

Vegetable Garden Disease & Pest Monitoring 2020
Rutgers Master Gardener Integrated Pest Management Team
Report #1, Week of April 27, 2020

PEST MONITORING APPROACH FOR 2020

To help Community Gardeners identify and manage insect pests and diseases, a team of Rutgers Master Gardeners conducted weekly inspections in two Community Gardens during the 2018 and 2019 growing seasons. They wrote weekly reports on problems they observed including insect pests, diseases, and other issues.

Because of Covid-19 restrictions, during 2020 the team will report on problems they observe in their own vegetable garden plots rather than inspect community gardens. Their plots are in six locations in Morris County including the Madison Community Garden and Morris Township ValleVue Community Garden, as well as two home gardens in Denville and two in Morris Township.

PROBLEMS SEEN SO FAR IN APRIL




- Allium Leaf Miners
- Flea Beetles
- Imported Cabbageworm butterflies
- Cold damage to plants
- White Grubs
- Scarlet Lily Leaf Beetles

GENERAL OBSERVATIONS

The weather in April has been colder than usual after a warmer than usual winter, and there have been a number of recent nights with below freezing temperatures. Because of the cool April many vegetable gardens are being planted later than usual.

REPORTS ON PROBLEMS

Pest: Allium Leaf Miner	Where: Denville and Morris Township home gardens
<p>Description: Allium Leaf Miner (ALM) feeding marks were seen on garlic and chive plants in Denville and Morris Township home gardens. Adult ALM flies were also seen in the Denville home garden.</p> <p>ALM adults are small flies that are active from late March to April / May. A second generation occurs in September to October / November. The adults lay eggs on the leaves. The larvae mine the leaves and migrate into the bulb and pupate. The injury caused by the larvae often leads to a rot in the bulb or neck of the plant and distortion of leaves. Injury to leeks, onions and scallions can be severe. Large numbers of orange pupae may also be found in harvested alliums particularly leeks.</p>	

		
<p>ALM feeding marks, Denville home garden</p>	<p>ALM pupae, Cornell University</p>	<p>ALM Adult, University of Delaware Cooperative Extension</p>

Suggestions:

- Row covers are effective at preventing egg laying during periods of adult activity. We would advise any new plantings of alliums, especially leeks, onions and scallions, be covered at the time of planting to prevent infestation. The spring row covers can be removed in early June after the adults quit flying. Row covers should be used again in the fall to prevent damage from the second generation of adults.
- Spinosad (for example, Captain Jack's Deadbug Brew) can be used for allium leaf miners. Please spray only allium foliage (not other plants) to reduce waste and protect beneficial insects and pollinators.
- Removal of all host debris prior to the end of the season can help prevent overwintering.

More Information: Fact Sheet / References


1. <http://www.nj.gov/agriculture/divisions/pi/pdf/AlliumLeafMinerAlert.pdf>
2. Pennsylvania Extension article: http://www.lancasterfarming.com/farming/produce/pest-alert-allium-leafminer-be-on-the-lookout/article_7adfadda-1be1-11e7-898a-a78002c87bb0.html
3. Pdf from Kris Holstrom 2018 talk at Community Garden Community Garden Conference: <https://www.arboretumfriends.org/CommunityGardenConference>
4. <https://extension.umd.edu/learn/allium-onion-leafminer>

<p>Pest: Flea Beetles</p>	<p>Where: Morris Township ValleyVue Community Garden and Morris Township home garden</p>
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Description: Flea Beetles and their damage were seen on small radish, arugula and lettuce plants grown from seed in the Morris Township ValleVue Community Garden and a Morris Township home garden. Flea Beetles are so small they can sometimes be mistaken for specks of soil but will jump if disturbed.

Flea Beetles attack many different vegetables including tomato, potato, eggplant, radish, swiss chard, sweet potatoes, kale and others. Flea beetle infestation may affect the growth of young plants and can be a significant pest of eggplant.

Higher flea beetle populations are often seen after a mild winter such as we had in 2020.

	
<p>Flea Beetle holes on radish plant, Morris County Community Garden 2019</p>	<p>Flea Beetles and leaf holes, University of Maryland Extension</p>

Suggestions:

- Row covers can protect young plants.
- Plants grown from small seeds are less tolerant to flea beetle damage than transplants, thus planting large-seeded crops or transplants can help.
- Early season plantings usually have more severe flea beetle infestations. Delaying planting, if possible, can reduce flea beetle problems.

More Information: Fact Sheet / References

1. Rutgers fact sheet #233 Flea Beetles <https://njaes.rutgers.edu/pubs/publication.php?pid=FS233>

Problem: Imported Cabbage Worm

Where: Morris Township Community Garden, Morris County Community Garden, Morris Township home garden

Description: Imported Cabbage Worm butterflies were observed in three gardens. These butterflies lay their eggs on brassicas such as cabbage, broccoli, and cauliflower. The green color and small size of the larvae makes it difficult to detect them on the leaves of your plants but you will know they are there if you begin to see holes in the leaves.

The butterfly lays single white eggs on the underside of leaves. Eggs hatch 3 to 5 days later and the green caterpillars begin feeding on the leaves. After 2 to 3 weeks of feeding, the caterpillars pupate and form a chrysalis on or near the affected plant. This matures in about 2 weeks and the cycle begins again. In our location, it is possible to have 2 to 3 overlapping generations in a season.

If you see this...



Missouribotanicalgarden.org

This won't be far behind



Growgreatvegetables.com

Suggestions:

- Handpick eggs and caterpillars and dispose of them by crushing or dumping in a jar of soapy water. The caterpillars are well camouflaged so your first inkling of a problem may be damage to leaves. Planting red cabbage varieties makes it easier to see the caterpillars.
- Row covers placed immediately after planting seedlings will keep the butterflies from laying eggs.
- Apply *Bacillus thuringiensis* var. *kurstaki* when caterpillars are small and actively feeding. The BT must be ingested to be effective.
- In the case of plants that form heads, harvest affected plants early to minimize tunneling by larger caterpillars into the head.

More Information: Fact Sheet / References

1. Fact Sheet FS286 <https://njaes.rutgers.edu/pubs/publication.php?pid=FS286>
2. University of Florida Entomology Dept. http://entnemdept.ufl.edu/creatures/VEG/LEAF/imported_cabbageworm.htm

Problem: Cold damage to plants	Where: Morris Township ValleVue Community Garden
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Description: Temperatures dropped to near or below freezing several times during April causing cold injury to some spring planted crops. Cold damage to leaves of plants was seen in the Morris Township ValleVue Community Garden

Cold injury can take many different shapes on affected plants. In some cases, symptoms may show up on the newest growth as a result of non-lethal injury to meristematic tissue. In pepper and tomato, new growth may be distorted with misshapen leaves. In some cases, new leaves may have a mottled, or mosaic look much like a plant infected with a mosaic virus. In these instances, plants will grow out of the problem.



The brown areas on leaves of this Red Cabbage plant in the Morris Township ValleVue Community Garden are from cold damage. The plant will outgrow the problem.



Cold damage to an asparagus spear in the Madison Community Garden. Some spears were affected, others were not.



Cold damage to a tomato plant in the Morris County Community Garden in late April, 2019. This plant did not recover.

Suggestions:

- Delay planting tender plants such as tomatoes until after the last frost in Spring. The last frost date is May 20th for Northern New Jersey and May 15th for Central New Jersey. (Note: Average last frost dates are earlier than that but it is not safe to plant at the average date.)
- The second reference below has a guide to planting dates for various vegetables. Don't assume that plants for sale at garden centers are ready to put in the garden. Garden centers often sell plants before it is safe to transplant them.
- Make sure transplants have been hardened off before putting them in the garden.
- You can use row covers or individual clear plastic cloches to create a warmer microclimate in your garden.

More Information: Fact Sheet / References

1. Rutgers Plant and Pest Advisory: <https://plant-pest-advisory.rutgers.edu/cold-injury-in-cucumber-2/>
2. Rutgers Fact Sheet Planning a Vegetable Garden: <https://njaes.rutgers.edu/fs129/>

Pest: White Grubs	Where: Morris Township ValleyVue Community Garden and Morris Township home garden
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Description: White Grubs were found in the Morris Township ValleyVue Community Garden and a Morris Township home garden. White grubs are the larvae of scarab beetles. They feed on the roots of many vegetable plants, including corn, bean, beet, potato, spinach, turnip, and other root crops. Some of the species include May or June beetles, European Chafer beetles, the Asiatic garden beetle, the green June beetle, the Japanese beetle, and the Oriental beetle.



White Grubs
Rutgers University Fact Sheet

Suggestions:

- As sod is turned over, raked, and prepared for planting, hand collect and destroy the grubs.

Fact Sheet / References:

- Rutgers fact sheet fs293 White Grubs <https://njaes.rutgers.edu/pubs/publication.php?pid=FS293>
- University of Massachusetts fact sheet: ag.umass.edu/vegetable/fact-sheets/scarab-beetle-japanese-oriental-asiatic-garden-beetles

Pest: Scarlet Lily Beetle

Morris Township Home Garden

Description: Scarlet Lily Beetles were seen in a Morris Township home garden. This type of beetle is scarlet with black head, legs and underside. They are easy to spot on the leaves of lilies where they feed voraciously and lay their eggs. Upon hatching, the larvae also attack the host plant while hiding under piles of their own excrement. The beetles and their larvae often consume all the plant's leaves, severely damaging the plant.

These beetles do not attack daylilies, only true lilies and fritillaries. They may occasionally also attack hostas, potatoes, and a variety of other flowering plants.

Research is underway to introduce several different species of parasitic wasps from Europe. There has been some success in establishing at least one variety (*Tetrastichus setifer*) in New England where it has had a positive effect in reducing the populations of this pest.



University of Massachusetts fact sheet.



UMass Extension Greenhouse & Floriculture Program



First instar larvae
University of Rhode Island website



Fourth instar larvae (hiding under excrement)
University of Rhode Island website

Suggestions:

- Handpick and squash the beetles. They are easy to spot and catch. If they realize you are hunting them,

they will drop off and hide in the debris at the base of the plant or sometimes fly away. If you are squeamish about squashing them, knock them into a jar of soapy water.

- Neem can be effective against the young larvae but must be renewed every 5-7 days.
- Spinosad (Captain Jack's Dead Bug Brew) may also be effective. Follow directions on the label.
- Larvae hiding under their piles of excrement can be hosed off the plant but this may not prevent them from climbing back up.

Fact Sheet / References:

- University of Massachusetts fact sheet, <https://ag.umass.edu/greenhouse-floriculture/fact-sheets/lily-leaf-beetle>
- University of Rhode Island website, <https://web.uri.edu/biocontrol/lily-leaf-beetle-larval-collections-2016/lily-leaf-beetle-photo-identification-guide/>

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