RUTGERS
New Jersey Agricultural Experiment Station

Rutgers Master Gardener IPM Team Report
Report # 4, Week of May 29, 2022

WHAT'S IN THIS REPORT			
TIPS	**NEW PROBLEMS SEEN**	**PROBLEMS LIKELY TO BE SEEN SOON**	**SPOTLIGHTS**
• Check to see if your crops need a nitrogen application	• Imported cabbageworm caterpillars • Colorado potato beetles • Three lined potato beetles • Spittlebugs • Aphids • Earwigs	• Squash bugs • Striped cucumber beetle • Grey mold on Strawberry plants and fruit	• Common Horsetail

GENERAL OBSERVATIONS AND TIPS

As we enter the first week of June, it may be time to add nitrogen to your crops. One must avoid adding too much since it might cause over development of the plant and reduce yields of fruit. Too much nitrogen may also lead to infestation by various diseases and insects. To find out how much is enough, but not too much, go to the fact sheet listed below. Do not add other nutrients such as potassium or phosphorus unless you have recently done a soil test. Remember, when it comes to fertilizer, you should only add as much as is called for and more is never better.
https://njaes.rutgers.edu/FS626/

REPORTS ON NEW PROBLEMS

Problem: Imported Cabbage Worm Caterpillars *(Pierus rapae)*	**Where: Morris Township Community Garden (5/20), Morris County Community Garden (5/23)**
Description: Imported Cabbage Worm butterflies lay their eggs on brassicas such as cabbage, broccoli, and cauliflower. The green color and small size of the larvae makes it difficult to detect them on the leaves of your plants but you will know they are there if you begin to see holes in the leaves. The butterfly lays single white eggs on the underside of leaves. Eggs hatch 3 to 5 days later and the green caterpillars begin feeding on the leaves. After 2 to 3 weeks of feeding, the caterpillars pupate and form a chrysalis on or near the affected plant. This matures in about 2 weeks and the cycle begins again. In our location, it is possible to have 2 to 3 overlapping generations in a season.	

If you see this…

Adult Imported Cabbageworm Butterfly

Larva
Photo: P.Nitzsche NJAES

The larvae won't be far behind

Larva
Photo: P. Nitzsche, NJAES

Damage on cabbage plants

Damage from cabbageworm feeding
Photo: P. Nitzsche NJAES

Management: Handpick eggs and caterpillars and dispose of them by crushing or dumping in a jar of soapy water. The caterpillars are well camouflaged so your first inkling of a problem may be damage to leaves. Planting red cabbage varieties makes it easier to see the caterpillars.

- Row covers placed immediately after planting seedlings will keep the butterflies from laying eggs.
- Apply *Bacillus thuringiensis var. kurstaki* when caterpillars are small and actively feeding. The *BT* must be ingested to be effective.
- In the case of plants that form heads, harvest affected plants early to minimize tunneling by larger caterpillars into the head.

More Information: Fact Sheet / References

Rutgers Fact Sheet FS286 Imported Cabbageworm: https://njaes.rutgers.edu/pubs/publication.php?pid=FS286

Problem: Pest: Colorado Potato Beetle ***(Leptinotarsa decemlineata)***	**Where: Morris Township Community Garden, May 14**

Description: Adult Colorado Potato Beetles overwinter in the soil and emerge in early spring, laying bright, orange-yellow eggs in small clusters on the undersides of the leaves of host plants in the *Solanaceae* family. Both adults and their larvae will feed on the foliage of potatoes, eggplant, tomatoes, peppers, groundcherry and other nightshade plants. The Colorado potato beetle is approximately 3/8th of an inch long and has a black and yellow striped body with an orange head. A second generation will emerge in late summer then overwinter in the soil. If not controlled, they can reproduce rapidly and defoliate plants. Monitor and destroy to disrupt any future infestations.

Colorado Potato adult with yellow eggs on underside of leaf.
Photo: Rutgers Fact Sheet 224

Newly hatched red-orange larvae eating leaves. Shows whole leaf damage happens quickly.
Photo: Rutgers Fact Sheet 224

Adult sitting on potato leaf
Photo: M. Olin, NJAES

Management:

- Colorado Potato Beetle adults and larvae can be effectively hand-picked.
- Destroy beetles and their larvae by crushing or placing them in a can of water with a few drops of dish detergent. Be sure to scout under leaves for their yellow eggs and remove/crush them.
- Row covers can protect young plants and prevent the beetles from reaching crops.
- Rotate crops each year, plant *Solanaceae* family as far as possible from previously infected area.
- A biological insecticide, *Bacillus thuringiensis var. tenebrionis*, is available (Novodor). This biopesticide utilizes a bacterium that kills small potato beetle larvae when used according to label directions.

Fact Sheet / References:

1. Rutgers University Fact Sheet FS224 https://njaes.rutgers.edu/pubs/publication.php?pid=FS224
2. University of Maryland https://extension.umd.edu/resource/colorado-potato-beetle-vegetables
3. Cornell University http://web.entomology.cornell.edu/shelton/veg-insects-ne/pests/cpb.html

Problem: Three-lined Potato Beetles ***(Lema daturaphila)***	**Where: Morris Twp. Community Garden (5/21), Morris County Community Garden (5/23)**

Description: : Three-lined Potato Beetles are found on plants in the family Solanaceae. Both adults and larvae feed on leaves including tomatillo, potato, and sometimes tomato and eggplant. Damage to tomatillos can be severe. Eggs are yellow and often found on the underside of leaves. Both adults and larvae feed on leaves. Gardeners sometimes mistake three-lined potato beetle adults for striped cucumber beetles.

Three lined Potato Beetle – Morris Twp Comm Garden, May 2021
Photo M. Albright, NJAES

Eggs of Three-lined Potato Beetle. Morris Twp Comm Garden, May 2021
Photo M. Albright, NJAES

Three-lined Potato Beetle larvae UNH Cooperative Ext.

Management:

- The eggs, larvae, and adults can be handpicked.
- Floating row covers are an effective barrier to the beetles while the plants are small.
- Neem and pyrethrins can be used. As with any pesticide, be sure the plant and pest is listed on the label and use according to instructions.

More Information: Fact Sheet / References

1. Rutgers NJAES, Three-lined Potato Beetle, FS242: https://njaes.rutgers.edu/pubs/publication.php?pid=FS242
2. UNH Cooperative Ext. Three-lined Potato Beetle: https://extension.unh.edu/resources/files/Resource001192_Rep1517.pdf

Pest: Spittlebug	**Where: Morris Township home garden (5/13)**

Description: According to the University of Connecticut, spittlebugs are common and easily recognized by the white foamy 'spittle' produced by the nymph or immature stage of the insects as they feed. Adults are less commonly seen but are known as froghoppers (close relatives of leafhoppers, etc). There are anywhere from 30 to 60+ spittlebug species in the United States. All feed on plants, including both woody and herbaceous types. Some spittlebugs have broad host ranges and others narrow.

There is usually only one generation per year and most overwinter in the egg stage inside overwintering plant tissue where they were deposited by the females in mid to late summer to early fall, depending on species. Hatch occurs in the spring, probably in May. Even though Spittlebugs feed by extracting plant sap/juice through needle-like mouth parts, they seldom cause notable injury to the plant. There are a few exceptions including the meadow spittlebug (*Philaenus spumarius*) and the pine spittlebug (*Aphrophora cribrata*).

Spittlebug foam on rhubarb leaf. No insect is present.
D. DuBrule NJAES

Adult meadow spittlebug.
Cheryl Moorehead, Bugwood.org/UCONN Edu

Suggestions: Spittlebugs are unlikely to cause significant damage to either vegetable or ornamentals. According to UConn, "the biggest problem with spittlebugs in the garden, whether it's an ornamental or food garden, is the unsightliness of the spittle masses. Spittle and nymphs can both be washed off the plants with a steady stream of water. Normally, no chemical controls are recommended and the spittle protects nymphs from contact insecticides. Not sure if there are enough spittlebugs to cause plants to be weakened? Look for distorted or stunted new growth, and of course numerous spittle masses on the same plant."

More Information: Fact Sheet / References

UConn Extension, Spittlebug: A Unique Little Insect: https://bugs.uconn.edu/2017/07/24/spittlebug-a-unique-little-insect/#

UMN Extension, Spittlebugs in the Home Garden, https://extension.umn.edu/yard-and-garden-insects/spittlebugs

Problem: Aphids *(Aphis spp.)*	**Where: Morris Twonship Community Garden (5/26)**

Description: Aphids can overwinter as eggs on bark or buds and become active in early spring. They are small, 1/16" to 1/8" long, soft-bodied, pear-shaped insects that range in color from pink, green, bluish green, black, brown, tan, or yellow. Aphids suck the juices from plants, which causes the leaves to curl and wilt. The sweet honeydew excreted by aphids often attracts ants. Aphids will flourish with temperatures of 65-80 degrees and reproduce rapidly with several generations a season.

Aphids on underside plum leaf
Photo: J. Williams, NJAES

Aphid found on Calendula
Photo: J. Basile, NJAES

Management:

- Encourage beneficials such as Ladybugs, Green Lacewing, and Syrphid flies, all feed voraciously on aphids. Companion plant with these three top plant families, the *Asteraceae* (Aster), *Apiaceae* (Carrot) and *Lamiaceae* (Mint). These provide nectar, pollen and shelter for beneficials and pollinators.

- Use a strong stream of water to knock aphids off plants.
- Avoid over-fertilization with nitrogen, as the lush growth that results makes the plants especially attractive to aphids.
- To avoid spread of the problem, remove severely affected plants from the garden.
- As a last resort, spray with insecticidal soap or Neem. Please be sure to read the label, and follow the directions thoroughly. Insecticidal soap will only kill on direct contact and Neem will disrupt their feeding until they gradually die.

Fact Sheet / References:

1. Rutgers University Fact Sheet FS077 https://njaes.rutgers.edu/pubs/publication.php?pid=FS077
2. University of Massachusetts Amherst https://ag.umass.edu/landscape/fact-sheets/aphids

LIKELY TO BE SEEN SOON

Grey Mold on Strawberry leaves and fruit
(Botrytis cinerea)

Description:
Botrytis is a genus of fungus that infects many of the most commonly grown vegetables and fruits in N.J. The species *cinerea*, or grey mold, is a common pathogen of strawberries. It can cause problems during cool wet periods when the fruit is growing to mature size. It presents as grey fuzzy growth that can cover the entire fruit. Once infected, the fruit is useless. Preventing infection organically can be difficult, but if diligent, can be helpful.
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Gray Mold (Botrytis Fruit Rot) of Strawberry

Photo: P. Nitzsche NJAES

Management:

- Mulching under the plant leaves, helps reduce splashing inoculant on the leaves from soil borne spores.
- Avoiding overhead watering will also help keep the leaves dry.
- Reducing density of strawberry plants and runners will also help to reduce infection
- Keeping the planted area weed free will help air flow and reduce competition.
- Remove infected leaves in the fall to reduce overwintering sclerota or mycelium leading to next year's infection.

Fact Sheet / References
Cornell University , Plant Disease Diagnostic Clinic, http://plantclinic.cornell.edu/factsheets/botrytisblight.pdf
Plant Pest Advisory Rutgers University, https://plant-pest-advisory.rutgers.edu/anthracnose-and-botrytis-control-in-strawberries-for-2022-2/

Pest: Squash Bugs
(Anasa tristis)

Description: Squash bug adults were seen at the Morris Township Community Garden. Squash bugs and their nymphs 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 wilting 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 adult

Squash bugs are about 5/8th inch long and resemble stink bugs

Photo: M. Albright, NJAES

Squash Bug eggs and 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 very 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 for adults and nymphs. As with any insecticide, make sure the product label includes the plant and pest, and follow the instructions on the label.

More Information: Fact Sheet / References

- Rutgers fact sheet FS228 Squash Bugs: https://njaes.rutgers.edu/pubs/publication.php?pid=FS228
- UC IPM Squash Bug Management Guidelines: http://ipm.ucanr.edu/PMG/PESTNOTES/pn74144.html

Pest: Striped cucumber beetles
(Acalymma vittatum)

Description: Striped cucumber beetles cause feeding damage on the foliage and fruit of cucurbit plants (cucumbers, squash and pumpkins). Importantly, striped cucumber beetles carry the bacterial wilt pathogen that can cause plants, especially cucumbers, to wilt and die. Cucurbits are broadly susceptible. These 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.

Striped Cucumber Beetle Adults (M. Albright, NJAES)

Damage Caused by Striped Cucumber Beetle on Zucchini Plant (M. Olin, NJAES)

Management:

- Check 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).
  - Keep your garden clean. Remove weeds in and around your garden, as they may be potential hosts for adults. If a plant is showing signs of bacterial wilt, remove the infested plant before more beetles can feed on the plant and spread the bacterium.
  - Use a physical barrier, such as a floating row cover, during early to mid-June to keep the Striped cucumber beetles away from your plants. Be sure to remove the barrier when cucurbits start to flower unless you are growing a parthenocarpic variety (one that doesn't require insect pollination).

Choose a pesticide that has a low impact on beneficial insects, such as ladybird beetles and pollinators. Neem is a plant-based pesticide that prevents insects from feeding, which eventually kills them. Spinosad and pyrethrins can also be used. Pyrethrins should come in contact with the beetles to be effective but avoid spraying when bees are present on crop flowers..

More Information: Fact Sheet / References

- Rutgers NJAES Cucumber Beetles FS225: https://njaes.rutgers.edu/pubs/publication.php?pid=FS225
- UMN Extension Cucumber Beetles in Home Gardens: https://extension.umn.edu/yard-and-garden-insects/cucumber-beetles
- Rutgers Fact Sheet 1123 Vegetable Insect Control Recommendations for Home Gardens: https://njaes.rutgers.edu/fs1123/

WEED SPOTLIGHTS

This week's report includes a weed seen during the recent community garden inspections by the IPM Team. These weeds, if left to grow to maturity, can become serious problems in the garden.

Horse Tail
(Equisetum arvense) ***Madison Community Garden***

Common horse tail is a perennial related to ferns. It therefore does not bloom but instead reproduces by spores, and rhizomes. The rhizomes can grow as long as six feet, and due to this extensive rhizomal network, it can be very difficult to eradicate once established. Generally horse tails prefer moist areas, but will tolerate most conditions. Eradication requires diligence starting early in the growing season and continuing until the first frost. Several years may be required to totally eliminate it.

Photo: NC State Extension

Horse Tail Madison Community Garden
Photo: Brian Monaghan NJAES

References

- Native plant Trust https://gobotany.nativeplanttrust.org/
- N C State Extension https://plants.ces.ncsu.edu/

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

Report Editor: Brian Monaghan
Tips and Weed Spotlights: Brian Monaghan
Sightings Reported by: Jennifer Basile, Margot Sample, Mary Olin, Mary Albright, Jill Williams