yellow stripe underneath it. There are multiple generations per year.</p>	
<p><b>Management:</b></p> <ul style="list-style-type: none"> <li>• Hand-picking of egg masses and larvae is effective, although time consuming.</li> <li>• Cover plants with row covers after transplanting.</li> <li>• The insecticide, Bacillus thuringiensis, can be used and only affects caterpillars. Neem, pyrethrin and Spinosad can also be used.</li> </ul>	
 <p>Cross-Striped Cabbageworm caterpillars on broccoli rabe. Photo: M. Albright, NJAES</p>	 <p>Cross-Striped Cabbageworm egg mass on the back of a broccoli plant leaf. The egg mass is about ¼ inch wide. Photo: M. Albright, NJAES</p>
<p><b>References</b></p> <ul style="list-style-type: none"> <li>• Rutgers Fact Sheet FS287, Cross-Striped Cabbageworm: <a href="#">Imported Cabbageworm (Rutgers NJAES)</a></li> <li>• Rutgers Fact Sheet FS1123, Vegetable Insect Control Recommendations for Home Gardens <a href="https://njaes.rutgers.edu/fs1123/">https://njaes.rutgers.edu/fs1123/</a></li> <li>• University of Massachusetts: <a href="https://ag.umass.edu/vegetable/fact-sheets/cross-striped-cabbage-worm">https://ag.umass.edu/vegetable/fact-sheets/cross-striped-cabbage-worm</a></li> </ul>	

**Problem: Mexican bean beetles**  
**(*Epilachna varivestis*)**

**Where: Morris Township home garden 7/24**

**Description:** Mexican bean beetle adults are round-to-oval hard-bodied insects, about 1/3 inch in length, yellow to coppery brown, with 16 black spots. Females lay clusters of yellow eggs on the undersides of leaves. The adults and eggs resemble lady bird beetle (also known as ladybug) adults and eggs. Mexican bean beetles are, in fact, in the same family. Mexican bean beetle larvae are yellow, cylindrical but tapered towards the rear, with branched spines. Pupae are also yellow and are on the undersides of leaves. These beetles and their larvae remove leaf tissue between the veins, resulting in a skeleton-like or lacy appearance. Severe defoliation may affect the harvest.



Mexican bean beetle adults are 1/3 inch in length and yellow to coppery brown with 16 black spots.  
Photo: M. Albright, NJAES



Mexican bean beetle eggs on the underside of a leaf.  
Photo: M. Albright, NJAES



Newly hatched Mexican bean beetle larvae.  
Photo: M. Albright, NJAES



Mexican bean beetle larvae feeding on the undersides of leaves.  
Photo: M. Albright, NJAES



Mexican bean beetle pupa.  
Photo: M. Albright, NJAES



Extensive leaf damage from Mexican bean beetle feeding.  
Photo: M. Sample, NJAES

**Management:**

- Inspect plants and handpick adults, eggs, larvae and pupae. The eggs, larvae, and pupae are usually found on the undersides of leaves. Handpicking is effective but time consuming.
- The New Jersey Department of Agriculture (NJDA) has a program to breed a tiny beneficial wasp that is helpful in the control of MBBs. The adult wasps or their mummies are available to farmers and the public for release in fields where MBBs are a problem. The adults are 2 – 3.5 mm in size and do not bite or sting humans or other animals. This parasitic wasp lays its eggs in MBB larvae. Wasp larvae feed inside the MBB larvae, kill it, and pupate inside it forming a case called a mummy. More information can be found: [The Mexican Bean Beetle Outreach Project \(nj.gov\)](http://TheMexicanBeanBeetleOutreachProject.nj.gov)



- Insecticides (Beauveria bassiana, neem, pyrethrins) can be used. Be sure to target both tops and bottoms of leaves. The first application should be made when eggs begin to hatch because small Mexican bean beetle larvae are easier to control with pesticides than large larvae or adults.
- Clean up and remove all plant debris after harvest.
- Try growing fast maturing varieties of beans.

**References**

- Rutgers University, Mexican Bean Beetles, Fact Sheet 227: <https://njaes.rutgers.edu/pubs/publication.php?pid=FS227>
- Rutgers Fact Sheet FS1123, Vegetable Insect Control Recommendations for Home Gardens <https://njaes.rutgers.edu/fs1123/>

**Problem: Harlequin bugs**  
**(*Murgantia histrionica*)**

**Where: Morris Township Community Garden 7/20**

**Description:** Harlequin bug adults and nymphs pierce stalks, leaves, and veins with needle-like mouth parts and extract plant juices from cabbage, cauliflower, collards, mustard, Brussels sprouts, turnip, kale, kohlrabi, radish, and horseradish. If infestations are heavy, harlequin bugs may also feed on asparagus, bean, beet, corn, eggplant, lettuce, okra, potato, squash and tomato. Damaged plants develop irregular cloudy spots around the puncture wound. Young plants may wilt, turn brown, and eventually die while older plants become stunted or deformed. Harlequin bugs can become a significant pest if not controlled.

Adult bugs overwinter on plant debris and rubbish. In spring, adults congregate on any cole crop available. Females usually lay eggs in double clusters of approximately 12 on the undersides of leaves, until the female has deposited a total of about 150 eggs. Eggs hatch in 4–11 days, depending on weather and temperature. Nymphs feed for about 5–6 weeks and pass through 5 instars over the next 2 months before becoming adults. There are 2 generations annually.



Harlequin Bug adults. Feeding damage can be seen on the leaf.  
Photo: M. Albright, NJAES



Harlequin bug eggs  
Photo: Rutgers Fact Sheet FS246

**Management:**

- Handpicking of adults, larvae and eggs is an effective means of managing Harlequin bugs. Since the bugs have an odor gardeners may want to wear disposable gloves.
- Remove all plant debris at the end of harvest since adults overwinter on plant material.

**Fact Sheet / References**

- Rutgers Fact Sheet 246 Harlequin Bugs: <https://njaes.rutgers.edu/pubs/publication.php?pid=fs246>

**Problem: Pigweed flea beetles**  
**(*Disonycha glabrata*)**

**Where: Morris County Community Garden 7/10**

**Description:** The Pigweed flea beetle is easily mistaken for both the striped cucumber beetle and the three-lined potato beetle due to similarities in its color and stripe pattern. While their coloration seems very similar, there are notable differences as you can see in the side-by-side photos below. The Pigweed flea beetle has pronounced black and white stripes, a red pronotum with either one or three black dots, and a black and red head.

Pigweed flea beetles feed upon plants in the Amaranth family, including pigweed, amaranth, callaloo and the flower, love-lies-bleeding. They lay their eggs at the base of the plant as well as on both upper and lower leaf surfaces. The eggs are yellow orange. The larvae are light in color (almost white), about ¼ inch long with a dark-colored head and a bumpy texture to their body. They feed on foliage until ready to pupate at which time they burrow into the soil. After about 13 days, the mature adults emerge.



Pigweed flea beetle adult  
Photo: S. Brighthouse, NJAES



Three-lined potato beetle adult  
Photo: Univ. of Minnesota Extension



Cucumber beetle adult  
Photo: Univ. of Minnesota Extension

**Management:**

- Hand pick adults and larvae. Successfully managing the first generation will help prevent subsequent generations.
- Spray plant foliage with the insecticide Spinosad (such as Captain Jack's Deadbug Brew).
- Remove pigweed and other amaranth-related plants from weedy borders as these provide a place for this pest to shelter.
- Adults overwinter in leaf litter so doing a good cleanup in the Fall will help prevent problems the following year.

**Fact Sheet / References:**

- Connecticut Agricultural Experiment Station, [https://portal.ct.gov/-/media/CAES/DOCUMENTS/Publications/Fact\\_Sheets/Entomology/PigweedFleaBeetlepdf.pdf?la=en](https://portal.ct.gov/-/media/CAES/DOCUMENTS/Publications/Fact_Sheets/Entomology/PigweedFleaBeetlepdf.pdf?la=en)

**Problem: *Cercospora* leaf spot disease on beets and Swiss chard**  
**(*Cercospora* spp.)**

**Where: Morris Township Community Garden 7/20**  
**Morris Township home garden 7/19**  
**Morris County Community Garden 7/24**

**Description:**

*Cercospora* leaf spot is an overwintering fungal disease that causes small circular spots with tan or white centers and red halos on leaves. The lesions begin small but can expand in size, resulting in significant loss of foliage. This fungus favors high humidity and temperatures between 75 and 85 degrees. It is spread by wind, rain splash, insects, shared tools, nearly anything in the garden it comes in contact with.

Crops at risk are beets, Swiss chard, carrots, spinach, peanuts, cucumbers, squash, melons and pumpkins.



*Cercospora* leaf spot on beet plants  
Photo: M. Albright, NJAES



*Cercospora* leaf spot close up on beet plant  
Photo: Purdue University



*Cercospora* Leaf Spot on Swiss Chard  
Photo: Brian Monaghan, NJAES



*Cercospora* Leaf Spot on Swiss Chard  
Photo: Cornell University

**Management:**

- Remove infected leaves.
- Feed and water affected crops regularly to avoid undue stress to plants and harvest infected crops as soon as possible.
- Since the fungus overwinters in plant debris, remove all infected plant material. Throw out, do not compost.
- Avoid planting succession crops of beets, Swiss chard and spinach close together.

- Water in the morning at the base of the plant to help make sure the plant is not wet during the night.
- Plant resistant beets such as Boldor, Bulls Blood, Cyindra, Detroit Dark Red and Touchstone Gold.
- Practice a two-year crop rotation.
- Remove weed hosts of lambs quarters and pigweed.

#### References

- Rutgers University: [Controlling Cercospora leaf spot in beet crops in 2023 — Plant & Pest Advisory \(rutgers.edu\)](https://plantandpestadvisory.rutgers.edu/2023/04/controlling-cercospora-leaf-spot-in-beet-crops-in-2023/)
- University of Massachusetts: <https://ag.umass.edu/vegetable/fact-sheets/cercospora-leaf-spot-of-swiss-chard-beets-spinach>



**Disease: Basil Downy Mildew**  
*(Peronospora belbahrii)*

**Where: Morris Township Community Garden 7/10**

**Description:** Basil Downy Mildew is neither a true fungus nor a mold, but a specialized pathogen called “oomycetes”. It is wind-borne and can spread quickly, especially during wet, humid conditions. Infected plants develop yellow leaves that can be misdiagnosed as a nutrient deficiency or due to waterlogged soil, However, check the underside of the leaf and there you’ll find a fuzzy mass of purplish-brown spores. Commonly grown sweet basils, such as Genovese, are the most susceptible to downy mildew, but new resistant cultivars are available. Spice types such as Thai, Cinnamon, Lemon, Lime, or Red Rosie are also less susceptible.



Basil plant with downy mildew disease

Photo: M. Albright, NJAES



Underside of a basil leaf showing purplish-brown spores of downy mildew

Photo: M. Albright, NJAES



Rutgers resistant basil varieties showing no signs of disease: Devotion left, Obsession right  
Photos: Margot Sample, NJAES



**Management:**

- Plant resistant varieties. Try Rutgers Devotion, Rutgers Obsession, or Prospera.
- If you buy basil plants from a nursery, check them carefully for disease symptoms before buying them. Do not purchase plants that show any disease.
- Cultural practices include proper plant spacing for optimum air flow, plant in full sun and avoid overhead watering.
- Pathogen is transmitted by wind, rain splash, contaminated seed and plants.
- The disease moves from the bottom of plant to the top of plant, so harvest any unaffected leaves from top of plant and use promptly.
- Remove and throw out infected plants to reduce spread of disease.
- Grow some plants in containers indoors.

**References**

- Rutgers Fact Sheet FS1279: <https://njaes.rutgers.edu/fs1279/>
- University of Maryland: <https://extension.umd.edu/resource/downy-mildew-basil-home-garden>

**Bacterial Wilt on cucumber plants**  
*(Erwinia tracheiphila)*

**Where: Morris County community Garden 7/10**  
**Morris Township Community Garden 7/17**

**Description:**

Bacterial wilt is a bacteria transmitted by the striped and spotted cucumber beetles. The bacterium survives in the beetle gut and is transmitted by contact with the mouth of an infected beetle or their feces. When the beetles feed on leaves and stems, this damaged plant tissue allows an entry point for *E. tracheiphila*. The bacteria multiply in the wound, enter the xylem vessels (water conducting tissues), and move through the petioles to the stems. Masses of bacteria, gums, and resin block the vascular system, resulting in wilt. Bacteria spreads further throughout the plant via adjacent xylem vessels and causes plant collapse and death. Infected plants retain the bacteria becoming a source of infections for other plants. Cucumber and muskmelons are more susceptible to bacterial wilt than winter squashes and watermelon. Summer squash, zucchini, and pumpkins may also be affected.

Cucumber beetles become active in late May or early June and feed on the blossoms of early flowering plants, such as dandelions, apples, and hawthorn, until their host crops are available.

Once a plant is infected with bacterial wilt, there is no cure. They usually succumb to disease 2-6 weeks post initial infection.



Bacterial Wilt Disease affecting the top portion of a cucumber plant. Bacterial Wilt often starts on part of the plant and then progresses. Photo: M. Albright, NJAES



Bacterial Wilt Disease affecting an entire cucumber plant. Photo: M. Albright, NJAES



Striped Cucumber beetles found weeks earlier on the plant to the left. Photo: M. Albright, NJAES

**Management:**

- Scout for cucumber beetles early in the season, especially in the cotyledon and first to third true-leaf stage, when the plants can suffer defoliation and bacterial wilt. Once beetles are present, monitor more frequently, every couple of days. They fly fast but can be caught and destroyed.
- Practice good garden sanitation. Remove weeds in and around your garden, as they become potential hosts for adults. If a plant is showing signs of bacterial wilt, remove the infected plant before more beetles can feed on the plant and spread the bacterium. Stop the cycle.
- Use row cover at planting to prevent beetles from landing and feeding on plants. Be sure to remove the barrier when cucurbits start to flower or try Parthenocarpic varieties, which don't require pollinators.
- Plant-based pesticides, such as Neem, prevent insects from feeding, which eventually kills them. Neem can also suffocate the insects but must come in contact with the beetles to be effective. Spinosad may also help manage beetles. Kaolin clay, such as Surround, creates a barrier to leaf surface and disrupts beetles landing and feeding.

**References**

- Rutgers University: <https://njaes.rutgers.edu/pubs/publication.php?pid=FS225>
- Rutgers University: <https://njaes.rutgers.edu/fs1123/>
- University of Minnesota: <https://extension.umn.edu/yard-and-garden-insects/cucumber-beetles>
- University of Massachusetts: <https://ag.umass.edu/vegetable/fact-sheets/cucurbits-bacterial-wilt>



## BENEFICIAL SPOTLIGHT

### *Trichopoda pennipes* (beneficial tachinid fly parasitoid)

**Description:** *Trichopoda pennipes* is a beneficial tachinid fly parasitoid of the squash bug and other members of the stink bug and leaffooted bug families. Gardeners should not kill *Trichopoda pennipes* flies because they are parasitoids of squash bugs and squash bug nymphs, and squash bugs are a major pest of squash plants. A parasitoid is an insect whose larvae live as parasites that eventually kill their hosts.

The adult *Trichopoda pennipes* fly is about the size of a house fly and may be seen on or hovering over squash plants in search of prey. It has a bright orange abdomen, velvety black head and thorax, and a fringe of short black hairs on the hind legs. The wings of male flies have a dark spot. The tip of the abdomen of female flies is black. The female fly lays eggs on the body of a large nymph or adult bug.

*Trichopoda pennipes* should not be confused with a squash vine borer that also has a red abdomen. Squash vine borers are a major pest of squash plants and should be destroyed. See pictures below.



*Trichopoda pennipes* (male)

Photo: J. Ogradnick (Cornell U. reference below)



*Trichopoda pennipes* on squash plant leaf

Photo: R. Terry, NJAES



The insects above are **NOT *Trichopoda pennipes***. They are **squash vine borer adults, a major pest of squash plants**, and should be destroyed if seen. Note that their wings are closed when they are not flying unlike the open wings of *Trichopoda pennipes*.

Photo: Ohio State

#### References:

- Cornell University: <https://biocontrol.entomology.cornell.edu/parasitoids/trichopoda.php>
- University of Wisconsin: <https://hort.extension.wisc.edu/articles/trichopoda-pennipes-parasitoid-of-squash-bug/>

## ***ADDITIONAL RESOURCES***

**All Rutgers Gardening and Landscaping Fact Sheets & Bulletins**

<https://njaes.rutgers.edu/pubs/subcategory.php?cat=5&sub=1001>

**Rutgers Master Gardener Program** <https://njaes.rutgers.edu/master-gardeners/>

**Rutgers Soil Testing Laboratory** <https://njaes.rutgers.edu/soil-testing-lab/>

**Community Gardening Series** <https://njaes.rutgers.edu/community-garden/>

**Office of the New Jersey State Climatologist** <https://climate.rutgers.edu/stateclim/>

**Rutgers New Jersey Weather Network** <https://www.njweather.org/>

**Ticks and Tick-borne Disease** <https://njaes.rutgers.edu/tick/>

**Rutgers NJAES You Tube Channel** <https://www.youtube.com/user/RutgersNJAES>

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