RUTGERS
New Jersey Agricultural Experiment Station

Rutgers Master Gardeners of Morris County Community Garden IPM Team Report #6 July 12, 2024

WHAT'S IN THIS REPORT		
TIPS	**NEW PROBLEMS SEEN**	**SPOTLIGHTS**
• Renovate your strawberry bed or start a new planting	• Cabbage looper caterpillar • Bacterial wilt on cucumbers • Spotted lanternfly • Squash bug eggs and adults • Asiatic beetles • Mite damage on pepper fruits, probably broad mites or cyclamen mites • Powdery mildew • Harlequin bugs	• Lightning bugs (fireflies)

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

GENERAL OBSERVATIONS AND TIPS

Some summer produce
Photo: M. Albright, NJAES

The gardens are really hitting their stride now. Early summer harvests are beginning. Many of us have enjoyed our first Jersey fresh tomatoes (and cucumbers, beans, peppers, and more) of the season. Make sure to keep up with your harvests to enjoy the fruits of your labor at their peak. Tomatoes can even be picked before they are fully red and will continue to ripen off the vine. If they are almost ripe when harvested, they will taste just like "vine-ripened" tomatoes. This can also prevent animals from taking one small peck in almost ripe tomatoes causing them to rot before becoming totally ripe.

If you have more than you can eat, preserve, and share with friends, consider donating to a local food bank. Many food pantries accept and are extremely grateful for donations of fresh produce. Many community gardens have a system to bring excess produce to a food pantry, making donating to a local pantry almost effortless. Perhaps the one thing even better than eating your fresh produce is sharing it.

Many early season crops are well past their prime or have gone to seed, perhaps a little earlier this year due to the excessive heat. Be ruthless about pulling out plants that are no longer producing produce you will actually eat. This can help prevent the spread of diseases and eliminate a perfect home for insect pests. It also leaves more space, airflow, water, and nutrients for your remaining crops to thrive.

Tip: Renovate your strawberry bed or start a new planting

To promote healthy growth and minimize disease, mature June-bearing strawberry beds should be renovated after harvest. As the name implies, June-bearing strawberries bear all their fruit in a small window of time, usually in June. Ever-bearing strawberries produce some berries in May or June and then a second harvest in late summer or early fall. Ever-bearing strawberry beds should not be renovated after the June harvest as this would eliminate the second harvest later in the season.

Many of the strawberry plots in the community gardens show signs of possible foliar disease (disease of the leaves).

Diseased leaves on strawberry plant.
Photo: J. Guarino, NJAES

Renovating the plot gets rid of the diseased leaves, since all leaves are removed. If a strawberry planting is to be fruited another year, it needs to be renovated. The leaves should be removed using a lawn mower set high, or line trimmer, or even scissors or pruners. Be careful not to damage the crown. Rows should be narrowed to 12" by digging out or rototilling and removing the oldest plants. It is important that the planting does not become too dense since this will cause a decrease in fruit size and an increase in disease and insect pressure.

Fertilizer should be applied to renew (invigorate) the planting. In the absence of a soil test, 5-10-10 fertilizer should be applied at 2 pounds/100 square feet at renovation, and again in mid-August to re-establish a healthy bed of plants. It is best to allow the mother plants to fruit for no more than three years to maintain optimal production and quality. New strawberry plantings of purchased virus-free stock can be established during the last year of fruiting of the old planting, to allow for a year of establishment, without sacrificing yield. Plant dormant bareroot strawberries in Spring as early as the soil can be worked to establish a new bed.

These references contain additional information on strawberry cultivation and plot renovation:

https://njaes.rutgers.edu/fs097/

https://extension.umn.edu/strawberry-farming/strawberry-end-season-renovation

NEW PROBLEMS SEEN

Problem: Cabbage looper caterpillar *(Trichoplusia ni)*	**Morris Township Community Garden (7/1)**

Description: Cabbage looper caterpillars are the offspring of a nocturnal moth called, appropriately, the Cabbage looper moth. The moths are brownish gray, approximately 1 inch long with a 1-1/2 inch wingspan. They lay single round, greenish-white eggs on the upper or lower surfaces of leaves on their preferred food source plants. These include cabbage, broccoli, collards, cauliflower and turnips. Additional food sources are lettuce, spinach, celery, parsley, beets, peas, potatoes, and tomatoes.

The newly hatched caterpillars are green and might be mistaken for imported cabbageworm caterpillars except for a significant difference. Cabbage looper caterpillars have several pairs of prolegs at their head end and two pairs at their hind end. There are no legs or prolegs in the middle. Therefore, they move by "looping" in a manner like inchworms. As the caterpillars grow larger, they develop distinctive white stripes on their sides and back. At maturity, they will spin a semi-transparent cocoon and attach it to the underside of a leaf.

Historically, this garden pest does not overwinter in New Jersey. The parent moths migrate into the area annually in the July-August period. The caterpillars can do considerable damage to their food crops, first eating large, irregular holes in the leaves and then progressing to the center of the plant. Severe defoliation and stunted growth result if Cabbage looper caterpillars are left unchecked.

Cabbage looper caterpillar
Photo: Utah State Univ. Extension

Cabbage looper eggs
Photo: Utah State Univ. Extension

Cabbage looper moth
Photo: Oklahoma State Univ. Extension

Management:

- Crush and/or handpick eggs and caterpillars. Control while small as larger caterpillars do much more damage.
- Use row covers to prevent egg-laying by the parent moths.
- *Bacillus thuringiensis var. kurstaki* can be effective against Cabbage loopers as can Spinosad. Check the labels and follow the instructions.
- Eliminate weeds such as wild mustard, wild cabbages, peppergrass and shepherd's purse where caterpillars might develop.

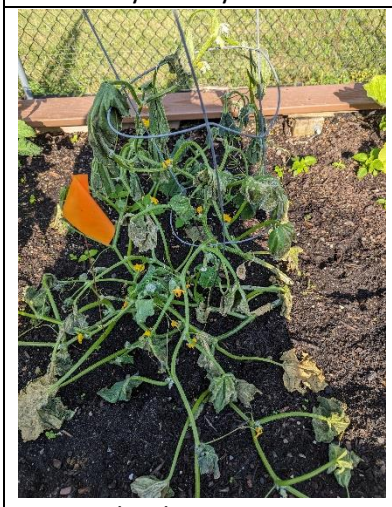
References:

- Rutgers University Fact Sheet 231, https://njaes.rutgers.edu/pubs/publication.php?pid=FS231
- Univ. of Utah Extension: https://extension.usu.edu/vegetableguide/brassica/cabbage-looper
- Oklahoma State Univ. Extension: https://extension.okstate.edu/programs/digital-diagnostics/insects-and-arthropods/cabbage-looper-trichoplusia-ni/

Bacterial Wilt on cucumber plants *(Erwinia tracheiphila*)	**Morris Township Community Garden (7/1)**

Description: Bacterial wilt is a bacteria transmitted by 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 two to six weeks after initial infection.



Bacterial Wilt Disease on a cucumber plant. Bacterial Wilt often starts on part of the plant and then progresses.
Photo: L. Terraneo, NJAES

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

Striped Cucumber beetles were 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 covers 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/

Problem: Spotted Lanternfly ***(Lycorma delicatula)***	**Various locations in Morris County**

Description: The spotted lanternfly is an invasive pest introduced into Pennsylvania in 2014. It was confirmed in New Jersey in 2018. There are four nymphal instars. The first three instars appear from May through July. They are black and white, and are strong jumpers, which enables them to avoid predators. The fourth instars are approximately a half inch in size and bright red, covered in black stripes and white spots. They appear in July through September. Adults, which are very colorful and attractive (photo below), can appear July through December. Generally, the spotted lanternfly is not a problem in vegetable gardens. It tends to prefer hardwood trees, and has been seen on the tree of heaven, *Ailanthus altissima,* one of its favorite hosts, as well as black walnut, sycamore, red maple, river birch, and/or willow. It also feeds on agricultural crops such as grapes, apples, and peaches. Sooty mold under the tree is a strong indication of an infestation within the canopy.

Adult spotted lanternfly. Photo: L. Barringer, Pennsylvania Department of Agriculture

Juvenile spotted lanternfly.

Photo: L. Barringer, Pennsylvania Department of Agriculture

Management:

- The spotted lanternfly is susceptible to pesticides. Neem oil is effective against nymphs.
- There are two commonly used trap types for spotted lanternflies. These are highly effective against the nymphs as they move up and down and between plants. Sticky bands plus chicken wire can be banded around tree trunks. Alternatively, circle trunk traps are highly effective. These are available to purchase online or can be made at home.
- Kill as many adults as you can. Stomping on them works.
- Scrape and destroy egg masses.
- Remove tree of heaven, if possible.

References:

- Rutgers University: https://njaes.rutgers.edu/spotted-lanternfly/
- Rutgers University: https://www.rutgers.edu/news/so-where-are-all-spotted-lanternflies

Problem: Squash bug eggs ***(Anasa tristis)***	**Morris Township Community Garden (7/1 - eggs) Morris County Community Garden (7/8 – eggs and adults)**

Description: Squash bug eggs have been found on zucchini plants. The adults are flying and mating, and egg laying has begun. These eggs will soon hatch, and their nymphs will suck the sap from leaves, stems and vines of squash, pumpkins, gourds, and melons. Leaves become speckled, later turning yellow to brown. Plants can wilt, and small plants can be killed completely, while larger plants begin to lose runners.

During the feeding process, squash bugs inject a poisonous substance causing a wilt known as *Anasa* wilt of cucurbits, closely resembling a disease called bacterial wilt. Squash bugs can also transmit Yellow Vine Disease of Cucurbits that causes vines to turn yellow and die.

Squash bug eggs close up. Females lay clusters of eggs on underside of leaf. These will hatch in ten days and nymphs mature in just over a month.
Photo: L. Terraneo, NJAES

Squash bug adult on leaf. Squash bugs are 5/8th inch long and resemble stink bugs. Adults can overwinter in leaf debris.
Photo: M. Albright, NJAES

Squash bug egg cluster with newly hatched nymphs.
Photo: M. Albright, NJAES

Management:

- Gardeners should inspect their plants and hand-pick (remove and crush or drop in a jar of soapy water) adults, eggs and nymphs. The eggs and nymphs are often found on the undersides of leaves.
- Flat boards can be placed on the ground since adults like to hide under them. Gardeners can lift the boards in the morning and destroy the squash bugs found.
- Sanitation is especially important. Remove trash, old vines, dead leaves, and plant residue to help prevent buildup of the pest and remove overwintering protection for squash bugs.
- The insecticide Neem can be applied to adults and nymphs. As with any insecticide, make sure the product label includes the plant and pest, and follow the instructions on the label.

References:

- Rutgers University: https://njaes.rutgers.edu/pubs/publication.php?pid=FS228
- University of California: http://ipm.ucanr.edu/PMG/PESTNOTES/pn74144.html

Problem: Asiatic garden beetles *(Maladera castanea)*	**Pequannock Community Garden (6/30)**

Description: The Asiatic garden beetle is a night feeder that attacks many different vegetables, herbs, fruit, and ornamental plants. Adult beetles may be active from late June to the end of October but do the most damage during July and August. Unlike Japanese beetles, adult Asiatic garden beetles notch, shred and strip foliage, rather than skeletonizing it. During the day, they hide in the ground. Beetle grubs feed on roots, damaging plants underground.

Asiatic garden beetles are 3/8 inch long and chestnut brown

Photo: North Carolina State

Asiatic garden beetle larvae are white grubs. Mature larvae are ½ inch long

Photo: North Carolina State

Management:

- Check damaged plants at night for the presence of Asiatic Garden beetles.
- Handpick beetles at night using a flashlight and drop them into a container of soapy water.
- Row covers may protect herb and vegetable planting beds against adult Asiatic garden beetles unless larvae have overwintered in the soil.
- Help prevent over-wintering by cleaning up the garden in fall.

References:

- Rutgers Fact Sheet 293: https://njaes.rutgers.edu/pubs/publication.php?pid=FS293
- Rutgers Fact Sheet 1009: https://njaes.rutgers.edu/fs1009/
- University of New Hampshire: https://extension.unh.edu/resource/asiatic-garden-beetle-fact-sheet

Problem: Mite damage on pepper fruits, probably broad mites (*Polyphagotarsonemus latus*) or cyclamen mites (*Phytonemus pallidus*)	**Denville home garden (7/2)**

Description: Russetting damage was recently seen on pepper fruits. This is likely due to Cyclamen Mites or Broad Mites. Broad mites and cyclamen mites (tarsonemid mites) are in a group separate from two-spotted spider mites (tetranycid mites), spinach crown mite (acarid mites), and rust mites (eriophyid mites). The mites are tiny and can only be seen under a microscope. Their presence is usually detected by their characteristic injury to foliage and fruit.

Typically, clusters of plants begin to show distortion on new growth while older, fully expanded leaves remain normal. As mites feed on blossoms, developing fruit exhibit extensive zippers and may even be fully russetted. Because they do not survive well outdoors during the winter months, infestations are more common in greenhouse settings than in outdoor plantings.

Pepper plant with Cyclamen Mites infestation. Photo: Rutgers Plant-Pest Advisory. (See reference below.)

Jalapeno fruit with zippering and russeting from mites. Photo: M. Sample, NJAES

Management:

- Spray with insecticidal soap or horticultural oil. Make sure the product label includes pepper plants and spider mites on its label. (Products that work for spider mites are effective on Cyclamen and Broad Mites.)
- Gardeners may also want to consider removing and destroying infested plants to keep the mites from spreading to other plants.

References:

- Rutgers University: Diagnosing important diseases in Pepper – Reference Guide — Plant & Pest Advisory (rutgers.edu)
- University of Maryland: Cyclamen Mites - Vegetables | University of Maryland Extension (umd.edu)
- Mississippi State University: https://extension.msstate.edu/newsletters/bug%E2%80%99s-eye-view/2016/broad-mites-vol-2-no-16

Problem: Powdery mildew *(Golovinomyces orontii)*	**Morris County Community Garden (7/8)**

Description: Windborne fungal spores cause this foliar disease. The first signs of infection are white, powdery deposits that can be found on older leaves of various cucurbit family members such as squash, zucchini, yellow summer squash, cucumbers and melons. It is difficult to avoid during a New Jersey summer, as favorable conditions are hot and dry weather followed by humidity. As this fungus spreads throughout the plant, you'll notice the plant leaves begin to turn yellow, dry and wither. Eventually, both the plant vigor and yield will be affected by lack of photosynthesis. Of note, there is also normal white coloration on the leaves of many squash varieties that is **not** powdery mildew. This coloration does not rub off but is part of the plant's regular leaf pattern.

Powdery mildew fungus spots on zucchini
Photo: R. Terry, NJAES

Normal color variation of some squash, not powdery mildew fungus.
Photo: J. Basile, NJAES

Management:

- Provide full sun, air circulation and proper spacing. When planting at-risk crops, leave extra space between plants to promote air circulation and ample room to receive sunlight.
- Remove infected leaves to prevent the spread of the disease, throw them away and do not compost.
- Try a spray made with potassium bicarbonate on the leaves to help prevent fungus.
- Remove debris at season end to help decrease spreading any spores.
- Clean your tools.
- Rotate crops (3-to-4-year rotation is ideal).
- Plant more resistant varieties.

References:

- Rutgers FSE310 Diagnosing and Managing Important Cucurbit Diseases in the Home Garden: https://njaes.rutgers.edu/E310/

Problem: Harlequin bugs ***(Murgantia histrionica)***	**Morris County Community Garden (7/8)**

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, beans, beets, 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 five instars over the next two months before becoming adults. There are two generations annually.

Harlequin Bug adult on horse radish
Photo: R. Terry, NJAES

Harlequin bug eggs
Photo: Rutgers Fact Sheet FS246

Management:

- The 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.

References:

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

BENEFICIAL SPOTLIGHT

Lightning bugs
Lampyridae (fireflies) in the order Coleoptera (beetles)

Description: Lightning bugs or fireflies are neither bugs nor flies. They are beetles in the family Lampyridae, and, like all beetles, they undergo metamorphosis with four distinct stages: egg, larva, pupa, and adult. The complete life cycle can take anywhere from a couple of months to two to three years or more, with most of the life cycle spent in the larval stage. According to the University of Wisconsin, there are 23 genera and about 200 species of fireflies in North America, most of which are about an inch or less in length.

Lightning bugs are most beneficial in the larval stage when they are voracious predators of soft-bodied invertebrates, including snails, slugs and cutworms. They typically hunt for their prey in moist soil or marshy areas and use their jaws to inject prey with paralyzing toxins. Once their quarry is immobilized, they secrete digestive enzymes that liquefy the prey before they eat them.

Both males and females produce flashes of light from organs on the underside of their abdomens. The light flashes and accompanying movements are used for courtship.

Photo: University of Kentucky

References:

- University of Wisconsin: https://hort.extension.wisc.edu/articles/fireflies/
- University of Missouri: https://mdc.mo.gov/discover-nature/field-guide/fireflies-lightning-bugs

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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