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***GARDENS SCOUTED FOR THIS REPORT: Morris County Park Commission's Community Garden in Morristown, Madison Community Garden and ValleVue Preserve Community Garden in Morris Township.***

**GENERAL OBSERVATIONS AND TIPS**

Despite the temperature and rainfall fluctuations experienced this summer, the majority of plots in the community gardens we inspected absolutely thrived this year. The variety of vegetables was impressive and the inclusion of more flowers made for pollinator bliss. Most impressive of all were the number of gardeners whose cultural and physical practices have expanded by use of vertical growing, crop rotation, mulching, weeding and succession planting. Let's keep these IPM methods growing with some end of season tips on season extension and garden clean up.

Season Extension can be accomplished with planting a variety of frost tolerant plants, such as cole crops and lettuces. They tolerate frost given the right conditions to sustain any damage and transplants are best planted earlier over later to establish a root system. Row covers help provide protection down to temps in the mid-twenties. Be sure to try these varieties to extend your greens- Vates collards, tatsoi, Bok choy, Vit mache, Rouge D'Hiver lettuce, arugula, and mizuna.



IPM Team member, Mary Albright, shows how she extends the growing season with a frost tolerant crop of brassicas. These seedlings were sown in early August and transplanted on Labor Day weekend. Tunnel fabric will be changed to heavier weight Agribon 50 that protects plants down to 24°F. The use of row cover also helps protect plants from caterpillars and whiteflies. She will harvest these plants well into November and possibly beyond. Photos: S. Brighthouse, NJAES and J. Basile, NJAES

Succession growing is another method that allows for regular harvest by interval planting. This can be performed throughout the season, starting in late spring, but also works to extend your season. Since all crops have different dates to maturity, check these dates on seed package, then stagger your plantings of desired crops so that you have a consistent supply of your favorite vegetables. Direct sow generally 6-8 weeks prior to the first frost to ensure for root establishment.



IPM Team member, Mary Olin, is shown harvesting the staggered plantings of bush haricot vert. These average 57 days to harvest. One patch was direct seeded early August, with another two weeks later. She continued the same with lettuces and Asian greens, which are frequently harvested and should last, without row cover, until the hard frost. Photos: S. Brighthouse, NJAES and J. Basile, NJAES



Garden Plot Clean Up- This can seem daunting following the heavy summer workload, but cleaning up debris now will prevent a buildup of plant disease and discourages spaces for pests to overwinter. Fall is also optimal time to soil test and remedy any deficiencies. Adding a layer of compost or a layer of shredded leaves, will enhance your soil structure, as soil microorganisms will begin to process. You'll be ahead of the game for planting anew come spring!

IPM Team members Sandra Brighthouse, Brian Monaghan and Catherine Mathis clear a plot of old stems, leaves and fruits to remove any diseased debris and to prevent any volunteer plants from growing.

Photo: J. Basile, NJAES

### Top 5 Overwintering Pests

Asparagus beetle adults overwinter in plant debris and emerge in spring to feed on new shoots. After first frost, remove the foliage by cutting stem down to 2 inches of ground. This helps prevent winter hiding in the hollow stems. Add compost or shredded leaves to help insulate crowns and suppress weeds.

Cucumber beetles also overwinter as adults and emerge in spring to mate and begin chewing cucurbit leaves. Stop the spread of cucurbit bacterial wilt by removing any plant debris for their nesting space. Next year try these pickling cultivars such as County Fair, Cross Country or Little Leaf, that offer some tolerance to this disease.

Imported Cabbageworm, Striped Cabbageworm, and Cabbage Loopers all overwinter in plant debris as pupa in a chrysalis and emerge as butterflies in spring. Help eliminate these pests and reduce their damage to your cole crops by clearing old cabbage and kale out of your plot.

Leafminers, both spinach and vegetable, overwinter as pupa in and around soil of host plants. Adult flies emerge in spring to mate and lay eggs on leaves. Spinach leafminers strike leaves of spinach, Swiss chard, celery, and cucumber. Vegetable leafminers affect beans, peas, squash, watermelon, beets, lettuce, onions, eggplant, pepper, tomato and potato.

Squash Vine Borers overwinter as pupa in and around the soil of host plants. Early removal of squash vines that are infested with larvae help reduce future populations from burrowing into the soil and overwintering.

### Autumn To Do

- Plant a cover crop, garlic, shallots, trees, shrubs, and spring bulbs.
- Clean and sharpen tools.
- Repair raised bed frames.
- Divide and plant any perennials.
- Bring tender plants indoors.
- Save and sort seeds.
- Leave some perennial flowers or seed heads for food and winter interest.
- Assess your year's harvest. Decide which plants worked and which didn't. Focus on disease and pest tolerance, as well as cold and heat tolerance. It can help make a difference in your plot.
- Research disease tolerant varieties to try growing next year.
- Look out for seed catalogs, they can quickly accumulate.
- Create a plot/garden map for crop rotation.
- Be aware of Deer tick adults
- Be on lookout of Asian Lady Beetles, Marmorated Stink Bugs and Box Elder bugs, as they're looking for winter hibernating space indoors.
- Shop the end of summer clearance sales!
- Rest and enjoy the fruits of your labors.

## REPORTS ON NEW PROBLEMS

**Anthrachnose of peppers**  
(*Colletotrichum spp.*)

**Morris Township Community Garden 9/19**  
**Morris Township home garden 9/12**

### Description :

A patch of red peppers was found with small brown circular spots that appear somewhat depressed in the skin of the ripening fruit. These lesions begin small, but will enlarge as they form a black fungal structure that assembles slightly beneath the surface. These fungal structures are called *microsclerotia*, and can overwinter in your soil. This soil-borne fungal disease was reported earlier on tomatoes, but since the tomato pathogen, *Colletotrichum coccodes*, can also affect peppers, crop rotation is key.



Peppers can be affected pre- and post-harvest. The red pepper on left, is still growing on the plant. This had a small spot that progressed into a large lesion with *microsclerotia* forming within the center. In due course, this entire fruit will rot.

The peppers shown on right were harvested, and within several days a number of Anthracnose spots began to develop.

Photos:

M. Albright, NJAES and J. Basile, NJAES



### Management:

- Remove all plant debris, since the *microsclerotia* can overwinter in your plot's soil.
- Remove all volunteer plants you may find growing from previous year.
- Practice three-year crop rotation.
- Reduce overhead watering. Mulching can help provide barrier and reduce water splash.
- Peppers require full sun and proper spacing. Don't overcrowd plants.
- Try staking to reduce leaf contact with soil.
- Fungus may also be spread by infected seed. Purchase certified pathogen free seed.

**Fact Sheet / References: Please note that some of the fungicides listed in these fact sheets can only be applied by a licensed pesticide applicator.**

University of Massachusetts <https://ag.umass.edu/vegetable/fact-sheets/solanaceous-anthracnose>

Rutgers Plant & Pest Advisory <https://plant-pest-advisory.rutgers.edu/controlling-pepper-anthracnose-2-2-2-2/>

North Carolina State University <https://content.ces.ncsu.edu/anthracnose-of-pepper>

**Cercospora on Malabar Spinach  
(Cercospora sp.)**

**Morris Township Community Garden 9/19**

**Description:**

Several plants were found with leaf spots of Cercospora. This fungal disease produces small circular spots with tan or white centers and red margins. As the spots expand, there can be major loss of foliage. The fungus thrives in high humidity and spreads by wind, rain splash, even insects. Malabar Spinach, *Basella alba*, has been found growing in popularity in more plots. This spinach-like substitute can be grown as an edible ornamental, since the annual vines are prolific with attractive foliage and purple vines and fruit. Although the plant is native to tropical Asia, it thrives here in the summer. Of note, the plants found with *Cercospora* leaf spot continued to flourish and the number of affected leaves remained minimal.



Diseased Malabar Spinach leaf full of spots with red margins indicative of *Cercospora*.

Remove the dead leaf litter or dead plants from your plot to limit the reproduction of spores.

Photos: J. Basile, NJAES



Older diseased leaves were found at the base of plant, but new growth at top of plant was healthy and robust. The plant was trellised, over six feet tall, and had abundant leaves with purple fruits just beginning to form. A striking edible and ornamental indeed.

**Management:**

- Remove infected leaves and discard. Continue to harvest and enjoy the healthy foliage.
- Practice good garden sanitation. This fungus overwinters in plant debris, be sure to remove all infected material at end of season.
- Use two-year crop rotation and be aware that this fungus also affects carrots, beets, spinach, Swiss chard, peanuts, cucumbers, squash, melons and pumpkins.

**Fact Sheet/References:**

1. University of Wisconsin <https://hort.extension.wisc.edu/articles/malabar-spinach-basella-alba/>
2. University of Massachusetts Amherst <https://ag.umass.edu/vegetable/fact-sheets/cercospora-leaf-spot-of-swiss-chard-beets-spinach>

**Downy Mildew on watermelon  
(*Pseudoperonospora cubensis*)**

**Madison Community Garden 9/14**

**Description:**

Downy mildew on cucumbers was previously included in Report #8 on July 29<sup>th</sup>. This disease has been found affecting watermelons in the Madison Community Garden, and the Rutgers Plant & Pest Advisory reported findings on squash, pumpkins and watermelon. The top surface of leaves presented with similar symptoms of the variety that affects cucumbers. Telltale angular yellow spots within the leaf veins that began to turn brown. The underside of the leaves had dark fuzzy growth that gave way to a grimy appearance. With time, the leaves will curl, decay and ultimately reduce crop yield. There are different strains of this fungus that can affect different crops within the same family, called a clade. One plot of cucumbers may be fine, while a plot with watermelons may become stricken. Clade I affects squash, pumpkins and watermelon, while Clade II affects cucumbers only. Being wind-borne, air currents and humid, wet conditions help this disease thrive. Unfortunately, disease resistant varieties of watermelons are not available. This disease can rapidly destroy a farm field, causing many hardships for farmers.



Top of watermelon leaf with yellow and brown spots. The disease will continue to develop with eventual death of the plant.



Underside of same watermelon leaf showing the fuzzy and grimy texture.

Photos: B. Monaghan, NJAES

**Management:**

- Avoid overhead watering as it spreads by watersplash and wind.
- Promote good air flow through proper spacing to help reduce time of leaf wetness.
- Plant early maturing varieties.
- Practice good garden sanitation.

**Fact Sheet / References:**

1. Rutgers Plant and Pest Advisory <https://plant-pest-advisory.rutgers.edu/cucurbit-downy-mildew-alert-6-16-21-2-3-2/>
2. Oklahoma State University [https://extension.okstate.edu/fact-sheets/watermelon-diseases.html#:~:text=Cercospora%20leaf%20spot,-Downy%20mildew%20\(Pseudoperonospora%20cubensis\),are%20affected%20more%20than%20others.](https://extension.okstate.edu/fact-sheets/watermelon-diseases.html#:~:text=Cercospora%20leaf%20spot,-Downy%20mildew%20(Pseudoperonospora%20cubensis),are%20affected%20more%20than%20others.)

**Grasshopper**  
*(Melanoplus differentialis)*

Morris County Community Garden 9/12

**Description:**

Grasshoppers are cyclic and localized pests in New Jersey. These chewing insects can damage many crops, particularly tomatoes and sweet corn. They can grow from one to two inches in length with strong jumping legs. Females lay egg pods, of up to 120 eggs, just beneath the soil surface in fall and undergo incomplete metamorphosis of egg, nymph to adult. Nymphs emerge in spring to feed on grass, weeds and plants, maturing into adults by summer. The adults are then found feeding on vegetables and flowers. Mating and egg laying begins the life cycle once more. Predators of grasshoppers include robber flies, birds, blister beetles, and believe it or not, coyotes.



A Differential grasshopper adult sits on kale leaf. Their long jumping legs make them highly mobile and oftentimes difficult to catch.

Favored crops include carrots, lettuce, beans. The leaves and not the fruit of peas, tomatoes and squash can be damaged as well.

Photo: N. Gardner, NJAES

**Management:**

- Handpick, if you can capture, and destroy.
- Crop rotation
- Harvest crops early by planting early maturing varieties.
- Destroy egg pods by turning over your soil in fall.

**Fact Sheet / References:**

1. Rutgers University <https://njaes.rutgers.edu/pubs/publication.php?pid=fs290>
2. Rutgers Plant and Pest Advisory <https://plant-pest-advisory.rutgers.edu/assess-untilled-soil-and-plant-roots-for-grasshopper-eggs/>
3. University of Connecticut <https://today.uconn.edu/2017/07/decision-making-ant-grasshopper/>

**Zucchini Mold**  
*(Choanephora cucurbitarum)*

Morris County Community Garden 9/12

**Description:**

Zucchini fruits were found covered with a dark fuzzy mold and were soft, watery and difficult to handle. *Choanephora* rot appears following hot weather on the blossom end of fruit and extends to cover the fruit with spores. Cucumbers and melons can also be affected. This disease can be short-lived and subsequent fruit sets are usually unaffected unless favorable conditions reoccur.



Zucchini fruit is completely enveloped with fungal growth from blossom end to stem.

Photo: M. Sample, NJAES



Above zucchini had rot, but notice all new fruits were unaffected due to more favorable growing conditions.

Photo: N. Gardner, NJAES



Closeup of infected fruit from plant at left. With time, the entire fruit will be covered.

Photo: S. Brighthouse, NJAES

**Management:**

- Create good growing conditions that favor healthy plant growth by providing full sun, air circulation and proper spacing.
- Avoid overhead watering. Feed and water affected crops regularly to avoid undue stress to plants.
- Remove infected fruits quickly, as these will not recover, and better to clear early rather than later.

**Fact Sheet / References:**

1. University of Minnesota  
<https://apps.extension.umn.edu/garden/diagnose/plant/vegetable/summersquash/fruitfuzzy.html>
2. Louisiana State University  
[https://www.lsu.edu/agriculture/plant/extension/hcpl-publications/pub-3476-Plant-Disease-ID-andMGMT-ChoanephoraFlowerandFruitRot\\_FINAL.pdf](https://www.lsu.edu/agriculture/plant/extension/hcpl-publications/pub-3476-Plant-Disease-ID-andMGMT-ChoanephoraFlowerandFruitRot_FINAL.pdf)

***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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