

WHAT'S IN THIS REPORT		
<p>NEW PROBLEMS SEEN</p> <ul style="list-style-type: none"> • Basil Downy Mildew • Squash Vine Borer • Squash Bug eggs • Early Blight on tomato • Catfacing on tomato • Sunscald on pepper • Celery Anthracnose 	<p>PROBLEMS LIKELY TO BE SEEN SOON</p> <ul style="list-style-type: none"> • Powdery Mildew on cucurbits 	<p>SPOTLIGHTS</p> <ul style="list-style-type: none"> • Long-Legged fly (beneficial) • Smartweed (weed)

GENERAL OBSERVATIONS AND TIPS

The usual summer triple threat of heat, humidity and moisture continues to create favorable conditions for fungal spores to thrive. We expect them every year and they pose a challenge, but continue to scout your garden for any signs of damage from pests or disease. Please also be mindful of standing water, as it's the breeding ground for mosquitos. Don't waste space, time or energy on poor performing plants. Remove any bolted or diseased plants to make way for a new crop of fast growers such as arugula, mustard greens or heat tolerant lettuces.

If you are interested in learning how to preserve any surplus harvest, you may enjoy attending this Rutgers, FREE online program:

Preserving Foods at Home on July 21, 2021 at 2:00 PM

Registration details: https://rutgers.zoom.us/webinar/register/WN_chiW3jFcTx6oYtd1aMpr2g

Sandra Greci, MS, LDN, RDN, CDCES, Family and Community Health Sciences Educator of Hunterdon County, will provide an overview of various options available to consumers for safe home food preservation, including freezing, canning, pickling and dehydrating. Trusted, science-based resources will be shared.

REPORTS ON NEW PROBLEMS

Disease: Basil Downy Mildew (Peronospora belbahrii)	Morris Township Community Garden July 11
<p>Description: Basil Downy Mildew is neither a true fungus nor a mold, but a specialized pathogen called "oomycetes". It is windborne and can spread quickly, especially during wet, humid conditions. Infected plants develop yellow leaves that can be misdiagnosed as a nutrient deficiency or due to waterlogged soil, however, check the underside of the leaf and there you'll find a fuzzy mass of purplish-brown spores. Commonly grown sweet basils, such as Genovese, are the most susceptible to downy mildew, but new resistant cultivars are showing potential. Spice types such as Thai, Cinnamon, Lemon, Lime or Red Rosie are also less susceptible.</p>	



Management:

- Plant resistant varieties. Rutgers has released resistant varieties from their basil breeding program. Try planting Devotion, Obsession, Passion or Thunderstruck.
- Cultural practices include proper plant spacing for optimum air flow, plant in full sun and avoid overhead watering.
- Pathogen is transmitted by wind, rain splash, contaminated seed and plants.
- The disease moves from the bottom of plant to the top of plant, so harvest any unaffected leaves from top of plant and use promptly.
- Remove and throw out infected plants to reduce spread of disease.
- Grow some plants in containers indoors.

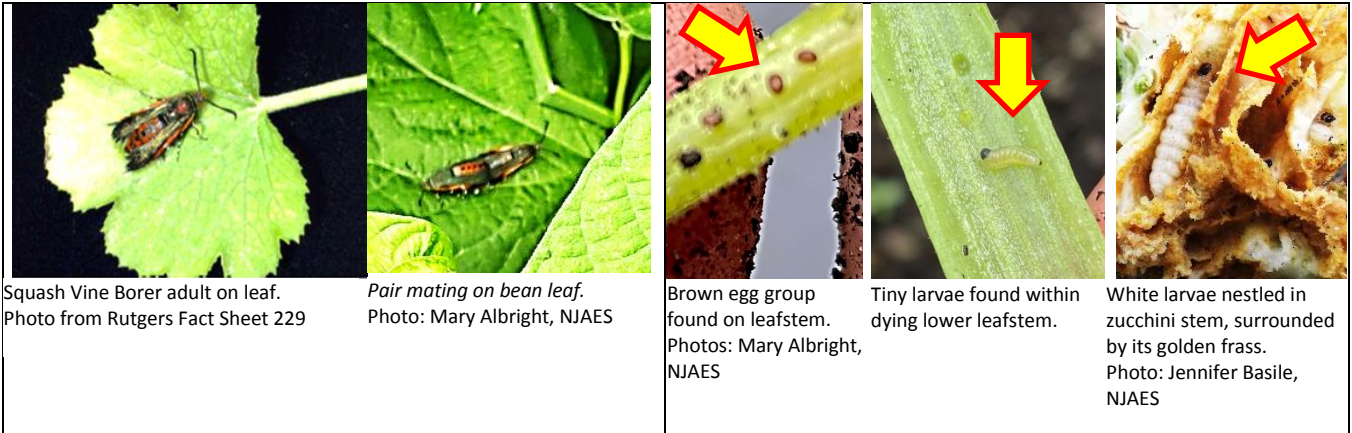
Fact Sheet / References:

1. Rutgers University Fact Sheet FS1279 <https://njaes.rutgers.edu/fs1279/>
2. Rutgers University <https://sebsnjaesnews.rutgers.edu/2020/09/james-simon-a-breakthrough-in-the-war-against-basil-downy-mildew/>
3. Cornell University <https://www.vegetables.cornell.edu/pest-management/disease-factsheets/basil-downy-mildew/>

Pest: Squash Vine Borer (*Melittia satyriniformis*)

Morris Township Community Garden July 11

Description: The squash vine borer is a menace to squash and pumpkin. The adult moth emerges in late spring to mate and lay eggs on the stems and leaf stems of pumpkin and squash plants from mid- June to early September. Check the stems thoroughly as the eggs may be found on lower stems also. They are active during day. Eggs are laid singularly or in small groups on the stem immediately above the ground surface. Eggs take up to 10 days to hatch, then the larvae enter the stem immediately. This point of entry is a small hole surrounded by frass. The larvae will feed on the plant for approximately 4 weeks by continuing to tunnel through the stem of the plant. When they are ready to pupate, the larvae will burrow into the soil, spin a cocoon, overwinter and emerge as adults in spring, and the cycle continues. Frass is the golden lumpy excrement that 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 later die. There is 1-2 generations a year.



Squash Vine Borer adult on leaf.
Photo from Rutgers Fact Sheet 229

Pair mating on bean leaf.
Photo: Mary Albright, NJAES

Brown egg group found on leafstem.
Photos: Mary Albright, NJAES

Tiny larvae found within dying lower leafstem.

White larvae nestled in zucchini stem, surrounded by its golden frass.
Photo: Jennifer Basile, NJAES

Management:

- Use floating row covers at time of seeding or transplanting to help prevent adults from laying eggs. The covers must be removed when the plant flowers to allow for pollination, unless growing parthenocarpic varieties, which don't require bees for pollination.
- Rotate crops and don't plant near locations that had borers the previous year, since adults could emerge from the soil under the row cover.
- Cut a longitudinal slit halfway through the vine above the frass to find and remove the borer. Mound soil along cut stem to develop new roots and promote continued growth.
- Grow *moschata* types such as Butternut or Long Island Cheese.
- Remove all infested vine debris to prevent any borers from overwintering and remove all vines once the plants have stopped producing.
- Spinosad (Captain Jack's Deadbug Brew and Monterey Garden Insect Spray) or Bt, *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.

Fact Sheet / References:

1. Rutgers University Fact Sheet FS229 <https://njaes.rutgers.edu/pubs/publication.php?pid=FS229>
2. University of Maryland <https://extension.umd.edu/resource/squash-vine-borer-vegetables>

Pest: Squash Bugs (*Anasa tristis*)

Morris Township Community Garden

Description: Adult squash bugs were observed in the garden on June 10th, now squash bug eggs have been sighted in the garden since June 26th. It's mating and egg laying time. Adults emerge in spring to mate and feed. As sap suckers, adults and their nymphs draw the sap from leaves, stems and vines of squash, pumpkins, gourds and melons, leaving plant foliage speckled, and turning yellow to brown. Plants will 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 also transmit Yellow Vine Disease of Cucurbits that causes vines to turn yellow and die. They overwinter in debris and there's one generation a year.

Management:

- Inspect your 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. Eggs have red appearance when they are close to hatching.
- 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.

- Remove old vine debris, dead leaves and plant residue to help prevent buildup of the pest and remove over wintering 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.



Squash bug adult on leaf. Squash bugs are about 5/8th inch long and resemble stink bugs. Photo: Mary Albright, NJAES



Squash bug eggs on underside of leaf.



Squash bug adult, nymphs and eggs on leaf. Photos: Jennifer Basile, NJAES

Fact Sheet / References:

1. Rutgers University Fact Sheet FS228 <https://njaes.rutgers.edu/pubs/publication.php?pid=FS228>
2. Rutgers University Fact Sheet FS1123 <https://njaes.rutgers.edu/fs1123>
3. University of Connecticut <http://www.ladybug.uconn.edu/FactSheets/squash-bug.php>

Disease: Early Blight on tomato
(*Alternaria linariae*, formerly known as *A. solani*)

Denville Home Garden July 8

Description: Early Blight is a fungal tomato disease that thrives in wet, humid weather. It is wind borne, soil borne and can be introduced by purchased plants or infected seed. Older leaves develop circular brown or black spots, which expand to form concentric rings with a yellow halo. Over time, the plant leaf will yellow and the leaves drop. This disease moves from plant base to the top of plant. Defoliation will reduce yield, but also exposes fruit to sunscald. It overwinters in plant debris.



Leaf with characteristic concentric brown lesion and yellow halo. Photo: Rutgers Fact Sheet 547



Early blight lesion on Brandywine tomato leaf. Photo: Margot Sample, NJAES

Management:

- Drip irrigation, avoid overhead watering and water at base. Water early in the day to allow plants to dry quickly.
- Mulch with landscape fabric or straw early to prevent the fungus from splashing up onto the plant. Use hardwood mulch for paths only.
- Good air circulation, provide at least 18" spacing between plants. Fungal diseases like moist, humid conditions.
- Stake or cage plants to limit foliage and fruit contact with the soil.
- Crop rotation of three years or longer. Try planting cultivars with some resistance such as Juliet, Mountain Magic, Jasper, Iron Lady, or Verona.
- Remove all plant debris since fungal spores of the diseases can overwinter in infected plant material.

- Control weeds.
- There are some organic copper based fungicides that can help prevent the disease. Be sure the product label includes the plant and disease, and follow all instructions on the label.

Fact Sheet / References

1. Rutgers University Fact Sheet FS547 <https://njaes.rutgers.edu/fs547/>
2. Rutgers University Breeding Program <https://breeding.rutgers.edu/tomatoes/>

Disorder: Catfacing on tomato

Madison Community Garden July 5

Description: Catfacing is a physiological tomato disorder which presents with crevices and cracks that result in distorted, misshapen fruit at the blossom end. Cool temperatures can reduce pollination. Indeterminate varieties are more at risk when they are significantly pruned. Heavy pruning reduces the plants' hormone auxin. Heirloom varieties with large fruits are inclined to encounter problems with catfacing.



Substantial damage on this deeply creviced and cracked tomato from Madison Community Garden.



Photo: Peter Nitzsche, NJAES

A variety of tomatoes with minor cracks and crevices. Catfaced tomatoes are safe to eat. Simply trim off lightly blemished area, but avoid heavily damaged fruits.

Photo: Brian Monaghan, NJAES

Management:

- Avoid cooler temps, refrain from setting transplants out too early.
- Avoid heavy pruning of plants.
- Plant less prone varieties.
- Cull severely damaged fruit. It burdens the plants' vigor and detracts from developing fruits.

Fact Sheet / References

1. Rutgers University Fact Sheet FS678 <https://njaes.rutgers.edu/fs678/>
2. University of Maryland <https://extension.umd.edu/resource/catfacing-problems-tomato>

Disorder: Sunscald on peppers

Madison Community Garden July 5

Description: Sunscald occurs when fruits are directly exposed to bright sunlight during hot weather. Plants with sparse foliage or those that have lost their leaves due to disease are most susceptible. Sunscald can also affect developing transplants that have not been hardened off and acclimated to handle direct sun exposure. Plants and fruit damaged and weakened by sunscald are vulnerable to attack by insects, fungi, and bacteria.



Sunscald injury on a green pepper at Madison Community Garden. Note the burn damage is developing on the side and not the bottom, as to rule out Blossom End Rot.
 Photo: Brian Monaghan, NJAES

Management:

- Use shade cloth to help provide a screen from direct sun exposure during fruiting.
- Healthy plants will have healthy foliage. Cull any disease laden plants.
- Plant pepper varieties that resist disease that defoliate the plants. One such example is Bacterial Leaf Spot resistant varieties Nitro S10, Intruder, Mercer.

Fact Sheet / References

1. Cornell University <https://blogs.cornell.edu/livepath/gallery/peppers/sunscald-on-peppers/>
2. University of Illinois <https://web.extension.illinois.edu/vegproblems/sunburn.cfm>

Disease: Celery Anthracnose aka Celery Leaf Curl

Denville Home Garden July 8

Description: Celery Anthracnose is a fungus that is seed borne. Signs include stunted plant growth, curling leaves and small brown lesions that develop on the petiole.



Celery stalks exhibiting curled leaves, twisted petiole, and brown lesions in young stalk tissue.
 Photos: Margot Sample, NJAES



Management:

- Remove infected plants immediately.
- Avoid overhead watering, as this fungus thrives in moist, warm conditions.
- Avoid working within the crop during wet weather, to prevent spread of disease.
- Crop rotation for 4 years.
- Start with clean seed and try planting more resistant varieties Geronimo, and Balada.
- Clear garden debris in fall.



Fact Sheet / References

1. University of Massachusetts <https://ag.umass.edu/vegetable/fact-sheets/celery-anthracnose>
2. Cornell University https://rvpadmin.cce.cornell.edu/pdf/veg_edge/pdf152_pdf.pdf



LIKELY TO BE SEEN SOON

Disease: Powdery Mildew on cucurbits	
<p>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 NJ 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.</p> <p>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.</p>	
	<p>Powdery mildew fungus spots on zucchini Photo: Mary Albright, NJAES</p>
	<p>Normal color variation of some squash, not Powdery mildew fungus. Photo: Jennifer Basile, NJAES</p>
<p>Management:</p> <ul style="list-style-type: none"> • Good cultural practices are worth the effort. 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. • Try potassium bicarbonate spray. Spray leaves to help prevent spread of fungus. • End of season cleanup. Removing debris helps decrease spreading any spores. • Clean your tools. • Crop rotation every 3 to 4 years. • Plant more resistant varieties. 	
<p>Fact Sheet / References</p> <ol style="list-style-type: none"> 1. Rutgers University Fact Sheet FSE310 https://njaes.rutgers.edu/E310/ 2. University of Minnesota https://extension.umn.edu/diseases/powdery-mildew-cucurbits 	

BENEFICIAL SPOTLIGHT

Long Legged Fly (<i>Dolichopus spp.</i>)	
	<p>Description: These dazzling little iridescent flies are sleek and slender long-legged powerhouses. They shimmer in a wide range of colors, are about ¼" long, undergo complete metamorphosis, and males boast the longest legs. This voracious little predator dines on your aphids and thrips. Habitat includes a garden setting, but also woodlands and riverbanks.</p>
	<p>Fact Sheet / References:</p> <p>Ohio State University https://ohioline.osu.edu/factsheet/ent-69 Texas A&M https://texasinsects.tamu.edu/long-legged-fly/</p> <p>Photos: Jennifer Basile, NJAES</p>

WEED SPOTLIGHT

Smartweed (<i>Polygonum pensylvanicum</i>)		
	<p>Description: Smartweed is an annual weed found throughout many a garden during the summer months. It can reach a height of nearly 4 feet with varied widths. Can be easily handpulled, since if allowed to go to seed, can become problematic in the home garden.</p> <p>Fact Sheet / References: Rutgers Weed Gallery: https://njaes.rutgers.edu/weeds/weed.php?smartweed Brandeis University: http://www.bio.brandeis.edu/fieldbio/Survival/Pages/smartweed.html</p>	
<small>Photos: Jennifer Basile, NJAES</small>		

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: Jennifer Basile

Beneficial and Weed Spotlights: Jennifer Basile

Sightings Reported by: Mary Albright, Mary Olin, Margot Sample, Brian Monaghan and Jennifer Basile