RUTGERS MASTER GARDENERS OF MORRIS COUNTY
COMMUNITY GARDEN IPM TEAM REPORT #4
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RUTGERS UNIVERSITY
Cooperative Extension of Morris County
New Jersey Agricultural Experiment Station

WHAT'S IN THIS REPORT?

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IPM TEAM REPORTS

The Morris County Rutgers Master Gardener Integrated Pest Management (IPM) Team scouts one or more community gardens each week. Every other week the team provides IPM Team reports on problems first observed during the two-week period. These reports contain summary descriptions, management methods, and research-based references for more information. Refer to Rutgers Fact Sheet 1123 and 1124 for all recommended controls for insect and disease pests. They are valuable resources from throughout the growing season:

- Rutgers University: FS1123: Vegetable Insect Control Recommendations for Home Gardens (Rutgers NJAES)
- Rutgers University: FS1124: Vegetable Disease Recommendations for Home Gardens (Rutgers NJAES)

The gardens scouted by the IPM Team include the Morris County Park Commission Community Garden, the Morris Township Ted Largman Community Garden, the Madison Community Garden, the Wick Garden in Jockey Hollow National Park, the Randolph Community Garden and the Washington Township Community Garden. The team also reports on sightings in the Pequannock Community Garden and their own vegetable gardens.

IPM Team Reports are available on the Rutgers Morris County Master Gardener website: Morris County Master Gardener website. Scroll to the bottom of the page to view the reports. On the website, you can also subscribe to the IPM Team Reports. When you subscribe, you will be sent a confirmation email that you need to respond to. If you don't see the confirmation email, check your spam.

GENERAL OBSERVATIONS and TIPS

GENERAL OBSERVATIONS

The garden season is in full swing in Morris County. Garden plots are yielding spring crops such as lettuce, spinach and other greens. Tasty treats like rhubarb and peas are producing. Strawberries are also starting to produce. It won't be long before strawberry rhubarb pie. Make sure to pick your produce when it's young and at its peak.

Now is a good time to prepare for the summer garden. Begin mulching as the temperatures increase to help mitigate weeds and soil temperature fluctuations. Provide sturdy supports for those plants you want to grow vertically. Putting the supports in place at or near planting time minimizes damage that might occur if you install the supports after plants have matured. Make sure your supports will handle the weight of mature plants and fruits. Floating row covers and/or insect netting can provide effective, non-toxic protection for crops susceptible to pest damage. Make sure that you don't


Figure: Gardeners with sturdy supports for beans. Photo: M. Sample, NJAES

trap pests inside the enclosure and that it is secured so the pests can't find a way inside. Be sure to remove it at flowering time for plants that require or are helped by insect pollination.

Pull weeds early and often. Keep a vigilant eye out for early signs of insect pests, diseases, and animal pest damage.

Most summer vegetables should be planted by now. If you haven't planted them all yet, now is the time. As spring crops become spent consider adding succession plantings of things like carrots, beets and beans. Avoid the temptation to overplant though. Almost all crops benefit from sufficient room for air flow. It may look like there's plenty of room with recently planted seedlings. Consider the plant size at maturity.

TIP: WATERING FOR A PRODUCTIVE GARDEN

It may seem that watering a garden plot is as simple as taking a hose or watering can and putting water on the garden. There are, however, many considerations about how and when to water that can affect both plant health and minimizing waste of this precious resource. We've had some recent significant rains, but Morris County is still in a drought.

- New Jersey Dept. of Environmental Protection: New Jersey Drought Information

If you regularly read these IPM reports, you have probably seen that we recommend watering plants at their base, avoiding overhead watering as much as possible. This has many advantages. You lose less water to evaporation. By not wetting the leaves you reduce the risk of disease. Many fungal diseases in particular spread more on wet plants.

If you garden at your home, investing in a drip watering system could help make watering easier and more efficient for years. Soaker hoses are a less expensive option that can also provide efficient ground level watering. For a community garden plot, your options are probably hand watering with a watering can or, if you're lucky, a hose . Do your best to apply the water at the base of plants giving them a long drink.

Timing is also important. The general rule of thumb for timing watering is to water deeply and to let the soil dry somewhat between waterings. This encourages root growth as the roots need to grow deeply to find water between waterings. Plants watered in this way tend to be more resilient and can better handle times of less moisture as they have strong roots that can find water deeper in the ground. For established plants under moderate weather conditions, this usually means watering every two or three days if there is no rain. Generally, the ideal amount of water for a vegetable garden is about one inch per week through rain and/or supplemental watering. A rain gauge can help you determine how much water you need to add. Mulch helps to moderate temperatures and slow evaporation, both of which can reduce the amount and frequency of supplemental water needed for optimal growth. Too much water can be as harmful as too little.

There are of course exceptions to this recommendation. Perhaps the most obvious is a plant that shows serious signs of thirst. If there seems no other source of the plant's stress, then by all means give it a drink. If it doesn't respond to moisture, it may be another issue. Another exception is extremely hot weather, especially a heat wave or sudden extreme heat before plants have a chance to gradually adjust to the increase in temperatures. We've had that type of early excessive heat this spring and gardens have benefitted from a little extra TLC including water.

Of course, newly planted seedlings benefit from extra water until they adjust. Planting when it's cloudy and cool also eases their transition. Seeds, especially those planted in hot weather, benefit from frequent watering until they

germinate and grow big enough root systems to retrieve moisture from deeper in the soil. An extremely light covering of straw or grass can help prevent them from drying out.

The goal is not perfection but doing what you can to use water judiciously while providing your garden with its moisture needs

Watering Resources:

- North Carolina Cooperative Extension: Watering Wisely: How Much Your Summer Vegetable Garden Really Needs
- Univ. of Minnesota Extension: Watering the vegetable garden
- Michigan State Univ. Extension: Smart watering in the vegetable garden

REPORTS ON NEW PROBLEMS

Problem: Tomato Septoria, Early Blight *(Alternaria linariae,* formerly known as *A. solani) &* Septoria Leaf Spot *(Septoria lycopersici)*

Where: Morris Township Community Garden June 1

Description: Septoria and early blight are common diseases seen in tomato plants in New Jersey. The diseases are caused by distinct pathogens but have a similar appearance. They thrive in similar conditions and can coexist. Management and prevention are the same. Both diseases usually begin on the lower, older leaves of plants. As the condition progresses, new, higher leaves are affected, wither and defoliate. Prolonged wet humid weather is favorable to these fungi and allows the condition to worsen. The disease spores can overwinter on plant debris. Good cultural techniques can help prevent the spread, or at least, slow its progress.

Septoria leaf spot is a soil-borne fungal disease that only infects tomato leaves and stems. The spots enlarge to 1/8-inch in diameter and are distinguished by a dark brown edge with a white or gray center. As the disease progresses and more leaf spots develop, the areas surrounding spots will turn yellow causing leaves to wither and die.

Early blight is also 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 seeds. Early blight is characterized by a few (5 to 10) brown, circular spots up to half an inch in diameter with concentric rings or ridges that form a target-like pattern surrounded by a yellow halo. As the disease progresses, stem and fruit also become infected forming dark, sunken spots. Dark, sunken cankers with concentric rings may also appear at or above the soil line on stems in the case of an *Alternaria* infection.

Over time, the plant leaf will yellow and the leaves drop. These diseases move from plant base to the top of plant. Defoliation will reduce yield but also exposes fruit to sunscald. It's possible to get a good tomato yield if the disease(s) arrive late in the season, so use good cultural practices to delay onset and reduce speed of transmission.

There are some varieties on the market and in development that have some resistance to multiple fungal and bacterial tomato diseases. If you have an issue with early blight and/or Septoria this year, you may want to try one of them next year to see if they offer disease resistance and how you like the taste. Be on the lookout for more info as these varieties are tried locally.

Figure: Septoria leaf spot
Photo: Rutgers University

Figure: Septoria leaf spot on tomato leaves
Photo: M. Sample, NJAES

Figure: Early blight characteristic concentric brown lesion and yellow halo.
Photo: Rutgers University

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

Management:

- Avoid overhead watering. Use drip irrigation or water at base of plants. 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.

References:

- Rutgers University: FS547: Diagnosing and Controlling Fungal Diseases of Tomato in the Home Garden (Rutgers NJAES)
- Cornell University: Disease Resistant Vegetable Varieties | Cornell Vegetables

Problem: Hawthorn lacebugs (*Corythucha cydoniae)*

Where: Wick Garden June 4

Description: Lacebugs are small insects that are named for the transparent texture of the wings of adults. Hawthorn lacebugs feed on hawthorn, quince and a number of other trees. Lacebugs are 1/8 to 1/4 inch long, with lacy wings held flat on the back. Immature lacebugs (nymphs) are oval and colorless at birth but soon turn black and spiny. Nymphs do not have wings. Both adults and their nymphs can be seen with the naked eye. They are found on the underside of leaves. One to three generations are produced throughout the summer, depending on the weather. Eggs or adults may overwinter, depending on the lace bug species.

Lacebugs and their nymphs pierce and suck leaves, causing the upper leaf surface to appear stippled. Light feeding produces a yellowish stippling while heavier feeding causes leaves to appear white before they dry completely and fall off. Plants are more susceptible to lacebugs if they are planted in full sun and have drought stress.

Figure: Quince leaf upperside shows stippling from lacebug feeding damage.
Photo: L. Terraneo, NJAES

Figure: Lacebugs feeding on the lower side of a quince leaf.
Photo: L. Terraneo, NJAES

Figure: Adult lacebugs are 1/8 to 1/4 inch long.
Photo: L. Terraneo, NJAES

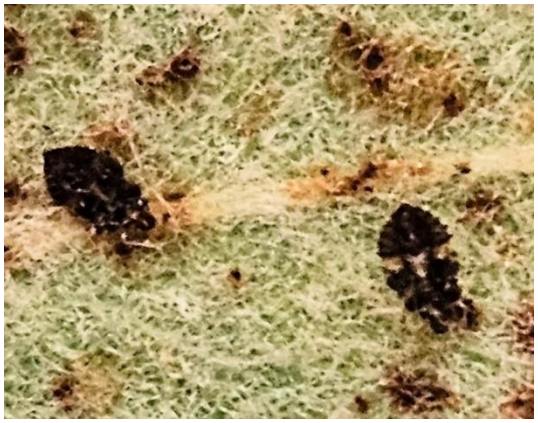

Figure: Lacebug nymphs
Photo: L. Terraneo, NJAES

Management:

- Keep plants watered during dry periods and mulch lightly to conserve moisture.
- Insecticidal soap and horticultural oil will help control lacebugs, but to be effective, must contact them directly on the underside of the foliage.

References:

- Rutgers University: Lacebugs: Life Cycle, Monitoring, and Pest Management in New Jersey (Rutgers NJAES)

Problem: White Rot on Garlic *(Sclerotium cepivorum)*

Where: Morris County Community Garden May 30

Description: Garlic can be a very easy-to-grow herb in the garden, but it is also prone to several diseases. One of those diseases is white rot (*Sclerotium cepivorum*). White rot is a destructive disease that causes symptoms of stunting, yellowing, and dieback of foliage. When bulbs are dug out of the soil, they are either coated with a white to gray colored fuzz (mycelium) or with a crusty covering that is embedded with tiny black poppy-seed sized sclerotia (reproductive structures). White rot can live in the soil for indefinite periods of time.

Figure: Note the soil sticking to bulb, white mycelium, and black poppy-seed sized sclerotia.
Photo: P. Nitzsche, NJAES

Figure: Stunted garlic plant with white rot on the base of the left stem. The other plants are healthy.
Photo: M. Albright, NJAES

Management:

- Buy certified disease-free garlic seed. Never plant garlic purchased from a grocery store because it may be a symptomless carrier of disease.
- Remove and dispose of infected plants. Do not compost these plants.
- Allow adequate spacing of plants.
- Don't plant garlic, onions or other alliums in the infested soil again for at least a couple of years.
- Sanitize tools before using them again in another garden area to avoid spreading the disease. A 10% bleach solution can be used to sanitize tools.
- Gardeners with previous white rot can try using a garlic powder treatment of 4.5 ounces of garlic powder per 100 square feet with half applied to the soil in October and half in March. The powder should be incorporated to a depth of six inches to help kill the overwintering spores by stimulating them to germinate with no real host.

References:

- University of Massachusetts: Alliums, White Rot : Center for Agriculture, Food, and the Environment (CAFE)

Problem: Spotted lanternfly nymphs *(Lycorma delicatula)*

Where: Morris Township home garden May 26

Description: The spotted lanternfly is a serious invasive pest introduced into Pennsylvania in 2014 that has spread to New Jersey. Although the adult resembles a moth in appearance, it is neither a moth nor a fly but, instead, is a type of planthopper related to other insects such as brown marmorated stink bugs, aphids and leafhoppers. Like these insects, the spotted lanternfly has piercing/sucking mouthparts with which it drills into the soft tissues of new growth on a variety of plants. This pest has the potential to seriously damage crops and trees.

The spotted lanternfly produces one generation a year. Their life cycle begins with eggs laid by the adults the previous autumn. After overwintering, tiny nymphs hatch out in the spring and progress through 4 stages or instars. During the first three instars, the nymphs' coloration is black with white spots. For the fourth and final instar, their coloration is red with white spots, after which the adult emerges.

Research is underway to identify naturally occurring predators and parasitoids for the spotted lanternfly. Praying mantis, spiders and other predaceous bugs have been observed preying upon them. In addition, there is a parasitic wasp, *Ooencyrtus kuvanae,* known as the spongy moth parasitoid that lays its eggs in the eggs of the spongy moth but also in those of the spotted lanternfly.

Figure: Spotted lanternfly nymphs (first instars) on a sunflower plant
Photo: M. Olin, NJAES

Figure: Spotted lanternfly nymph, early stage (found late May – July)
Photo: Penn State University

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

Figure: Adult spotted lanternfly, wings closed
Photo: University of California

Figure: Adult spotted lanternfly, wings open
Photo: Rutgers University

Management:

- Spotted lanternfly is a harmful pest of grapes, but more research needs to be done to determine whether it is harmful to other fruits and vegetables. To date, the IPM Team has not seen significant damage to other vegetable garden plants.
- Gardeners can handpick the nymphs or knock them into a jar of soapy water (however, they scatter quickly).
- Painter's masking tape wrapped around the hand with the sticky side out can be effective in capturing multiple nymphs at one time.
- Contact insecticides can be sprayed on the nymphs. Organic insecticides include horticultural oil, insecticidal soap 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.

References:

- Rutgers University: Spotted Lanternfly | Rutgers Cooperative Extension
- Penn State University: Spotted Lanternfly Management Guide

Problem: Strawberry Leaf Spot Disease (*Ramularia grevilleana*)

Where: Morris Township Community Garden June 1

Description: This fungus produces symptoms of small, round, white to tan leaf spots that are surrounded by dark purple to reddish tissue that varies in size. The spots appear scattered over the leaf surface, which reduces leaf function. These spots can also be found on petioles and calices. Older plantings are most susceptible where it occurred previously. This pathogen survives in overwintering leaf tissue.

Leaf spot can affect yield directly because it causes small black spots on fruit, and indirectly because leaf death increases likelihood of sunscald. Additionally, where leaf spot becomes severe, plants can be predisposed to winter injury and flower bud production can be inhibited the following year. Young leaf tissue is susceptible to infection if exposed to a period of leaf wetness that persists for more than 12 hours. Long wet periods over several days combined with warm temperatures over 50°F favor disease development in the spring and in summer after bed renovation.

The fungus also can infect fruit in what is called black seed disease. Berries usually have one or two spots but may have as many as 10. Spots are brownish black, hard, and leathery and appear on one to several achenes. Fruit does not rot but discolors under the spot.

Figure: Strawberry leaf spot disease on the underside of a leaf
Photo: M. Sample, NJAES

Figure: Strawberry leaf spot disease on the top of leaves
Photo: M. Sample, NJAES

Figure: Strawberry with black seed disease
Photo: M. Sample, NJAES

Management:

- Space plants properly to allow for air circulation.
- Practice good weed management and garden sanitation.
- Use drip irrigation if possible. Limit overhead watering to minimize the length of time that leaves are wet.
- For June bearing strawberries (not everbearing / day neutral strawberries) renovate the bed 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. Sanitize tools.
- Some moderately resistant varieties are Allstar, Atlas, Cavendish and Jewel.

References:

- Rutgers University: FS097: Growing Strawberries in the Home Garden (Rutgers NJAES)
- Rutgers University: Identifying and controlling common leaf spot in strawberry — Plant & Pest Advisory
- Cornell University: Leaf spot of Strawberry | Long Island Vegetable Health

Problem: Earwigs (*Dermaptera* order)

Note: Earwigs are both garden pests and beneficial predators

Where: Morris Township Community Garden June 1

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 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 usually 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 vines or weeds. The best way to identify whether they are causing damage in the garden is to look for them with a flashlight in the dark.

Earwigs make up the insect order *Dermaptera*. The adult earwig is identified by a pair of prominent forceps-like 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.

Figure: Earwig on horseradish leaf
Photo: N. Gardner, NJAES

Figure: Holes in Swiss chard caused by earwigs
Photo: M. Albright, NJAES

Figure: Male earwig
Photo: Iowa State University

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 bucket 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.

References:

- University of Connecticut: Earwigs | Home Garden Education Office

Problem: Orange rust disease on blackberry plant *(Gymnoconia nitens and Arthuriomyces peckianus)*

Where: Morris County Community Garden June 8

Description: Orange rust, a fungal disease, is one of the most common diseases of blackberries and black raspberries. It does not affect red raspberries. Symptoms of the disease are spindly canes with misshapen, pale green to yellowish leaves. The leaves become covered with bright orange blisters on the underside of the leaves.

Even though infected plants do not usually die, harvest can be significantly reduced. Once infected, the plant cannot be cured.

Figure: Orange rust on a blackberry leaf
Photo: D. Tyson, NJAES

Management:

- Management is primarily by removing the plant, including its roots, so the disease does not spread to other plants.

References:

- Purdue University: Orange rust in brambles | Purdue University Facts for Fancy Fruit
- Michigan State University: It's that time of year for orange rust in brambles - Fruit & Nuts

SPOTLIGHT

Weed: Mugwort *(Artemisia vulgaris)*

Description: Mugwort is a perennial flowering plant that is highly invasive. It is commonly found along roadsides, uncultivated areas and open fields or meadows.

Mugwort grows from 2 to 5 feet tall. The leaves are deeply lobed, alternately arranged, greenish on top, and white and fuzzy on the bottom. If crushed, the leaves will release a distinctive scent similar to chrysanthemums. Small inconspicuous disk flowers form mid-summer to early fall. It spreads aggressively by rhizomes and will quickly form colonies. Even a small piece of cut root is able to produce a new plant. It can also spread by seed. Mugwort thrives in full to partial sun and moderately dry to mid-moisture soils. It does not tolerate soils that are wet.

Figure: View of under and upper sides of mugwort leaf
Photo: J. Carlson, NJAES

Figure: A community garden plot overgrown with mugwort
Photo: B. Monaghan, NJAES

Figure: View of mugwort from above
Photo: University of Maryland

Management:

- Controlling mugwort is difficult once patches have become established.
- Mowing to prevent seed dispersal from early summer through mid-September is recommended.
- Covering the soil with landscape fabric to smother colonies is another option.
- Hand pulling young plants early in the growing season is also effective.
- Exhaust the root system by continuous pulling or removal of the leaves (this is difficult.)
- Be sure to use gloves, then bag and dispose of debris in the trash.

References:

- University of Maryland: Mugwort | University of Maryland Extension

ADDITIONAL RESOURCES

All Rutgers Gardening and Landscaping Fact Sheets & Bulletins Publications Category (Rutgers NJAES)
Rutgers Master Gardener Program Rutgers Master Gardener Program | Rutgers Cooperative Extension
Rutgers Soil Testing Laboratory Soil Testing Laboratory | Rutgers Cooperative Extension
Community Gardening Series Community Gardening Series | Rutgers Cooperative Extension
Office of the New Jersey State Climatologist Office of the New Jersey State Climatologist
Rutgers New Jersey Weather Network Office of the New Jersey State Climatologist
Ticks and Tick-borne Disease Ticks and Tick-borne Disease | Rutgers Cooperative Extension
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