# RUTGERS

New Jersey Agricultural Experiment Station

# Rutgers Master Gardener IPM Team Report Report # 5, Week of June 14, 2021

WHAT'S IN THIS REPORT		
NEW PROBLEMS SEEN	SPOTLIGHTS	
Striped cucumber beetles	Ladybird beetle eggs (beneficial)	
Squash bugs	Crabgrass (weed)	
White rot on garlic		
Wireworm		
• Earwig (both pest and beneficial)		
Cross striped cabbageworms		
Spotted Lanternfly nymphs		
Gray mold on strawberries		
Sunscald on strawberries and bean plants		

#### **GENERAL OBSERVATIONS AND TIPS**

Gardeners are happy to have more typical weather after the unusual late May cold snap followed by an early June heat wave that stressed some of their plants. Vegetable gardens are growing vigorously now, and the gardeners are pleased to see their garden plans becoming reality. Stay on top of weeding since the weeds are also growing vigorously and it is best to remove them when they are small. Weeds compete with nearby plants for nutrients and are harder to remove when they are large. Remember to water at the base of the plant, not the foliage, so as not to encourage pathogens that thrive on damp foliage.

#### **REPORTS ON NEW PROBLEMS**

Pest: Striped cucumber ceetles	Where: Morris Township Community Garden
(Acalymma vittatum)	6/5/2021

**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.

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

# Pest: Squash Bugs<br/>(Anasa tristis)Where: Morris Township Community Garden 6/10/2021

**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 5/8<sup>th</sup> 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.

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

## Problem: Wireworms (Melanotus, spp.)

### Where: Madison Community Garden 6/2/2021

**Description:** Wireworms, the larvae of click beetles, live in the soil and eat small roots, burrow into tubers and fleshy roots, and destroy germinating seeds and seedlings. Wireworms are hard-bodied, ½ to 1½ inches in length, and yellow to yellowish-brown or whitish-brown. Early feeding generally appears as shallow holes; late feeding appears as ragged, deep holes. Nearly all types of vegetables may be damaged, but most frequently attacked crops include the root crops (carrots, potatoes, radishes, sweet potatoes, and turnips), corn seedlings, strawberries, and stems of tomato transplants. Less frequently damaged crops include beans, beets, lettuce, melons, onions, peas, and cucumber and tomato fruits that touch the soil surface. Several species of wireworms are common in New Jersey.

Wireworms overwinter as larval and adult stages in the soil. Adults emerge in late spring when soil temperatures warm up (about late-May and June in New Jersey), and deposit eggs in damp soil. Larvae hatch and feed on plant roots and other underground portions for 1–6 years, depending on the species.



Wireworm Photo: Brian Monaghan, NJAES



Adult Click Beetle Photo: Rutgers fact sheet FS294



Wireworm damage to potato Photo: Rutgers fact sheet FS294

#### Management:

- If wireworms were previously a problem, plant susceptible crops as far away from that area as possible.
- Avoid planting a garden in soil that was previously sod. Wireworms build up in sod, and when the sod is replaced by garden crops, the wireworms feed on the roots of the new crops.

#### More Information: Fact Sheet / References

Rutgers Fact Sheet FS294, Wireworms: <u>https://njaes.rutgers.edu/pubs/publication.php?pid=FS294</u>

#### **Pest: Earwigs** Note: Earwigs are both garden pests and beneficial predators (insect order Dermaptera)

#### Where: Morris Township Home Garden 6/8/2021

#### Description:

Earwigs are night feeding insects that can be both pests and beneficial predators. As pests in the vegetable garden they may feed on seedlings, plant leaves, flowers, soft fruit and on corn silk. Leaves chewed by earwigs often have a ragged or shredded look. As beneficial predators, they feed on eggs and immature stages of insects, such as fleas and aphids, as well as snails and other slow-moving invertebrates.

Earwigs mostly feed at night and seek out dark, cool, moist places to hide during the day. Common hiding places are under loose clods of soil, boards, or dense growth of vines or weeds. The best way to identify whether they are causing damage in the garden is to look for them with a flashlight at night.

Earwigs make up the insect order Dermaptera. The adult earwig is identified by a pair of prominent forcepslike appendages at the tail end of its body. Most species have wings under short, hard wing covers, but they seldom fly. Immature earwigs look like adults except they are smaller and lack wings. The adult is about 3/4 inch long and reddish brown.



Photo: M. Albright, NJAES

Holes in leaves of Swiss chard plant eaten by earwigs Photo: M. Albright, NJAES

#### Management:

- Earwigs can be trapped with a rolled-up newspaper, corrugated cardboard, bamboo tubes, or a short piece of hose. Place these traps on the soil near plants just before dark and shake accumulated earwigs out into a pail of soapy water in the morning.
- Remove hiding sites for earwigs, such as weeds, piles of rubbish, and leaves. Mulches may also harbor earwigs.
- Natural enemies include toads, birds, and other predators. Chickens and ducks will consume many earwigs.

- University of Connecticut: <u>http://www.ladybug.uconn.edu/FactSheets/earwigs.php</u>
- University of California IPM: <u>http://ipm.ucanr.edu/PMG/PESTNOTES/pn74102.html</u>

# Pest: Cross-striped caterpillars and eggs (Evergestis rimosalis)

# Where: Morris Township Community Garden 6/10/2021

**Description:** 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.

#### Management:

- Hand-picking of egg masses and larvae is effective, although time consuming.
- Cover plants with row covers after transplanting.
- The insecticide, Bacillus thuringiensis, can be used and only affects caterpillars. Neem, pyrethrin and Spinosad can also be used.



Cross-Striped Cabbageworm caterpillars on broccoli rabe. Photo: M. Albright, NJAES



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

- Rutgers Fact Sheet FS287, Cross-Striped Cabbageworm: https://njaes.rutgers.edu/pubs/publication.php?pid=FS287
- Rutgers Fact Sheet FS1123, Vegetable Insect Control Recommendations for Home Gardens <u>https://njaes.rutgers.edu/fs1123/</u>
- <u>https://ag.umass.edu/vegetable/fact-sheets/cross-striped-cabbage-worm</u>

# Pest: Spotted lanternfly nymphs (Lycorma delicatula)

#### Where: Morris Township Home Garden

**Description:** Spotted lanternfly nymphs were seen on raspberry plants in a Morris Township home garden. The spotted lanternfly is a serious invasive pest introduced into Pennsylvania in 2014 that has spread into New Jersey. Spotted Lanternfly adults were reported in Morris County last year and nymphs have been seen in Morris County this year. Spotted Lanternflies have the potential to seriously damage crops and trees.



Spotted lanternfly nymphs (early stage) on raspberry plant M. Albright, NJAES



Spotted lanternfly nymph, early stage (found April – July) Photo: Penn State U.



Spotted lanternfly nymph, late stage (found July – September) Photo: Penn State U.



Spotted lanternfly adult, wings open Photo: Rutgers University

Spotted lanternfly adult, wings closed (found July – November)

Photo: Penn State U.

#### Management:

- Gardeners can handpick the nymphs or knock them into a jar of soapy water (however they scatter quickly)
- Contact insecticides can be sprayed on the nymphs. Organic insecticides include pyrethrins and neem. As with any insecticide, be sure to follow label instructions.
- Further information on managing spotted lanternfly adults, nymphs and eggs, as well as their favorite host plants, can be found in the references.

- <u>https://njaes.rutgers.edu/spotted-lanternfly/</u>
- <u>https://extension.psu.edu/spotted-lanternfly-management-for-residents</u>

Disease: White rot in garlic plant	Where: Morris Twp. Community Garden 6/10/2021
<b>Description:</b> Garlic can be a very easy-to-grow herb in One of those diseases, white rot ( <i>Sclerotium cepivorur</i> Community Garden. White rot is a destructive disease dieback of foliage. When bulbs are dug out of the soil	the garden; however it is also prone to several diseases. n), was found in garlic plants in the Morris Township that causes symptoms of stunting, yellowing, and they are either coated with a white to gray colored fuzz
(mycelium) or with a crusty covering that is embedded structures). White rot can live in the soil for indefinite	with tiny black poppy-seed sized sclerotia (reproductive periods of time.
<ul> <li>Management:</li> <li>Buy certified disease-free garlic seed. Never p may be a symptomless carrier of disease.</li> </ul>	lant garlic purchased from a grocery store because it
<ul> <li>Remove and dispose of infected plants. Do no</li> <li>Allow adequate spacing of plants.</li> </ul>	t compost these plants.
<ul> <li>Do not plant garlic, onions or other members couple years.</li> </ul>	of the allium family in the infested soil again for at least a
<ul> <li>Sanitize tools before using them again in anot bleach solution can be used to sanitize tools.</li> </ul>	her garden area to avoid spreading the disease. A 10%
<ul> <li>Gardeners with previous white rot can try usir powder per 100 square feet with half applied should be incorporated to a depth of 6 inches to germinate with no real host.</li> </ul>	ng a garlic powder treatment of 4.5 ounces of garlic to the soil in October and half in March. The powder to help kill the overwintering spores by stimulating them

White Rot disease on garlic Note the soil sticking to bulb, white mycelium and black poppy-seed sized sclerotia. Photo: P.Nitzsche, NJAES

rot are in the first row of this raised bed. (6/13/2021). Photo: M. Albright, NJAES

Several brown, stunted garlic plants with white

White rot disease on garlic plants

- Cornell University, http://plantclinic.cornell.edu/factsheets/garlicdiseases.pdf
- Cornell University, <u>https://rvpadmin.cce.cornell.edu/uploads/doc\_480.pdf</u>
- University of Maine, <u>https://extension.umaine.edu/publications/wp-</u> content/uploads/sites/52/2020/03/2062.pdf

Problem:	Sunburn	(sunscald) on
strawberr	ies and be	ean plants

Strawberries: Morris Township Community 6/6/2021 Bean plants: Dover and Morris Township home gardens 6/6/2021

**Description:** Sunburned strawberries and bean plant leaves were seen after the start of the early June heat wave. Sunburn can occur when plants that develop under cloudy or rainy conditions are exposed to sudden direct sun and heat.

On strawberries, symptoms occur on portions of fruit exposed to the sun and appear on the upper side of fruit just prior to ripening. Some strawberry varieties are more prone to sunscald than others.

Sunscald on the leaves of plants, such as bean plants, shows as an area on the leaf turning papery white or tan. The affected leaf tissue rapidly becomes desiccated with the extra light/heat exposure, causing the light tan to white discoloration on the leaves and stems of sensitive plants.

Sunburn can occur on many other fruits and plants. Sunburned peppers and tomatoes are often seen later in the gardening season.



Sunscald on strawberries Photo: Mary Albright, NJAES



Sunscald on strawberries Photo: Cornell University



Sunscald on bean plant leaf Photo: Jill Williams, NJAES

#### Management:

- Maintain a good plant canopy over fruit by promoting plant vigor and by using good cultural practices.
- Irrigate when soil is dry to reduce fruit and plant stress.

- Cornell University: <u>https://blogs.cornell.edu/berrytool/strawberries/strawberries-upper-sides-of-berries-exhibit-a-water-soaked-bleached-out-appearance/</u>
- University of Kentucky: <u>https://strawberryscout.ca.uky.edu/sunburn</u>
- University of Delaware: <u>https://sites.udel.edu/weeklycropupdate/?p=11875</u>

# Disease: Gray Mold in Strawberries (*Botrytis cinerea*)

#### Where: Morris County Park Commission Community Garden 6/6/2021

**Description:** Gray mold of strawberries is caused by a fungus, *Botrytis cinerea*, which infects both the flowers and fruits. Because of this, Botrytis can greatly reduce fruit yields and is considered one of the most damaging diseases of strawberry. Botrytis is most prevalent during prolonged cool, wet weather during bloom and near harvest. Gray mold overwinters in old leaves, petioles and mummified fruit. In the spring during cool humid weather, spores form and spread by wind or water to wounded or extremely soft plant tissues. Infection can also occur from previously infected plant parts.







Gray mold on strawberries, Photo: Edward Sikora, Auburn University



Gray Mold on strawberry, Photo: D. DuBrule, NJAES

#### Management

- Space plants so they dry rapidly after rain and irrigation. Don't water from above. During the growing season, strawberry plants need about one inch of water a week. On sites with sandy soils or during very hot weather, plants may need more water. Wet the soil to a depth of six to eight inches with each irrigation. Avoid applying so much water that the soil remains saturated for long periods.
- Pick berries frequently, especially during wet and warmer periods.
- Remove and dispose of rotten or severely damaged fruit throughout the season.
- Remove infected plant parts. Collecting and removing infected plant parts can slow the spread of the disease. This should be done frequently especially during fruit bearing time.
- Fertilize established strawberries in late summer to keep them vigorous and best able to withstand disease and to promote fall growth. Spring fertilization results in excessive leaf growth and runner formation and doesn't promote more or larger berries.
- For June-bearing strawberries (not everbearing / day neutral strawberries) renovate the bed two to four weeks after the last harvest by removing old leaves being careful not to damage the crown. A hedge clipper or mower can be used to remove the leaves.

- OSU Extension Service: <u>https://extension.oregonstate.edu/news/keep-those-gray-fuzzy-strawberries-check</u>
- Rutgers University Fact Sheet FS097 Growing Strawberries in the Home Garden: <u>https://njaes.rutgers.edu/fs097/</u>

### **BENEFICIAL SPOTLIGHT**

#### 14-spotted ladybird beetle (also called 14-spotted ladybug) (Propylea quatuordecimpunctata)



#### Where: Denville Home Garden 6/5/2021

**Description:** Even though the insect in the picture to the left is yellow, it one of the species of ladybird beetles: a 14-spotted ladybird beetle. Ladybird beetles are also known as ladybugs.

There are hundreds of species of ladybird beetles in North America. All but two (Mexican bean beetles and squash beetles) are beneficial as adults and larvae, feeding voraciously on many soft-bodied pest insects, especially aphids. They also feed on mites and other small insects and insect eggs.

The adults are usually  $\frac{1}{4}$  -  $\frac{3}{8}$ " long, round or oval, and ranging from black to pink, yellow or red, with or without spots on their wings.

Females may lay between 20 and 1,000 eggs over a three-month period. The eggs are tiny, bright yelloworange and spindle-shaped, laid upright in clusters of 5-30 and usually deposited near colonies of the insects that the larvae eat, most often in relatively protected locations on the undersides of leaves. The larvae look completely different from adults; they are tapered and alligator-like, growing from 1/25" up to 3/8" long, typically through four larval instars over 20-30 days. The larvae are very active, moving around quickly in search of prey.

You can attract ladybird beetles by growing flowering plants that produce nectar and pollen eaten by adult ladybird beetles, and also by avoiding the use of broad-spectrum insecticides. If any of your plants have aphids, undoubtedly ladybird beetles will follow!

A few other species of ladybird beetles:



Ladybird beetle (Harmonia axyridis) Photos above: Cornell University



Ladybird beetle (Hippodamia convergens)



Ladybird beetle (*Coleomegilla maculate*)

Exceptions that are not beneficial: There are two species of Ladybird beetles that are not beneficial: the Mexican bean beetle, *Epilachna varivestis*, and the squash beetle, *Epilachna borealis*.



Mexican bean beetles (left) are a major pest of bean plants. The adult has 16 spots and is copper colored.

Photo: Purdue University

#### References

- Rutgers Fact Sheet on Mexican Bean Beetles: <u>https://njaes.rutgers.edu/pubs/publication.php?pid=FS227</u>
- Cornell University: <a href="https://biocontrol.entomology.cornell.edu/predators/ladybeetles.php">https://biocontrol.entomology.cornell.edu/predators/ladybeetles.php</a>
- University of Maryland: <u>https://extension.umd.edu/resource/ladybird-beetles-or-ladybugs</u>

### WEED SPOTLIGHT

Crabgrass	Where: Morris Township Community Garden
(Digitaria spp.)	and Morris Township home garden

**Description:** There are two common types of crabgrass--hairy crabgrass (Digitaria sanguinalis) and smooth crabgrass (D. ischaemum). It doesn't make too much difference which one is present. They look similar and are similar in control. One has hairs on the leaf and the other doesn't. They are both annuals and germinate in May. They are highly prolific seed producers. Crabgrass is best weeded when the plants are small and before they produce seeds.



Crabgrass - small plants Photo: M. Albright, NJAES



Crabgrass - large plant Photo: Dr. John Meade, NJAES

#### References

• Rutgers Weed Gallery, Crabgrass: <u>https://njaes.rutgers.edu/weeds/weed.php?crabgrass</u>

### **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/

### PEST MONITORING APPROACH FOR 2020/21

During 2018 and 2019, teams of Rutgers Master Gardeners conducted regular inspections of two community gardens: the Morris County and Madison Community Gardens.

Due to Covid-19 restrictions during 2020/21, the team is reporting on problems observed in their own vegetable garden plots rather than inspecting all the plots in the community gardens. The team's plots are in eight locations in Morris County including the Madison Community Garden, Morris Township ValleVue Community Garden, Morris County Community Garden, as well as home gardens in Denville, Dover, Morris Plains, Kinnelon, and Morris Township.

Report Editor: Mary Albright

**Sightings Reported by:** Mary Albright, Diane DuBrule, Brian Monaghan, Mary Olin, Margot Sample, and Jill Williams