

WHAT'S IN THIS REPORT		
TIPS	NEW PROBLEMS SEEN	SPOTLIGHT
<ul style="list-style-type: none"> • To expand your vegetable repertoire, try growing ethnic vegetables. 	<ul style="list-style-type: none"> • Angular leaf spot • Japanese beetles • Brown marmorated stink bug larva • Pigweed flea beetle • Squash vine borer adult and eggs • Leafhopper 	<ul style="list-style-type: none"> • <i>Galinsoga</i> spp., aka Gallant soldier • Purslane, <i>Portulaca oleracea</i>

GARDENS SCOUTED FOR THIS REPORT: ValleVue Preserve Community Garden in Morris Township, Wick Garden Morristown, and Madison Community Garden.

GENERAL OBSERVATIONS AND TIPS

To expand your vegetable repertoire, try growing culturally important vegetables.

Gardeners have been growing vegetables that are culturally important in their home and community gardens. Whether it be ancestral seeds from the African Diaspora, Indigenous tribes, East or South Asia, the Levant, Italy, the Caribbean, Mexico or South America, to name a few, commercial production of many specialty crops has increased in New Jersey for the last 20 years and nationwide it has grown to be a multimillion-dollar market.

Rutgers has been researching vegetables that have the best success in New Jersey since 2001. Researchers and breeders from Rutgers started working with yacon, exotic peppers, okra, roselle, tropical spinach, and tiger nuts to determine the best varieties for our area. As the market for specialty vegetables grows, so does the availability of these vegetables for the home grower. By doing some very simple internet searches, one can find seed companies that offer seeds of culturally important vegetable varieties for the home grower. Whether one is looking for peppers, melons, beans, leafy plants, or something different, you can find many varieties that grow all over the world.




Why not try something new?

This information appears with the understanding that no endorsement or discrimination by Rutgers Cooperative Extension is implied or intended. In addition, Rutgers Cooperative Extension does not guarantee the performance of the crop, nor do we attest to the business practices of these companies.

More information can be found at:

- <https://worldcrops.org/>
- <https://extension.umd.edu/resource/specialty-vegetables/>
- <https://trueloveseeds.com/>
- <https://www.seedways.org/>
- <https://sistahseeds.com/>
- <https://hudsonvalleyseed.com/>

REPORTS ON NEW PROBLEMS

Angular Leaf Spot on cucumber plants (<i>Pseudomonas syringae</i>)	Wick Garden (6/18)	
<p>Description: Angular leaf spot (ALS) is a bacterial disease that favors warm, humid conditions and affects members of the Cucurbitaceae family, notably cucumbers. It is spread via water splash, handling, garden tools and may be seed-borne. Initial symptoms are small, white or tan-brown water-soaked spots that eventually expand until they reach the leaf veins, resulting in the angular appearance. In wet conditions, a bacterial ooze may form on these spots, causing a white deposit when it dries. Infected spots may dry and crack giving the leaf a tattered appearance. Eventually the leaves deteriorate, reducing plant vigor. Stems and fruit can also become infected, with fruit transferring bacteria to seed.</p>		
		
<p>Early stage of angular leaf spot disease on squash leaf Photo: M. Olin, NJAES</p>	<p>Later stage of disease on leaf showing tattered appearance Photo: M. Olin, NJAES</p>	<p>Closeup showing angularity of diseased spot Photo: J. Basile, NJAES</p>
<p>Management:</p> <ul style="list-style-type: none"> • Purchase certified seed and try resistant varieties such as Calypso, Diva, Fanfare and Marketmore. • Try growing vertically on a trellis to limit contact with soil and water splash. • Avoid overhead watering and don't handle plants when leaves are wet to avoid transmission. • Prune off infected leaves and stems or remove entire plant if disease is widespread. • Dispose of infected plants and diseased leaves responsibly, away from the garden. Do not compost. • Practice good garden cleanup as bacteria overwinters on seeds and diseased plant debris. • Practice a 2-year crop rotation plan. 		
<p>References:</p> <ul style="list-style-type: none"> • Rutgers University: https://njaes.rutgers.edu/E310/ • University of Massachusetts: https://ag.umass.edu/vegetable/fact-sheets/cucurbits-leaf-spots 		

Japanese beetle
(Popillia japonica)

Morris Township Community Garden (6/17)

Description:

This serious pest of flowers, trees and shrubs, fruits, vegetables, field crops and turf has returned to the gardens. Adults feed on more than 300 plant species, while the grubs feed mainly on the roots of grasses. This beetle is native to Japan and was first reported in the United States in 1916 in New Jersey. Currently, they are established from Maine to Georgia and in nearly every state east of the Mississippi River and several mid-western states. Beetle larvae (white grubs) have brown head, crème body and appear “C” shaped. They overwinter in the soil, actively feed on roots and emerge as flying adults when spring soil temperatures warm. These adults then feed on leaves and shoots over a four-to-six-week period. Adults are 9/16 of an inch in length and metallic green with coppery-brown wing covers (called *elytra*). Adults usually feed on tissue between leaf veins, resulting in leaves with lace-like or skeletonized appearance. They are most active during warm days, feeding on plants exposed to full sun throughout the day. Japanese beetle adults start feeding at the top of plants, migrating downward after depleting food sources.



Typical damage caused by adult beetles found at top of plant. Skeletonized leaves are telltale signs of recent activity. Adults assemble in masses and are often found mating.



IPM Team member, Mary Olin, demonstrates easy mechanical method of beetle removal from rhubarb plant.

Use cup of soapy water and simply shake off beetles into container. Dispose of remains, but get ready to begin anew, as they can be prolific. Handpicking can also work if you are so inclined.

Top plant choices of feeding are rhubarb, beans, tomatillo, grapes, peach, plum, cherry, rhododendron, roses, and many other ornamentals.

Photos: J. Basile, NJAES

Management:

- Handpick Japanese beetles daily in the morning or evening when air temperatures are cooler. Collect them in a jar or bucket of soapy water or rubbing alcohol (70% isopropyl alcohol).
- Pheromone traps can be problematic, since they actually attract more than they can capture.

References:

- Rutgers University: <https://njaes.rutgers.edu/fs1009/>
[Rutgers University https://njaes.rutgers.edu/pubs/publication.php?pid=FS293](https://njaes.rutgers.edu/pubs/publication.php?pid=FS293)
- University of Minnesota: [Japanese beetles in yards and gardens | UMN Extension](#)

Problem: Brown Marmorated Stinkbug Nymphs (5th instar)
(*Halyomorpha halys*)

Morris Township home garden (6/17)
Morris County Community Garden (6/17)

Description: The Brown marmorated adult stinkbugs have a mottled brown-grey shield-shaped body and are approximately 5/8 inch long with white banding on their antennae and legs. They are flying insects. This pest usually lays clutches of approximately 28 elliptical-shaped eggs on the underside of leaves. Upon hatching, the nymphs progress through five instars or stages during which they range in size from 2.4mm to 12mm (approx. 2/16 to 1/2 inch). The first instars resemble ticks and are not very active, remaining near the egg mass. Nymphs have dark reddish eyes and a yellowish-red abdomen with black stripes. Their legs and antennae are black with white banding.

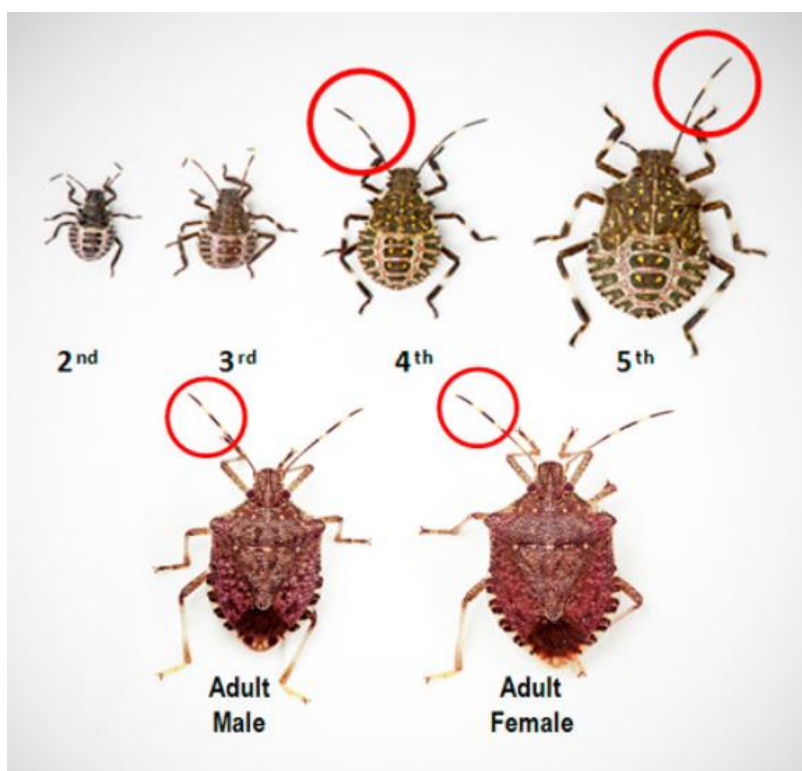
The Brown marmorated stink bug is native to Asia and was introduced into the United States in the mid-1990's. They produce one to two generations per year in cooler climates and can be a serious agricultural pest as they feed on a variety of tree fruits and vegetables such as apples, cherries, corn, peaches, peppers, tomatoes and soybeans. Feeding damage can lead to pitting and scarring and sometimes a mealy texture. They also feed on leaves, causing a stippled area about 1/8 inch in diameter around the feeding site. They do not chew holes but pierce the epidermis and suck out the juices.

This pest overwinters in confined spaces such as buildings, dead trees and logs. In Spring, they emerge and lay their eggs on wild host plants, then move on to begin feeding on their chosen food crops of which there are many.



5th instar brown marmorated stinkbug nymph

Photo: M. Albright, NJAES



Brown marmorated stinkbug lifecycle. Note the white bands on the antennae and legs. (from University of Missouri reference below)

Photos: Dr. T. Leskey, USDA-ARS



Eggs and first instar nymphs

Photo: M. Albright, NJAES

Management:

- Hand pick adults, nymphs and eggs and crush or deposit in a jar of soapy water.
- Clear away any likely overwintering sites in or near your garden.
- Organic insect sprays containing Spinosad have shown some efficacy but need to be reapplied frequently.
- **READ THE LABEL**

References:

- Rutgers New Jersey Agricultural Experiment Station: [How to Identify the Brown Marmorated Stink Bug \(Rutgers NJAES\)](#)
- US Environmental Protection Agency (EPA): [Brown Marmorated Stink Bug | US EPA](#)
- North Carolina Extension: [Brown Marmorated Stink Bug \(North Carolina\) | NC State Extension Publications \(ncsu.edu\)](#)
- University of Missouri: [Brown Marmorated Stink Bug Identification & Scouting // Integrated Pest Management, University of Missouri](#)

Problem: Pigweed flea beetles
(*Disonycha glabrata*)

Morris County Community Garden (6/17)

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.

References:

- Connecticut Agricultural Experiment Station, https://portal.ct.gov/-/media/CAES/DOCUMENTS/Publications/Fact_Sheets/Entomology/PigweedFleaBeetlepdf.pdf?la=en

Problem: Squash vine borer and eggs
(Melittia satyriniformis synonym M. cucurbitae)

Morris Township Community Garden: adult (6/20)
Morris Township home garden: eggs (6/22)

Description: The squash vine borer, *Melittia satyriniformis* or *Melittia cucurbitae*, is a significant pest of squashes and pumpkins and a lesser pest of cucurbits and melons. Frass, which is greenish / yellow excrement, indicates that borers are feeding and tunneling inside the stems of the plants. If the borer(s) are not removed, they will cause the plant to wilt and die.



Squash vine borer inside a stem

Photo: P. Nitzsche, NJAES



Frass (excrement) from Squash vine borer

Photo: M. Albright, NJAES



Squash vine borer adult

Photo: L. Voo, Gardener at Morris Township Community Garden



Squash vine borer eggs

Photo: B. Werling, MSU Extension

Management:

- Watch for and destroy adults.
- Inspect plants for eggs. They can be anywhere on the plant. Most often they are at the base of the plant, on the stems, or on leafstalks. They can be removed with the sticky side of tape.
- If frass is seen, cut a longitudinal slit halfway through the vine above the frass to find and remove the borer.
- If there are multiple locations with frass, there may be multiple borers.
- Remove infested vines that cannot be saved to prevent the borers from overwintering, and remove all vines once the plants have stopped producing fruit.
- Floating row covers can be used early in the season to keep adults from laying eggs on the plants. The covers need to be removed when the plant flowers to allow for pollination. If row covers are used, don't plant near locations that had borers the previous year, since adults could emerge from the soil under the row cover.
- Spinosad (Captain Jack's Deadbug Brew and Monterey Garden Insect Spray) or *Bacillus thuringiensis* can be applied to kill the young larvae as they hatch from the eggs before they bore into the stem. The pesticides will not work once the larvae enter the stem.

***Read and follow all pesticide label instructions. Be cautious - read the label.

References:

- Rutgers Fact Sheet: <https://njaes.rutgers.edu/pubs/publication.php?pid=FS229>
- University of Connecticut Fact Sheet: <https://homegarden-cahnr.media.uconn.edu/wp-content/uploads/sites/3479/2022/08/Squash-Vine-Borer.pdf>

Problem: Leafhoppers
(Family: Cicadellidae)

Wick Garden (6/19)

Description: Leafhoppers are small, less than 1/4-inch wedge shaped insects that can injure many vegetable crops, including potato, beans, carrot, celery, eggplant, lettuce, parsnip, parsley, rhubarb, and others. Leafhopper feeding causes leaves to develop pale specks. Leaves of plants may turn yellow then brown and curl and die. Leafhoppers also excrete honeydew on which blackish sooty mold grows. As nymphs molt into the next (larger) instar, they leave whitish cast skins on the underside of foliage. Some leafhopper species transmit plant pathogens that cause plant disease. There are many species of leafhoppers.

Leaf hoppers were found on bean and amaranth plants.



Leafhopper
Photo: Missouri Department of Conservation



Potato
Leafhopper

Photo: C. E.
Rice

Management:

- Row covers are effective at excluding leafhoppers but must be removed at flowering if the plant needs pollination by insects. Row covers are effective for potato plants since they do not need pollination. In addition, row covers over potato plants exclude pests such as Colorado potato beetles and three lined potato beetles.
- Regularly inspect plants if leafhoppers were a problem the previous growing season.
- If nymphs are abundant early in the growing season, the plant can be sprayed with Pyrethrins or Canola oil. It is important to get thorough coverage because the nymphs are on the undersides of the leaves.

References:

- Rutgers Fact Sheet on Leafhoppers: <https://njaes.rutgers.edu/pubs/publication.php?pid=fs237>
- Rutgers Fact Sheet on Insect Control for Home Gardens: <https://njaes.rutgers.edu/fs1123/>
- Penn State University: <https://extension.psu.edu/potato-leafhopper-on-vegetables>
- University of New Hampshire: <https://extension.unh.edu/blog/2018/07/potato-leafhoppers>
- University of California: <http://ipm.ucanr.edu/PMG/GARDEN/VEGES/PESTS/leafhopper.html>

SPOTLIGHT

Galinsoga and Purslane



Galinsoga is a fast growing annual that flowers from April to October. It grows 1-2 feet tall, with multiple branched stems, opposite leaves, and small white flowers. As a voluminous seed producer, one plant can produce nearly 7,500 seeds in a season. Because of this, the plant can become invasive rapidly since there is no seed dormancy. The new seed will quickly germinate, creating multiple generations in a season.

Be sure to remove early in the season to prevent seed production.



Purslane, *Portulaca oleracea*, is also a summer flowering, fast growing annual. This low, crawling plant can be found throughout gardens in New Jersey. Can be maintained by hand pulling, to prevent seed spread. Please note that if you hoe, any remaining pieces will root.

Although considered to be a weed, it is a popular green used in many ethnic foods.

Photo: P. Nitzsche, NJAES

Reference:

- University of Maryland Extension: <https://extension.umd.edu/resource/galinsoga/>
- Penn State Extension: <https://extension.psu.edu/purslane>

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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