



PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

2301 N. Cameron St., Harrisburg, PA 17110 | 717-694-3596 | info@PAVeggies.org | PAVeggies.org

Pennsylvania Vegetable IPM Weekly Update

August 2, 2023

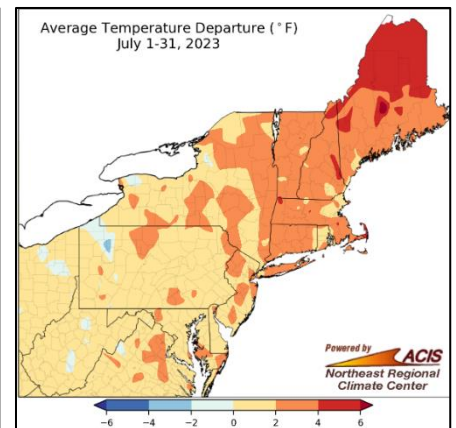
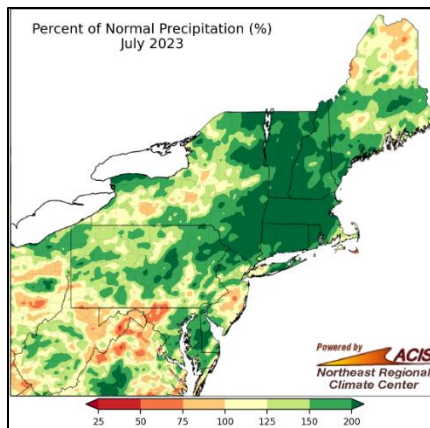
Please call 717-694-3596 if you no longer wish to receive these updates.

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.

PA Vegetable and Berry Current Issues for August 1, 2023

Beth Gugino and Kathy Demchak

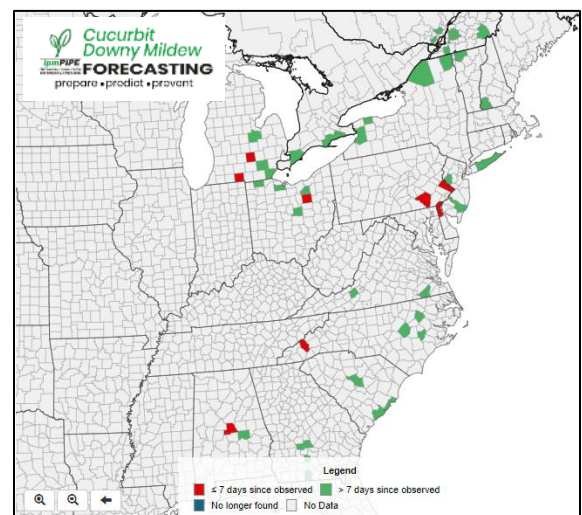
General conditions: According to the [Northeast Regional Climate Center](#), there is no question that July was wet across much of the Northeast region including much of Pennsylvania. In fact, it was wet enough that much of New England was relieved of the persistent drought conditions from earlier in the year. July was also warmer than normal across much of the region with the largest departures from normal occurring across northern Maine. For the month of August, NOAA is predicting continued wetter than normal conditions across much of PA with temperatures being closer to the normal average.



July 2023 average percent of normal precipitation (left) and temperature (right) from the [Northeast Regional Climate Center](#).

FIELD/HIGH TUNNEL PRODUCTION

Reports of **downy mildew on cucumber** are continuing to increase with reports in Lancaster and Bucks Co. as well as unconfirmed reports in Crawford and Mercer Co. All of the reports north of South Carolina and including a new report in Alabama have been on cucumber. Conditions have been ideal for spread of this disease across the region. A regular spray program on cucumber and cantaloupe with downy mildew specific fungicides such as Orondis Opti, Ranman and Previcur Flex is still recommended. Check the [2022/23 Mid-Atlantic Commercial Vegetable Recommendations](#) for a more complete list of options. There have not been any reports on pumpkin, squash, or watermelon yet north of the report much earlier this season in South Carolina.



Cucumber beetle pressure has been high across some parts of the state with plants continuing to show symptoms of **bacterial wilt**. **Cucurbit yellow vine decline** is another bacterial disease; however, it is transmitted by squash bug. It occurs less frequently than bacterial wilt and is most prevalent on summer squash and pumpkin/winter squash. Often scattered plants develop intense yellow foliage two weeks before the fruit mature and when the stems are cut, the phloem tissue is dark and discolored. **Thrips** and also **spider mite** pressure remains high in greenhouse cucumbers as well as that from **tomato pinworm** on tomato. **Catfacing** and **zippering** is developing on fruit from thrips infestations in the flowers earlier in the season.



*Cucurbit yellow vine decline symptoms on pumpkin.
Photo: B.K. Gugino.*

Severe storm damage is still being reported as a result of both forecasted and pop-up storms. In some cases, pepper plants have been knocked over, exposing the fruit making it vulnerable to sunscald or in some cases breaking the stems. Foliar diseases spread by rain splash such as Septoria leaf spot and bacterial diseases on tomato as well as Alternaria leaf blight on cantaloupe have been observed.

To spray or not to spray before the next storm? Even when implementing the best management program, if your farm was in the path of the recent severe storms, it is likely that many of the common summertime diseases that are spread via rain splash and strong winds were further exacerbated if you experienced hail. Under those conditions, consider shortening your spray interval. Apply products before a rain when the leaves are dry to prevent excess run-off of the product being applied. Most products have a rain-fast period which is the amount of time needed between the application and a rain event to enable the product to adhere to the leaves and other plant parts (typically four hours). The use of select adjuvants could also help. See the product label for specific directions and recommendations. Keep in mind that some products should not be tank mixed with an adjuvant and those details can be found on the label. [Crop Data Management Systems](#) (CDMS) is a good resource for quickly looking up product labels in their labels database. The general rule of thumb is that 1 or 2 inches of rain will remove ½ the product residue and over 2 inches will remove most the residue.

Spraying under wet field conditions can also cause infested soil to splash onto the lower portions of the plants and fruit. Phytophthora fruit rot often originates on the upper surface of the fruit due to soil splash. Take precautions when moving spray equipment between fields under wet conditions especially if soilborne pathogens are of concern. Every year take steps to improve your overall soil health by incorporating the use of cover and green manure crops, rotating in season-long soil building crops (if possible) or using other organic materials to build up soil organic matter. Improve soil drainage especially in lower lying areas of the field or plant permanent grass strips or waterways to divert water out of the field to a non-ag field location. Determine if or where your hardpan is and deep rip just below that level to improve drainage or include a cover crop such as tillage/daikon radish whose roots can penetrate that compacted layer. Improved soil health will also help to reduce the negative effects of compaction in the drive rows when having to use equipment under less-than-ideal field conditions.

Fertility issues continue to be observed in high tunnel tomatoes. Soil testing at the beginning of the season and then tissue testing during the season can help guide fertility programs. Often more is not better and can frequently make a problem worse and have led to issues such as boron toxicity, uneven ripening, gray wall, etc. In some tunnels that are very out of balance, clear water is being recommended to “flush” the system before applying any more fertilizer. Many fertilizer formulations can contribute to increased salinity which can also negatively impact the plant. Resources shared earlier this season include a tutorial on [plant nutrition in hydroponic systems](#). For those growing in native soils check out a series of articles that was recently written by Elsa Sánchez and Tom Ford based on soil samples from the high tunnels of 27 growers. These articles will help growers navigate the topics of soil chemical properties and crop health and include High Tunnel Soil Health Test Report: [Soil pH](#), [Soluble Salt Levels](#), [Soil Nutrient Levels](#), and [Organic Matter and Cation Exchange Capacity](#).

BERRY CROPS

Conditions for disease development and spotted wing drosophila have been nearly perfect given the warm wet and humid weather we had been experiencing over the past couple of weeks. **Fruit anthracnose on blueberries**, which we don't often see in PA, has been noticed on a few farms. This may be being made worse by high **spotted wing drosophila** populations in these locations, as this pest can help to spread the anthracnose organism. The holes made by SWD provide entry points for this disease, but also the flies move spores from fruit to fruit as they travel, making the problem worse. Effective insecticides for SWD with a 1-day or less PHI on brambles include Mustang Max, Verdepryn, Exirel, and Delegate. These products are also labeled for blueberries, but Exirel and Delegate have a 3-day PHI. Other effective options for blueberries with a 3-day or less PHI are Brigade, Malathion, Imidan and Danitol.



Anthracnose fruit rot of blueberry. The white "threads" on the fruit surface are breathing tubes of spotted wing drosophila eggs inserted into the fruit. Photo: K. Demchak.

Cane anthracnose on brambles is present in some plantings; lesions are most obvious on this year's canes. Keep plantings well-weeded and rows narrowed back to improve air circulation, remove old canes as soon as possible after harvest is over, and be sure not to leave pruning stubs when removing fruiting canes as several disease organisms overwinter on them and then infect new canes next year as they emerge. Some **flagging of blueberry canes** and **death of bramble canes** has been noticed during harvest. These canes likely had prior infections that weakened them, but the stress of fruiting put them over the edge, resulting in their death. With blueberries, these canes should be removed now before the entire plant becomes girdled by the disease, and bramble canes should be removed as noted above.

Fruit anthracnose is also present on day-neutral strawberries. Resistance to category 11 fungicides is widespread, so captan, a multi-site fungicide, should either be applied alone or added to the tank with products like Switch, Inspire Super, Miravis Prime, or Luna Flex. Apply any fungicides before rainy spells rather than afterwards.

Viral symptoms have been noted on the blackberry cultivar 'Natchez', but whether it is more susceptible to viruses or just serves as an indicator plant because it shows viral symptoms isn't known yet. Generally, more than one virus must be present before symptoms are seen or yields are reduced. If you have this cultivar on your farm, you may want to check it for viral symptoms and then also take a closer look at other varieties as well. Any plants with viral symptoms should be dug out to protect other plants from becoming infected.



Anthracnose lesions on black raspberry cane. Photo: K. Demchak.

PestWatch Report – July 26

MOTH CATCH LOW AGAIN IN PA

Glen Bupp and Leah Fronk, Penn State Extension

Corn earworm numbers caught in traps reporting data this week were again low at most sites this week. Most sites across the state saw a decrease in numbers. One site in Washington County experienced an increase which bumped their spray interval to 4-5 days. Because of the low numbers, most of the state is on a 5-6 day or greater interval for spray applications. 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.

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. However, we tend to see more resistance later in the season than now, as moths migrate from further south in the United States up to our region. Diamides and spinosyns do not provide effective control of other pests such as sap beetles, brown marmorated stink bug, Japanese 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 was again at very low this week. One site in Centre County caught 2 moths. Another site in Lackawanna County caught a single fall armyworm. 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 corn earworm catch:

Location	16-Jul	23-Jul	30-Jul	Location	16-Jul	23-Jul	30-Jul	Location	16-Jul	23-Jul	30-Jul
Bedford, Pennsylvania			Franklin, Pennsylvania			Luzerne, Pennsylvania					
Peach Hill Orchard	9	13	3	Waynesboro	23	53	1	Drums		23	
Blair, Pennsylvania			Indiana, Pennsylvania			Lycoming, Pennsylvania					
Hillview Farms	11	20	11	Brush Valley	2	0	4	Drums	12		6
Bucks, Pennsylvania			Juniata, Pennsylvania			Mifflin, Pennsylvania					
Delaware Valley Univ	7	23	25	Yarnick's Farm	95	17	8	Shirey Farm	10	6	
Butler, Pennsylvania			Lackawanna, Pennsylvania			Montgomery, Pennsylvania					
Renfrew	8	6	6	Port Royal		7	8	Snyder Farm		13	
Centre, Pennsylvania			Lancaster, Pennsylvania			Susquehanna, Pennsylvania					
PSU Research Farm	11	7	3	Clarks Summit		0	3	LaRue's Montrose			1
State College	3	8	0	Clarks Summit				Washington, Pennsylvania			
Clinton, Pennsylvania			Lehigh, Pennsylvania			York, Pennsylvania					
Loganton	12	14	5	Landisville	6	15	12	Peters Township	24	30	44
Erie, Pennsylvania			York, Pennsylvania								
Lake City Nursery Rd	56	6	5	Neffsville	28	4	10	York	6	12	17
Lake City Rt 5	13	2	0	New Danville	17	42	18				
				Germansville, PA	17	18	10				

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