



PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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Pennsylvania Vegetable IPM Weekly Update

August 17, 2022

These are cooperative projects involving Penn State University researchers, Penn State Cooperative Extension educators, growers, the Pennsylvania Department of Agriculture, the Pennsylvania Vegetable Marketing and Research Program and the Pennsylvania Vegetable Growers Association.

Pest Watch Report

Karly Regan, Penn State Extension Educator

MOTH CATCH CONTINUING TO INCREASE ACROSS PENNSYLVANIA

Corn earworm numbers caught in traps reporting data this week were increasing at many sites again this week. Sites in Blair, Bucks, Franklin, Lancaster, Lehigh, Montgomery and York Counties experienced average catch per night of 11-30 moths, which means a spray interval of 3-4 days would be suggested for corn that's tasseling or silking. Bedford County experienced average catch per night of 10 moths which means a spray interval of 4-5 days would be suggested. Sites in Indiana, Juniata, Mifflin, and Northampton Counties experienced average catch per night of 2-4 moths which means a spray interval of 5-6 days. As a reminder, corn that is tasseling or silking is very attractive to corn earworm, as eggs are laid on silks, and control must be achieved while larvae are recently hatched before they've entered the ear.



Fig 1. A larval corn earworm feeding on corn



Fig. 2. Fall armyworm feeding damage on corn

Once the spray threshold is reached, you can consider products from the pyrethroid class, diamide class, or spinosyn class for effective control. We tend to see the best efficacy from non-pyrethroid products such as Coragen, Verimark, Blackhawk, and Radiant, as pyrethroid resistance has increased in migrating corn earworm populations. Particularly, we tend to see more resistance later in the season, as moths migrate from further south in the United States up to our

beetles, or adult corn rootworms. If you're seeing these pests as you scout your corn, consider adding a pyrethroid, or the premix Besiege to control those.

Fall armyworm catch remains low this week with 12 or fewer moths caught in Bedford, Blair, Juniata, Lycoming and Mifflin Counties and zero caught in all other counties reporting this week. By managing for corn earworm, fall armyworm should be adequately controlled, as well. Fall armyworm damage can occur on the ear, as well as on the foliage. Foliage feeding will leave ragged edges and waste that resembles sawdust.

Average weekly catch – 7-day moving average. The average catch per night (total catch, divided by the number of nights trapping), divided by the number of nights where data exist, multiplied by 7. If no data exist for that week, null is reported.

County	Site	CEW			FAW		
		Aug 1	Aug 8	Aug 15	Aug 1	Aug 8	Aug 15
Bedford	Curryville	10.5	9.4	9.7	0.8	2.4	1.7
Blair	Sinking Valley	5.8	11	10.7	0	0.1	0.9
Bucks	Doylestown	3.9	4.6	26	0	0.1	0
Centre	State College	2.1	0.7	Null	0	0	0
Centre	Rock Springs	3.2	3	Null	0	0	0
Clinton	Loganton	0.4	0.4	Null	0	0	0
Franklin	Shippensburg	3.1	2	16	0	0	0
Franklin	Waynesboro	1.7	1.9	23.1	0	0	0
Indiana	Indiana	1.1	3.3	3.7	0	0	0
Juniata	Port Royal	0.7	2.3	3.4	0	0	0.1
Lancaster	Landisville	4.2	2.9	15.9	0	0	0
Lancaster	New Danville	2	0.7	6	0	0	0
Lancaster	Neffsville	2.4	3.6	30.2	0	0	0
Lehigh	Germansville	19	4.3	14.6	0	0	Null
Luzerne	Drums	Null	0	0	Null	0	0
Lycoming	Linden	0	Null	1.5	0	Null	0.4
Lycoming	Montoursville	0.4	0.1	0.6	2.1	0	1.1
Mifflin	Belleville	5.4	2.3	2.7	0.7	0	1.7
Montgomery	Souderton	4.3	Null	24.3	0	0	0
Montour	Washingtonville	3.9	2.7	Null	No trap	No trap	No trap
Northampton	Easton	0.4	Null	2.8	0	Null	Null
Washington	Venetia	2.9	Null	Null	0	Null	Null
York	York	1.5	4.3	12.1	0	0	0

THRESHOLDS Reproductive (tassel/silk) and late vegetative corn attract moths. Shorten spray schedules when populations increase.

Threshold based on CEW	Catch per week	Spray Frequency
Almost Absent	1-13	7+
Very low	14-35	5-6
Low	36-70	4-5
Moderate	71-349	3-4
High	>350	2-3

PA Vegetable and Berry Current Issues for August 16, 2022

Beth Gugino, Kathy Demchak, and Karly Regan, Penn State

GENERAL CONDITIONS

As hot and dry as it seemed across Pennsylvania in July, it was much worse in neighboring states like New Jersey, Rhode Island, Connecticut, and Massachusetts. Over the past 128 years, this July was PA's 24th driest July and its 103rd in terms of maximum temperature averaging, 84.0°F for the daily highs. While the Palmer Drought Severity Index ranked PA's July the 65th driest over the past 128 years, in comparison MA and CT each ranked 11th this year. For PA, the driest July occurred in 1965 and the wettest in 2019. The current U.S. Drought Monitor places Potter, Tioga and much of Union Co. at moderate drought (D1) status and surrounding counties in the northern tier, central eastern part of the state and Bucks and Montgomery Co. at abnormally dry (D0) as of 9 August 2022. For more climate related information visit the Northeast Regional Climate Center website (<https://nrcc.cornell.edu>).

FIELD PRODUCTION

Cucumber remains the predominant host for downy mildew in the mid-Atlantic and northeast regions. The closest nearby reports on cucurbits other than cucumber and cantaloupe include eastern TN on butternut squash and most recently on jack-o-lantern pumpkin in a research field in northwest OH. The protectant fungicides for downy mildew tank mixed with targeted fungicides for powdery mildew will help protect against both diseases. **Powdery mildew** continues to be reported on a wide array of cucurbit crops in both the greenhouse and field which is typical for this time of the season.

There have also been additional confirmed reports of **Phytophthora blight in cucurbit as well as pepper fields**. Keep in mind that asymptomatic (visibly healthy) fruit at harvest could still develop symptoms post-harvest. It usually takes several days for visible symptoms to develop. If concerned about post-harvest fruit losses, consider holding back a bin a day or two to see if symptoms develop. If a bin is rejected, avoid disposing of rotting fruit in production fields which could be a source of the inoculum the next year. There are also reports of bacterial diseases in some cucurbit fields. As the fruit develop, the bacteria can splash disperse from the leaves onto the fruit and then enter through natural openings on the fruit surface (lenticels). Eventually lesions will develop and can also be colonized by secondary soft rot bacteria leading to complete collapse of the fruit.

Grey mold is being reported in some tomato high tunnels as dew periods extend with lower night temperatures. Also be on the lookout for **Septoria leaf spot** in field tomatoes and **anthracnose on peppers**. There continue to be **no reports of late blight** on tomato or potato in the region.

On the insect front, be on the lookout for **cabbage looper** in cabbage and kale. These green caterpillars can leave ragged feeding on foliage, as well as contamination due to their frass. **Slug damage** has been observed in late planted sweet corn in regions with recent rain, as well as **stink bugs** on tomato. Stink bug damage can appear as yellow circular lesions on fruit. **Spotted and striped cucumber beetles** are still being reported in cucurbit fields. As cucurbits finish blooming, options for management expand as the risk of harm to pollinators is reduced.



Post-harvest watermelon fruit rot caused by Phytophthora blight. Fruit was infected in the field, but symptoms did not develop until several days later (Photo: Jeff Stoltzfus, Penn State Extension).



Fruit lesions caused by bacterial leaf spot on pumpkin fruit (Photo: Vegetable grower in Bucks Co., PA).

BERRY CROPS

Spotted wing drosophila numbers have increased greatly and will only get higher from here on out. Growers should be using all available cultural controls to keep numbers as low as possible. These include harvesting brambles, especially raspberries, every day if possible or at least every other day to help to keep SWD populations low. Harvest thoroughly and refrigerate fruit as close to 32 degrees as possible right after you pick it. Even a few hours at warm temperatures can speed up the development of SWD, while refrigerating the fruit at very cold temperatures will kill eggs and recently hatched larvae. Remove cull fruit from the planting completely and bag it; do not just compost it. Keep plantings weeded to keep the humidity low in the plants, as SWD loves humid conditions. This will also minimize SWD hiding places and allow sprays to infiltrate the canopy. Spray every row so that each side of every row is thoroughly covered. Available insecticides can be found in this article:

<https://extension.psu.edu/spotted-wing-drosophila-a-2021-update-for-berry-growers>.

Blackberries with sunscald have been noted. High temperatures and/or bright sunlight can result in either bleached drupelets or drupelets that revert to a red color after cold storage. Use of 30% shade cloth in the field has reduced sunscald incidence in studies done elsewhere, and in research at Penn State, high tunnel plastics that diffused light and reduced UV practically eliminated the problem. Keep in mind that SWD larvae feeding in a drupelet will cause it to lighten in color also, which could be mistaken for sunscald.

It is getting to the time of year when **day-neutral strawberry** yields will be increasing as temperatures cool, but unfortunately, so are the populations of pests with multiple generations like **thrips and tarnished plant bug** (besides spotted wing drosophila). Thrips cause bronzing of the fruit surface, and the surface damage caused by their feeding can result in seeds being raised and easily rubbed off (so can powdery mildew) as the berry surface does not expand like normal to surround the seeds. Treatment is only needed if populations become high enough to affect fruit quality. Radiant or Entrust are the most effective products, with Assail being an option as well. Tarnished plant bugs cause button berries. If you are spraying for spotted wing drosophila, you are unlikely to need additional sprays for tarnished plant bug, since broad-spectrum products used for SWD also control this pest.

Given the dry conditions in many locations in the state, you may hesitate to direct water resources to crops that are finished producing for the year like June-bearing strawberries, summer-bearing raspberries, or blueberries. However, remember that how well these crops grow this year will determine next year's yields, so please keep your berry crops in mind throughout the rest of the summer.



Two SWD larvae (white square), an egg under the skin with breathing tubes (arrow) and more breathing tubes from other eggs (ovals) on blackberry (Photo: K. Demchak).



Surface bronzing from thrips feeding, and a raised seed can be seen on this strawberry (Photo: K. Demchak).

Vegetable Disease Updates

Beth Gugino, Penn State Extension Vegetable Pathologist

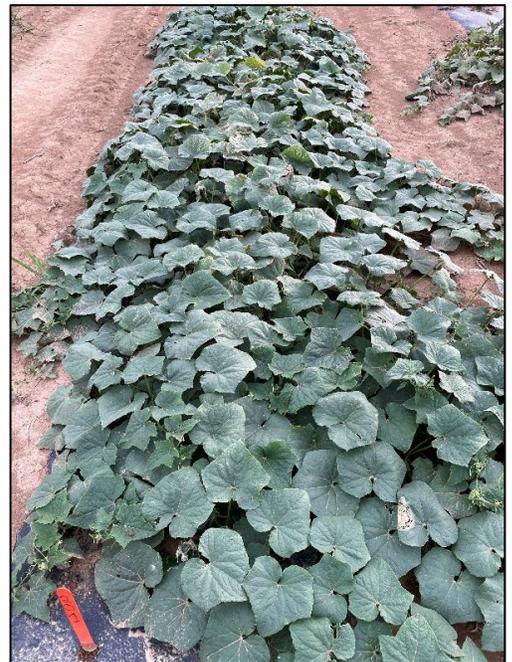
GENERAL UPDATES:

- Based on the USAblight map, there continue to be **no reports of late blight** on tomato or potato in the region. If you suspect late blight on your farm, please let me know either by email at bkgugino@psu.edu or by phone at 814-865-7328 or contact your local Extension Office.

CUCURBIT DOWNY MILDEW UPDATE:

This past week there have been fewer new reports of **cucurbit downy mildew** in the region. Reports continue to be on cucumber and cantaloupe (preferred by clade 2 populations of the pathogen). There was one new report on jack-o-lantern pumpkin in northwestern Ohio in Fulton Co. along the Michigan border. Downy mildew is currently confirmed on cucumber in Centre, Mifflin, Dauphin, and Lehigh, Juniata, Snyder, Lancaster, Berks, and Bucks Co. If you suspect cucurbit downy mildew on your farm, please let me know either by email at bkgugino@psu.edu or by phone at 814-865-7328 or contact your local Extension Office. For the latest reports and forecasts check out <https://cdms.ipmpipe.org>.

This 2022 season a **fungicide efficacy trial on cucumber** was conducted at the Penn State Russell E. Larson Agricultural Research Center. Downy mildew moved rapidly through the trial with disease incidence (percentage of leaves in a 16 ft plot showing symptoms) progressing from an average of 5 to 95% in the untreated control plots from 3 to 10 Aug. Plots preventatively sprayed with a rotation of the targeted fungicides Ranman (FRAC 22), Previcur Flex (FRAC 28), and Zampro (FRAC 45 + 40) tank mixed with chlorothalonil had an average disease incidence of < 1%. OMRI-approved Champ WG (FRAC M1) applied as a weekly preventative had an average disease incidence of 11%. Plots sprayed with a single targeted product (not a registered use application) indicated that Ranman and Previcur Flex are still very effective for managing downy mildew on cucumber while Presidio was not effective. A full report will be available this fall.



Select 2022 cucumber downy mildew fungicide trial treatments taken on 10 Aug: A: Untreated control; B: Ranman, Previcur Flex, Zampro tank mixed with chlorothalonil rotation; C: Champ all applied weekly on a preventative schedule (Photos: Beth K. Gugino).

Clinic Corner: Findings from the Penn State Plant Disease Clinic

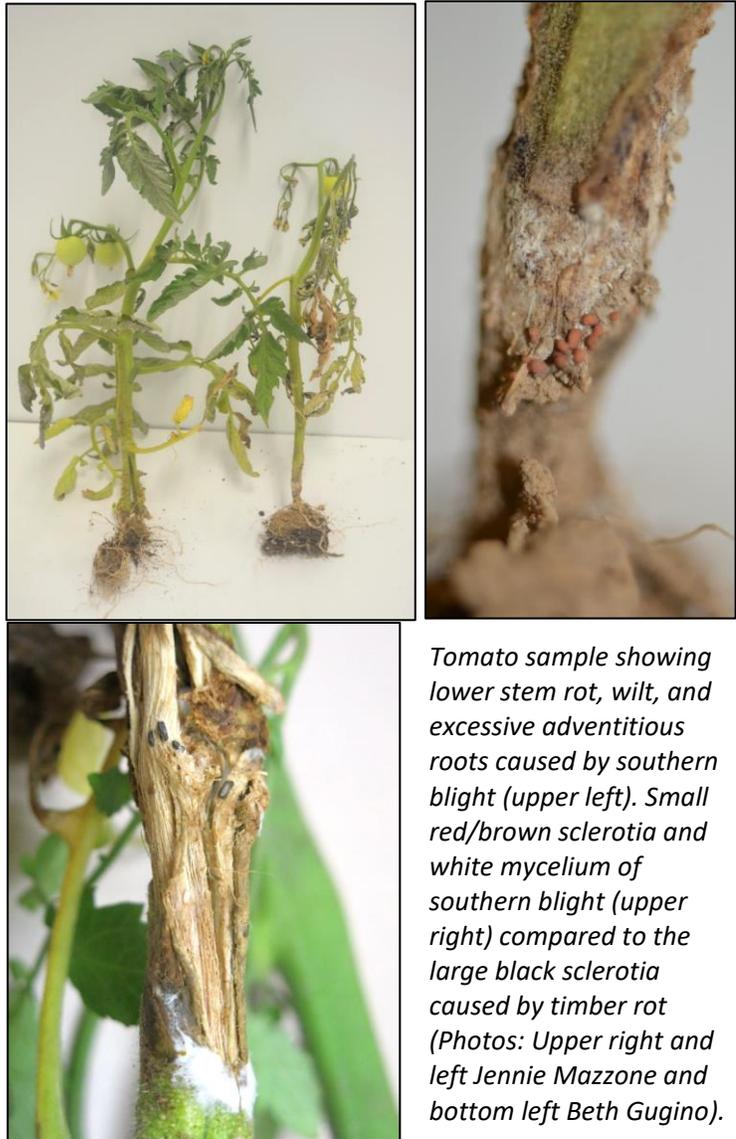
Jennie Mazzone Penn State Research Technologist and Assistant Diagnostician

SOUTHERN BLIGHT ON TOMATO

The [Penn State Plant Disease Clinic](#) has received several tomato samples this summer with the disease southern blight caused by the fungus *Athelia rolfsii* (= *Sclerotium rolfsii*). One set of samples was associated with a research field in Centre County, PA, one from a commercial high tunnel in Allegheny County, PA, and another from a homeowner garden in Lehigh County, PA. The samples had lower stem/crown rot. Adventitious roots were forming above the rotted stem area. The stem lesions girdled the plant, causing wilt of the entire plant. Signs of white mycelium and reddish-brown circular sclerotia (overwintering structure) were present.

Southern blight is not commonly found in PA but it is an important disease to be aware of. The disease is more commonly found in southeastern U.S. and as far north as Maryland and Delaware. When we find it in PA, it is often associated with transplants that were sourced from the southeast. This disease may be confused with timber rot (also known as white mold) caused by the fungus *Sclerotinia sclerotiorum*. The color, shape, and size of the southern blight pathogen's sclerotia help distinguish it from timber rot. The southern blight pathogen's sclerotia are reddish-brown, spherical, and small (1-2 mm diameter) whereas the timber rot pathogen's sclerotia are black, irregularly shaped, and larger in size (2-10 mm diameter). The southern blight fungus is favored by high temperature, moist soil conditions, and acidic soil.

Southern blight can be difficult to control. This fungus can infect many plant species, including tomato, pepper, bean, cantaloupe, carrot, potato, sweet potato, watermelon, tobacco, and soybean. Crop rotation with a nonhost like corn or small grains is recommended. More information on southern blight management can be found in the [2022-23 Mid-Atlantic Commercial Vegetable Recommendations](#).



Tomato sample showing lower stem rot, wilt, and excessive adventitious roots caused by southern blight (upper left). Small red/brown sclerotia and white mycelium of southern blight (upper right) compared to the large black sclerotia caused by timber rot (Photos: Upper right and left Jennie Mazzone and bottom left Beth Gugino).

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Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.