RUTGERS MASTER GARDENERS OF MORRIS COUNTY
COMMUNITY GARDEN IPM TEAM REPORT #3
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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 throughout the growing season:
Rutgers Fact Sheet FS1123 Vegetable Insect Control Rutgers Fact Sheet FS1124 Vegetable Disease Control

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.

NEWS

IPM Team Reports are now 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 now 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

Weather extremes and wildly variable temperatures are still with us as the month of May winds down. Don't lose heart. With the advent of June the season looks to be more "seasonable" with warm days, mild nights and the periodic sprinkle of rain to keep the soil from drying out. As you plant your summer crops – tomatoes, peppers, cucumbers, squashes and beans – don't forget to harvest and enjoy the cooler season crops you planted in March and early April. Spinach and lettuces are coming along well right now but, as the hotter temperatures arrive in later June, they will begin to bolt and set seed. Enjoy them while you've got them!

TIP: FLOWERS IN THE VEGETABLE PATCH

Figure 1 Honey bee on kale flowers.
Photo: M. Olin, NJAES

Companion planting is a technique of incorporating a variety of different types of plants in a vegetable garden in an effort to increase yields, discourage weeds and insect pests, or provide a food source and/or habitat for beneficial insects. These can be other vegetables, flowers or herbs.

There is plenty of folkloric information regarding which plants make good companions for each other. In fact, some of these "old wives tales" have been scientifically studied, sometimes with encouraging results. For instance, one study showed that broccoli paired with nasturtiums discouraged Cabbage loopers and Imported cabbageworms from damaging the broccoli plants.

Other studies have shown that thrips can be deterred by planting marigolds and basil near tomatoes. As carriers of Tomato Spotted Wilt Virus (TSWV), thrips can adversely affect the health and, subsequently, the harvest of your tomato plants. While marigolds and basil have been shown to be helpful with thrips, they do not necessarily have the same effect on other tomato plant pests.

Adding flowers to your vegetable plot can be as simple as allowing some crop plants like lettuces and kale to bloom and attract pollinating insects. The Editor of this report has found that using alyssum flowers as a living, floral mulch is one technique that is both effective and beautiful. The main rule is to avoid having companion plants out-compete the primary crop. Direct-seeding alyssum flowers in the same row as peppers seems to work well. The pepper plants root deeply while the alyssum roots more shallowly, avoiding competition for nutrients. Alyssum grows in a mat, covering the soil, which helps deter weeds and retain moisture. In addition, it produces tiny white flowers which attract some of the very smallest pollinators.

Figure 2 Self-seeded Bachelor Buttons.
Photo: M. Olin, NJAES

It can be fun to experiment with different combinations of vegetables and flowers to see what works best in your own garden. Sowing flowers near your vegetable plants can attract a variety of different pollinators and beneficial insects to your plot and it's not unusual for some of these colorful favorites to self-seed for a labor-free spot of beauty to be enjoyed the following year.

Figure 3 Self-seeded Violas
(aka Johnnie Jump-Ups)
Photo: M. Olin, NJAES

References:

- University of Minnesota: Companion planting in home gardens | UMN Extension
- Penn State Extension: Herbs Make Good Plant Partners and Companions

REPORTS ON NEW PROBLEMS

Problem: Diamondback moth caterpillar *(Plutella xylostella)*

Where: Morris Township Community Garden May 16, caterpillar; Madison Community Garden May 26, pupa
Description: Diamondback moth (*Plutella xylostella*) caterpillars are small (up to 1/3 inch long), yellowish-green, and tapered at both ends. If disturbed, they often wriggle vigorously and sometimes hang by a silk-like thread. When the population is low, feeding damage often appears as small holes from beneath the leaf but not completely through to the upper surface of the leaf, or as very small, numerous pinholes. When the population is high, plants may become riddled with holes.

Caterpillars of the diamondback moth feed almost exclusively on cole crops such as broccoli, cabbage and kale.

The females lay small, round, yellowish-white eggs that are difficult to see on the underside of leaves. Young larvae can become fully grown in 20–25 days and attach themselves to the underside of the leaf in a small, delicate-appearing, lace-like cocoon which loosely covers the pupa. There are multiple generations per year.

Figure 4 Diamondback moth caterpillars are yellowish-green and up to 1/3 inches long.
Photo: Rutgers Plant and Pest Advisory

Figure 5 Diamondback moth pupa. Actual size is about 3/8 inch long.
Photo: L. Terraneo, NJAES

Figure 6 Diamondback moth adult. Insect's actual size is about 3/5 inch.
Photo: J.R. Baker, NC State Univ.

Management:

- Use row covers to prevent egg laying. Be sure to check under row covers regularly to make sure no pests have gotten under them.
- Scout for caterpillars and pupae.
- Because the diamondback moth can overwinter in plant debris, clean out cole crop plants after harvest.
- *Bacillus thuringiensis* can be used to treat severely infested crops As with any pesticide, follow directions carefully. This pesticide only works if the insect eats a treated leaf and needs to be re-applied after rain.

References:

- Rutgers University: FS232: Diamondback Moths in the Home Garden (Rutgers NJAES)
- NC State Extension: Diamondback Moth | NC State Extension Publications

Problem: Colorado potato beetle *(Leptinotarsa decemlineata)*

Where: Pequannock Community Garden May 18, adult; Morris Township Community Garden May 19, adult, and May 20, eggs

Description: Adult Colorado potato beetles overwinter in the soil and emerge in early spring, laying bright, orange-yellow eggs in small clusters on the undersides of the leaves of host plants in the Solanaceae family. Both adults and their larvae will feed on the foliage of potatoes, eggplants, tomatoes, peppers, groundcherries, and other nightshade plants. The Colorado potato beetle is approximately 3/8th of an inch long and has a black and yellow striped body with an orange head. A second generation will emerge in late summer and then overwinter in the soil. If not controlled, they can reproduce rapidly and defoliate plants. Monitor and destroy to disrupt any future infestations.

Figure 7 Adult Colorado potato beetle on potato leaf. Photo: M. Olin, NJAES

Figure 8 Colorado potato beetle eggs on underside of leaf. Photo: M. Olin, NJAES

Figure 9 Newly hatched Colorado potato beetle larvae eating leaves. Photo: Rutgers University

Management:

- Colorado potato beetle adults and larvae can be effectively hand-picked.
- Destroy beetles and their larvae by crushing or placing them in a can of water with a few drops of dish detergent. Be sure to scout under leaves for their yellow eggs and remove/crush them.
- Row covers can protect young plants and prevent the beetles from reaching crops.
- Rotate crops each year and plant Solanaceae family as far as possible from previously infected areas.

References:

- Rutgers University FS224: Colorado Potato Beetle (Rutgers NJAES)
- University of Maryland Colorado Potato Beetle on Vegetables | University of Maryland Extension

Problem: Three-lined potato beetle adult *(Lema daturaphila)*

Where: Morris Township Community Garden May 18, adult

Description: Three-lined potato beetles are found on plants in the Solanaceae family. Both adults and larvae feed on leaves including tomatillo, potato, and sometimes tomato and eggplant. Damage to tomatillos can be severe. Eggs are yellow and often found on the underside of leaves. Gardeners sometimes mistake three-lined potato beetle adults for striped cucumber beetles.

Figure 10 Three-lined potato beetle adult
Photo M. Albright, NJAES

Figure 11 Eggs of Three-lined potato beetle
Photo M. Albright, NJAES

Figure 12 Three-lined potato beetle larvae. The backs of the larvae are often covered with a dark layer of their own excrement.
Photo L. Terraneo, NJAES

Management:

- The eggs, larvae, and adults can be handpicked.
- Floating row covers are an effective barrier to the beetles while the plants are small.
- Neem and pyrethrins can be used. As with any pesticide, be sure the plant and pest is listed on the label and use according to instructions.

References:

- Rutgers University: Three-Lined Potato Beetle (Rutgers NJAES)
- University of New Hampshire: Three-Lined Potato Beetle

Problem: Sowbugs and Pillbugs *(Porcellionidae* family*)*

Where: Morris Township Community Garden May 18

Description: Friend or foe? Usually considered beneficial due to its contributions to breaking down dead matter, this tiny crustacean can also prove to be a nuisance, especially in great numbers. They will feed on seedlings and fruit that comes in contact with the ground, such as strawberries and melons, and root crops.

Characteristics include a grey-brown armored exoskeleton, with seven pairs of legs, body length of a half inch, antennae and two pointy 'tails' at the end. Sowbugs differ from pillbugs, aka roly-poly bugs, as the end appendage prevents them from their namesake rolling response when disturbed. They thrive in moist soil, and do not bite. Their natural predators are small mammals, spiders, beetles, and toads.

Figure 13 Sowbugs at base of radish plants
Photo: C. Mathis, NJAES

Figure 14 Pillbugs and Sowbugs
Photo: J. Kalish, University of Nebraska

Management:

- To prevent damage to tender plants, eliminate garden debris, leaf piles, fallen fruit, and weeds from gardens and growing areas.
- Use coarse mulch, which will allow water to drain easily. Improve air circulation by providing trellises for vines.
- If possible, raise fruits like strawberries and melons above the ground.
- Apply diatomaceous earth as a barrier; it will function as a desiccant and may protect plants.
- Practice good garden sanitation to remove hiding spaces.
- The use of landscape fabric can be effective to creat a barrier between soil, seedlings, and low fruiting plants.

References:

- University of California: Pillbugs and Sowbugs / Home and Landscape / UC Statewide IPM Program (UC IPM)

Problem: Aphids *(Aphis spp.)*

Where: Morris Township Community Garden, May 18, *(Aphis fabae)*
Description: Aphids can overwinter as eggs on bark or buds and become active in early spring. They are small, 1/16" to 1/8" long, soft-bodied, pear-shaped insects that range in color from pink, green, bluish green, black, brown, tan, or yellow. Aphids suck the juices from plants, which causes the leaves to curl and wilt. The sweet honeydew excreted by aphids often attracts ants. Aphids will flourish with temperatures of 65-80 degrees and reproduce rapidly with several generations a season.

Figure 15 Aphid on Calendula plant. Photo: J. Basile, NJAES

Figure 16 Black bean aphids on underside of artichoke plant leaf. Photo: M. Albright, NJAES

Figure 17 Winged aphid on underside of kohlrabi leaf (about 1/8th inch long). Photo: M. Albright, NJAES

Management:

- Encourage beneficials such as ladybugs and lacewings which feed voraciously on aphids.
- Use a strong stream of water to knock aphids off plants.
- Avoid over-fertilization with nitrogen, as the lush growth that results makes the plants especially attractive to aphids.
- To avoid spreading the problem, remove severely affected plants from the garden.
- As a last resort, spray with insecticidal soap or neem.

References

- Rutgers University: FS230: Aphids on Vegetables (Rutgers NJAES)

Problem: Rhubarb leaf spot *(Ramularia rhei)*

Where: Morris Township Community Garden May 22

Description: Rhubarb is usually relatively problem-free in the garden. *Ramularia rhei*, a rhubarb leaf spot disease, doesn't usually seriously impact yield but it can weaken the plants over time if left unchecked. It first appears as small red dots that gradually enlarge to form circular lesions a half-inch or more in diameter. Larger spots become white to tan with purplish halos. The larger spots can lead to sunken lesions in the stalk tissue. Stalk infections can come later, appearing as small spots that elongate as the stalk grows. White fungus can develop in the centers of spots on leaves and/or stalks, becoming brown as the tissue dies. Fungi overwinter in infected plant debris.

Figure 18 Leaf spot on underside of rhubarb leaf.
Photo: J. Basile, NJAES

Figure 19 Leaf spot on top surface of rhubarb leaf.
Photo: L. Terraneo, NJAES

Management:

- Remove and discard all leaves after hard frost
- Don't add infected leaves to compost
- When harvesting, remove stalks with infected leaves first
- Don't over-water and avoid overhead watering as much as possible
- Provide sufficient air flow by using adequate spacing

References

- University of Minnesota: Growing rhubarb in home gardens | UMN Extension

Problem: Striped cucumber beetle *(Acalymma vittatum)*

Where: Madison Community Garden, May 26, adult

Description: Striped cucumber beetles feed on and damage the foliage and fruit of cucurbit plants (cucumbers, squash and pumpkins). Importantly, striped cucumber beetles carry the bacterial wilt pathogen that can cause plants, especially cucumbers, to wilt and die. Cucurbits are broadly susceptible. These beetles become active in late May or early June and feed on the blossoms of early flowering plants, such as dandelions, apples, and hawthorns, until their host crops are available.

Figure 20 Striped cucumber beetle adults.
Photo: M. Albright, NJAES

Figure 21 Zucchini plant with heavily damaged leaves due to adult cucumber beetles' feeding.
Photo: M. Olin, NJAES

Management:

- Check for cucumber beetles early in the season, especially in the cotyledon and first to third true-leaf stage, when the plants can suffer defoliation and bacterial wilt. Once beetles are present, monitor more frequently (every couple of days).
- Keep your garden clean. Remove weeds in and around your garden, as they may be potential hosts for adults. If a plant is showing signs of bacterial wilt, remove the infected plant before more beetles can feed on it and spread the bacterium.
- Use a physical barrier, such as a floating row cover, during early to mid-June to keep the striped cucumber beetles away from your plants. Be sure to remove the barrier when cucurbits start to flower unless you are growing a parthenocarpic variety (one that doesn't require insect pollination).
- Neem is a plant-based pesticide that prevents insects from feeding, which eventually kills them. Read the label thoroughly and follow the directions carefully.

References

- Rutgers University: FS1123: Vegetable Insect Control Recommendations for Home Gardens (Rutgers NJAES)
- University of Maryland: Cucumber Beetles: Spotted or Striped on Vegetables | University of Maryland Extension

WEED SPOTLIGHT

Weed: Field Pennycress *(Thlaspi arvense)*

Description: Field pennycress, a winter or summer annual, is becoming more and more common in New Jersey. It is a member of the mustard family.

Seeds germinate in the fall and grow into a basal rosette around 6 inches across that will overwinter. In the spring, growth will resume. Seeds that germinate in the spring or summer may not produce a basal rosette. The overwintered plants will grow an erect flowering stem and several side stems. Tiny white pedicelled flowers of 4 white petals form atop the stems. Blooming occurs in April through June. Pennycress seed pods appear soon after the plant has flowered. The seed pods are flat and round with a top notch that splits open to drop black seeds. This plant prefers moist disturbed soils and full sun, but is adaptable to various conditions. It has a shallow root system consisting of a tap root and many fibrous roots. A mature plant can grow up to 32 inches tall.

Figure 22 Detail of field pennycress flowers and basal rosette.
Photo: J. Carlson, NJAES

Figure 23 Field pennycress plant in a community garden raised bed.
Photo: J.Carlson, NJAES

Figure 24 Close-up of field pennycress seed pods.
Photo: J. Carlson, NJAES

Management: Controlling field pennycress seed production is key to managing this weed. Hand pulling before it flowers is most effective. The plant is easy to pull thanks to its shallow root system.

References:

- Cornell University: Field pennycress | CALS
- North Carolina State: Thlaspi arvense (Field Pennycress) | North Carolina Extension Gardener Plant Toolbox
- University of Wisconsin: Field Pennycress, Thlaspi arvense – Wisconsin Horticulture

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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