

| WHAT'S IN THIS REPORT | | |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| TIPS | NEW PROBLEMS SEEN | SPOTLIGHTS |
| <ul style="list-style-type: none"> • When is it time to cull a crop? | <ul style="list-style-type: none"> • Powdery mildew • Carrot weevil • Eggplant lace bug • Golden tortoise beetle | <ul style="list-style-type: none"> • Leopard slug (beneficial/non-beneficial) |

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

Beware the summer doldrums – aka the dog days of summer

Here we are at the beginning of August which is normally a time of hot, dry weather. People often refer to this time as the “dog days” of summer. Did you ever wonder where that expression comes from? It refers to the appearance in the night sky of the star, Sirius, also known as the Dog Star. Sirius is the brightest star in the constellation Canis Major, the Greater Dog, who in mythology was Orion the Hunter's companion.

Mythology and astronomy aside, these are the days when tomatoes are beginning to ripen and many gardeners are picking warm weather crops such as green beans, summer squash, peppers and basil. The struggle against weeds and insect pests has been going on for weeks and now disease organisms, such as powdery mildew, are beginning to put in an appearance. This is the point in time when a certain weariness and lassitude can begin to overtake even the most ardent gardeners.

Although you may want to take a break, now is the time to pace yourself and keep abreast of the necessary chores which keep your garden orderly, healthy and producing well. As pointed out in previous IPM reports, it is also the time to think ahead to crops that you can plant now and reap the rewards in September and October. What if your garden is full to overflowing with plants already? What should you do?

Tip: When is it time to cull a crop?

Having planted and nurtured various crops in the garden for weeks, how do you decide it is time to get rid of them? Ask yourself these questions and see if it helps you to put things in perspective.

- Do you have cool weather crops, such as peas, lettuce and radishes, in the garden that are far past their season? Unless you are planning to collect and save seeds, get rid of them.
- Are plants still setting fruit but at a greatly reduced rate? They should be replaced with something more productive.
- Is a crop succumbing to the depredations of insects and/or disease? Time to remove it.
- Have you had all the zucchini you can stomach and the neighbors don't answer the door when they see you approaching with a bag full of squash? It's OK to pull out a plant that is still producing but you aren't enjoying any more.

Keeping your garden fresh and engaging is a process which includes planning, planting, harvesting and, finally, culling. Don't feel guilty about moving on.



Bacterial Wilt Disease on cucumber plant.
Entire plant affected.
Photo: M. Albright, NJAES



Dead pea plants in August.
Should have been removed weeks ago.
Photo: M. Olin, NJAES

REPORTS ON NEW PROBLEMS

Problem: Powdery mildew
(Golovinomyces orontii)

Where: Morris Township Community Garden (7/27)

Description: This foliar disease is caused by windborne fungal spores. 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 squash
Photo: M. Olin, NJAES



Normal color variation of some squash, not powdery mildew fungus
Photo: Jennifer 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 spread of the disease, throw away and do not compost.
- Apply a spray made of 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 resistant varieties such as:
 - Cucumbers: Calypso, Diva, Green Finger, Marketmore, Parks Whopper II and Paraiso
 - Summer squash: Success PM Straightneck, Smooth Operator
 - Zucchini: Astia, Dark Star, Cocozelle, Spineless Perfection
 - Winter squash: Honey Nut, Autumn Frost, Bush Delicata

Fact Sheet / References

- Rutgers University Fact Sheet, <https://njaes.rutgers.edu/E310/>
- Cornell University Disease Resistant Vegetable Varieties, <https://www.vegetables.cornell.edu/pest-management/disease-factsheets/disease-resistant-vegetable-varieties/>
- University of Connecticut, <https://homegarden.cahn.uconn.edu/factsheets/powdery-mildew-of-cucurbits/>

Problem: Carrot weevil (*Listronotus oregonensis*)

Where: Morris Township Home Garden (7/28)

Description: Carrot weevils feed upon members of the Apiaceae family. Besides carrots, this family includes plants such as dill, parsley, celery, parsnips, lovage and fennel, among others. Carrot weevil adults are dark brown in color with a dome-shaped back and the pronounced snout associated with weevil species. They are tiny, only about 5/16 inch long and that, combined with their dark coloration and their predilection to “play dead” when disturbed make them very difficult to spot.

Adults lay oval eggs about 0.8 mm long which are light yellow at the outset but darken to a brownish-black by the time of hatching. Larvae are legless, C-shaped grubs about 1/3 inch long and ranging in color from white to pinkish-brown. Their heads are hard and yellowish-brown in color.

Adult Carrot weevils overwinter in plant refuse and grass close to the garden. They emerge in April in southern New Jersey and 1-2 weeks later further north. They feed on the foliage of plants in the carrot family including common weeds like Queen Ann’s Lace. After several days of feeding, the female begins to lay eggs in the petioles or crown of the host plant. Eggs hatch in 7-10 days after which the larvae emerge and can cause severe damage by feeding and tunneling through the roots. After about 2 weeks, larvae pupate in the soil and then emerge as adults in another 2-3 weeks. There are 2-3 generations in the north and more in the south.



Carrot weevil larva in damaged carrot
Photo: M. Albright, NJAES



Typical Carrot weevil damage
Photo: M. Albright, NJAES



Carrot weevil adult
Photo: Univ. of Massachusetts Amherst Extension

Management:

- Eliminate plant refuse from the garden, particularly of plants in the Apiaceae family. Carrots left in the ground to overwinter provide ideal overwintering sites for Carrot weevil adults.
- Avoid creating a garden near wastelands, woods or ditches to minimize migration of this pest into the garden.

- Alternate host plants such as broad-leaved plantain, patience dock and sour grass should be removed to avoid attracting weevils.
- If possible, rotate planting locations of carrots, celery and parsley as far as possible from the previous year's planting site.
- There are no effective insecticides to control this pest available to the home gardener.

References:

- Rutgers University Fact Sheet: <https://njaes.rutgers.edu/pubs/publication.php?pid=FS250>
- Ohio State University Extension: <https://ohioline.osu.edu/factsheet/ent-83>
- University of Massachusetts Amherst Extension: <https://ag.umass.edu/vegetable/fact-sheets/carrot-weevil>

Problem: Eggplant lace bug
(*Gargaphia solani*)

Where: Morris County Community Garden (7/17)

Description: The Eggplant lace bug is quite tiny and it is difficult to see any details using only the naked eye. Adults are mottled gray to dark brown and measure about 1/16 inch in length. Their nymphs are wingless, yellow with black markings, black antennae and develop black spines on their bodies as they mature. At the most mature nymph stage, they are only about 8/100 inch long.

Eggs are 0.4 mm long, oval and greenish at the base, brown toward the tip. There is a crater-like depression on one end with a white lace-like border. Eggs are laid on end in a roughly circular cluster and lean in different directions. They would be difficult to detect and identify using only the naked eye. The mother bug remains with her eggs and nymphs to protect them from predators. Since they are so tiny, this can be a helpful tool when attempting to diagnose their presence.

Eggplant lace bugs feed on eggplant, tomato, potato, sunflower, sage, cotton and horsenettle. They feed by piercing and sucking the juices from plant tissues. This results in roughly circular areas of a whitened discoloration. The insects will be found on the underside of these discolored areas.

They are most commonly seen in Maryland, Missouri, and Oklahoma southward. They have been reported as far west as New Mexico and Arizona and also in New Jersey, Pennsylvania, Connecticut, and British Columbia.

Eggplant lace bugs overwinter as adults among plant debris. They emerge to lay eggs in mid to late May. Up to 6 annual generations can occur on eggplant.



Eggplant lace bug guarding her eggs
 Upper circle = eggs
 Lower circle = adult
 Photo: M. Olin, NJAES



Adult eggplant lace bug (greatly magnified)
 Photo: North Carolina Cooperative Extension



Example of damage caused by Eggplant lace bug feeding.
 Photo: Maryland Extension Service

Management:

- Encourage natural predators of the eggplant lace bug which include lady beetle adults and larvae, spiders and shield-shaped soldier bugs.
- Inspect upper and lower surfaces of leaves if you notice stippling or loss of green color.
- Apply an ultra-fine horticultural oil or insecticidal soap, being sure to spray both upper and lower leaf surfaces.
- Clear away all debris at the end of the growing season to help prevent overwintering of this pest.

References:

- Virginia State University Cooperative Extension: https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/3104/3104-1548/ENTO-415.pdf
- University of Maryland Extension: <https://extension.umd.edu/resource/eggplant-lace-bugs-vegetables>

Problem: Golden tortoise beetle
(*Charidotella sexpunctata*)

Where: Morris Township Home Garden (7/31)

Description: Very little biological information is available on the Golden tortoise beetle, probably due to its negligible effect on agricultural crops. It is, however, a beautiful and interesting insect and the discovery of one in your garden is more often a cause for wonder rather than dismay. They feed exclusively on plants in the Convolvulaceae family which includes sweet potatoes, bindweed and morning glory. These beetles are native to the Americas and widely distributed in eastern North America and as far west as Iowa and Texas.

Adult beetles appear in May or June in New Jersey at which time they lay their eggs, resulting in a new population of adults in July. Golden tortoise beetles are relatively small at 5 to 7mm in length. They have a flattened, rounded shape and vary in color but are invariably some shade of orange or metallic gold. The metallic gold ones are blindingly bright in sunlight.

Eggs are white and are deposited singly in groups of about 20 on the underside of leaves. They are oval, flattened and measure about 1mm in length. Hatching occurs in 5 to 10 days. Larvae are broad and flattened and have branched spines protruding from the edges of their bodies. They are yellowish to reddish-brown in color. Larvae progress through three instars, while carrying their discarded skins and feces over their backs to deter predators. Upon maturing, the larva attaches itself to a leaf and pupates after which the new adult emerges in 7 to 14 days. In northern states, there may be more than one generation per year.

Golden tortoise beetle larvae and adults feed on foliage. They are generally on the underside of leaves and eat all the way through the leaf, creating characteristic small or medium-sized irregular holes. It is unusual for their numbers to be so large that they endanger the plant.

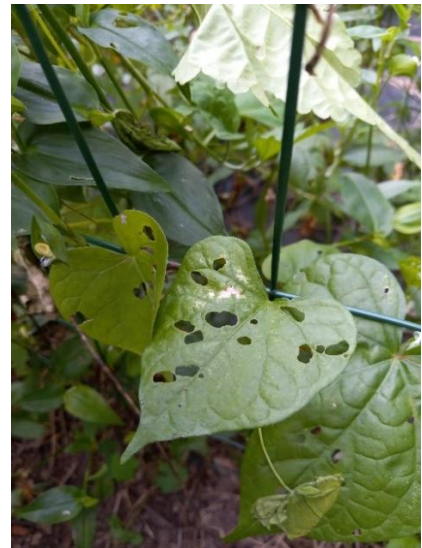
Natural predators of the Golden tortoise beetle include various different beetles, including ladybird beetles. There is also a species of parasitoid wasps and one of parasitoid flies that prey upon them as well.



Adult golden tortoise beetle
Photo: L. Schimming, bugguide.net



Golden tortoise beetle larva with fecal matter "shield"
Photo: P. Choate, Univ. of Florida



Morning glory leaf with characteristic feeding pattern of Golden tortoise beetle

Photo: M. Olin, NJAES

Management:

- Eliminate weeds of the morning glory family, such as bindweed, from your garden area.
- Encourage natural predators to help keep the population under control.

- If necessary, hand pick any existing beetles, larvae and eggs and destroy them.
- Organic controls such as neem can be used. Be sure to read the label, check that your target pest is listed and follow the directions.

References:

- Rutgers University: <https://njaes.rutgers.edu/pubs/publication.php?pid=FS292>
- University of Florida: https://entnemdept.ufl.edu/creatures/veg/potato/golden_tortoise_beetle.htm

SPOTLIGHT

Leopard slug
(Limax maximus)

Description: Leopard slugs are easily recognized by their large size and their spotted and striped coloring. They range from 3 to 7 inches long. Other names for this slug are Spotted garden slug and Giant slug. They are hermaphroditic which means they encompass both male and female organs within the same organism.

Like their much smaller cousins, the Leopard slug feeds upon both fresh and rotting plants. Tubers, fruits, leaves, roots, bulb flowers and perennial herbs all figure in their diet. In addition, they are omnivorous for they also prey upon and eat smaller slugs.

They require a moist environment with good cover to keep them from drying out and tend to be nocturnally active. They have been known to harbor a parasite that is capable of infecting humans, although this is a rare occurrence in the United States, so wear gloves when handling them.

Toads, robins, starlings, English sparrows and garter snakes are all predators of slugs. Sprinkling diatomaceous earth, ashes or sand around plants in your garden can be an effective means of discouraging slugs as they avoid crawling over anything dusty or scratchy.



Closeup of Leopard slug
Photo: M. Olin, NJAES



Leopard slug showing full size and slime trail
Photo: M. Olin, NJAES

References:

- Rutgers Cooperative Extension Fact Sheet 397: <https://njaes.rutgers.edu/pubs/publication.php?pid=FS397>
- University of Maine: <https://extension.umaine.edu/ipm/ipddl/publications/5036e/>
- Texas State University Invasive Species Institute: <http://www.tsusinvasives.org/home/database/limax-maximus>

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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