



# PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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## *Pennsylvania Vegetable IPM Weekly Update*

*July 15, 2020*

*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

*Beth Gugino, Shelby Fleischer and Kathleen Demchak, Penn State Extension Specialists, in consultation with Penn State Extension Educators*

**General conditions and observations:** Rainfall across the state has been highly variable with some locations in southeastern PA receiving over 5 inches of rain this past week to some locations receiving almost no rain and severely impacting non-irrigated crops. In general, vegetables and small fruit under drip irrigation have fared well across the state despite some delays in maturity due to the cool spring. However, issues related to uneven watering such as blossom end rot, cracking and checking are being observed especially in high tunnels with the very high fluctuating temperatures over the past couple of weeks.

### FIELD PRODUCTION UPDATE

Although there are no confirmed reports of **downy mildew on cucurbits** in PA, pressure is building along the east coast and around the Great Lakes region with reports in Michigan, Ontario Canada, Ohio, and New York. There are unconfirmed reports near Chambersburg and Waynesboro, PA. Regular scouting of fields is critical. Much of the state was at some risk this past weekend. It typically takes 3 to 12 days depending on weather conditions for symptoms to become visible. Downy mildew can be distinguished from angular leaf spot by the dark purplish-gray sporulation on the underside of the leaves. Use of protectant fungicides is recommended along with including more target fungicides in the rotation especially if rain is in the forecast. Check the [CDM ipmPIPE website](#) for the latest reported outbreaks and disease forecasting information or call the 1-800-PENN-IPM hotline which is updated on Wednesdays each week.

**Non-target impacts of herbicide** continue to be reported whether it is the movement of tainted manure off-site into a sensitive crop during a heavy rain or the movement of an active ingredient such as aminocyclopyrachlor from a right-of-way application into a vegetable field. An example is pictured to the right showing a pumpkin vine with significant dieback of the leaves from the tip backwards



*Photo credit: Jeff Stoltzfus, Penn State Extension*



*Marginal chlorosis on cantaloupe caused by frequent copper-based fungicide applications (Photo: Beth K. Gugino).*

Be on the lookout for **marginal yellowing around your cantaloupe leaves**. Although it looks like a possible nutrient deficiency, this can be the result of salts accumulating along the leaf edges through guttation (water drops along the edges of the leaves) in the morning. The water exuded by the leaves contains salts which are left when the leaves dry and can then concentrate along the leaf edge and lead to phytotoxicity or burning of the leaf edge. Frequent copper-based fungicide applications can result in a similar symptom and foliar fertilizers as well as acidifying the solution can exacerbate symptoms.

Spreader stickers and other adjuvants can also lead to phytotoxicity by aiding to draw the product into the leaf. Sensitivity can vary by cultivar, the combination and rates of products in the spray tank, and the weather at the time of application. It is recommended that you keep detailed notes and scout your field post-application to check for possible phytotoxicity so that spray programs can be adjusted if needed.

**Purple blotch is being reported in sweet onions.** This fungal disease can blight down the leaves leading to an overall reduction in bulb size. If you are pulling onions, then there is no need to worry about this disease. If you do not anticipate pulling for another week or so, a fungicide application may be warranted. Pay attention to the pre-harvest intervals most

fungicides have a 7 to 14-day PHI on onion. Only products containing azoxystrobin and Fontelis have a 0 and 3-day PHI, respectively.

During onion harvest be on the lookout for onions with interior brown discolored and soft leaves within the onion neck. These are the result of the bacterial disease called **bacterial center rot** and often those leaves can be traced down into the corresponding scale in the bulb which render it unmarketable. The hot temperatures in the 90°Fs have been highly favorable for disease progress. Cultural strategies such as growing on silver mulch with a heat strip can help reduce soil temperatures later in the season which are associated with increases losses.

**Insect pests are trending to be more abundant and diverse this year.** Warm weather speeds their development. Dry weather could also be a factor by slowing the effect of insect pathogens. In cucurbits,

**Cucumber Beetles** continue to be active. The first field generation is emerging now, adding new adults to overwintered adults that are still present. Fields that did not control the immigrating overwintered adults could experience a rapid rise in cucumber beetles. Scout inside flowers. **Squash bugs** and **squash vine borer** are active, as well as **2-spotted spider mites**, especially on watermelons, and other melons. **Potato leafhopper** and **tarnished plant bug** are more abundant and showing up in more crops than we typically see. Other crops and weeds often support these species, and the wetter weather early in the spring would have enabled their populations to grow. The change to drier weather will result in movement, especially into irrigated crops. Snap beans and potatoes will support strong populations of potato leafhopper and tarnished plant bug. In controlled environment ag settings, we are seeing **tomato pinworm**.



*Neck of a healthy onion (top bulb in image) compared to those with center rot (bottom two bulbs) (Photo: Beth K. Gugino).*

In sweet corn, **corn earworm** trap captures are rising across the southern portion of the state. We also had a report of **stalk borer**, is a relatively rare find to reach pest status. Younger larvae have longitudinal stripes along the rear and are brown towards the head; older larvae are a uniform gray color. Larvae tunnel into stalks. A recent update on common stalk borer is here <https://cropwatch.unl.edu/common-stalk-borer-scouting>. Also, **Western corn rootworm** adults will be emerging soon as adults – scout for feeding on silks.

We are seeing significant problems with **sap beetles in sweet corn**, even in crops that have been sprayed. Dusky sap beetle is the most common species. We tend to have the worst problems in the southeast part of the state, and at

farms with strawberries, cantaloupes, or other fruit nearby. Also, always use tight husk cultivars with long silk tubes, and minimize worm damage. It gets difficult to deal with strong sap beetle populations if there is not good sanitation. Try for clean harvests, and clean-up after harvest. Dusky sap beetle is active in April, feeding on decomposing plant material, wounds in trees (sap), and have 2-4 generations/year. Once you are already dealing with sap beetles, it is hard to control. Sap beetle infestations follow behind "worm" infestations, which create entry holes for the beetles to reach kernels to deposit their eggs. Also, sap beetles and mycotoxins - *Aspergillus* and *Fusarium* - have a complex interrelationship. Sap beetles belong to a family of beetles that transport fungal spores, and the interaction of these fungi with the



*Dusky Sap beetle adult.*  
Photo: M. Price.



*Dusky Sap beetle larvae in sweet corn.* Photo credit: Zach Champaign.

plant tissue may be important for the insect's development. When we do find sap beetles in sweet corn, we often find lots of larvae in a single ear, even

in crops that have been sprayed. Insecticide applications 5-6 days after the first onset of silking is the best timing, which are attracted to the ear zone to lay eggs as silk tissue degrades.



*Dusky Sap beetle larvae.* Photo credit: Tom Ford.

Begin sampling at pollen shed. Pyrethroids, carbamates, one neonicotinoid (Assail), and a spinosyn product (Blackhawk) are labelled for sap

beetles in sweet corn. Efficacy trials from Delaware in 2013 showed that multiple (5) applications were required to reduce the % of damaged ears by sap beetle relative to the untreated control.

## BERRY CROPS

Disease incidence is relatively low with the exception of diseases that would have become problematic during the cool wet spring. Weather conditions were conducive to the presence of **mummy berry** disease of blueberry, and fruit infections are becoming apparent now. Though it is too late for controlling this disease this year, growers who see mummified fruit now should make a note to manage this disease next spring. Mummified fruit that falls to the ground this year will be next year's inoculum source. Removing infected fruit or burying it with mulch next spring can help to reduce the inoculum load, though these measures alone are not likely to be all that is needed.

Dry warm weather often results in higher insect pressure of pests such as **two-spotted spider mites**, **thrips**, **tarnished plant bugs**, and **potato leafhoppers**; many of these pests are now present in berry plantings. **Spotted wing drosophila** is present though hot dry weather is not ideal for this pest. Growers should remain vigilant, however.

Hot dry weather is putting considerable stress on bramble plantings, and **winter injury** and/or cane diseases such as **anthracnose** and **spur blight** are resulting in cane death as the stress of fruiting is added. Priority should be given to keeping these crops irrigated during dry spells. Thorough pruning when removing floricanes after fruiting, taking care of avoid leaving pruning stubs, will help to in minimizing disease inoculum for next year.



*Fruit shrivels and lightens in color as the mummyberry fungus invades the berries.* Photo credit: K. Demchak.



*Cutting the berries open reveals the mycelium that is colonizing them.* Photo credit: K. Demchak.

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

# Sweet Corn Insect Pest Monitoring

Shelby Fleischer, Extension Vegetable Entomologist, Penn State University

Interactive Maps with Google style view at <http://www.pestwatch.psu.edu/sweetcorn/tool/index.html>

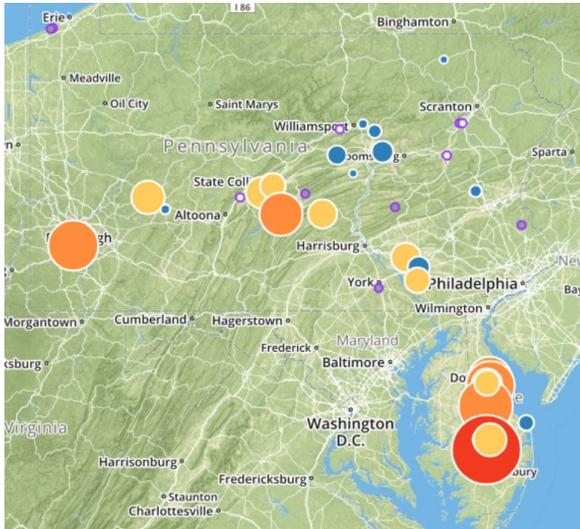


Corn Earworm

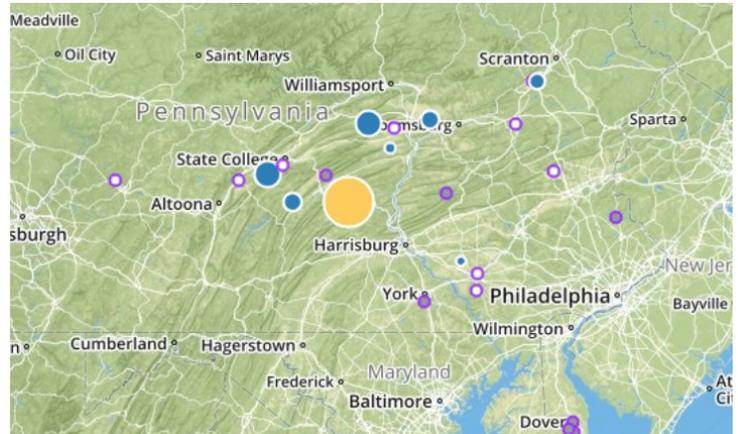
Corn earworm (CEW) catch increased in multiple locations in the southern half of the state. Of the 27 sites with weekly average estimates from this week or last, 8 exceeded spray thresholds. An additional 2 showed strong increases, although not reaching spray thresholds. Among the sites above threshold, locations in Lancaster county (last week), Mifflin county, and Washington county may need a tighter spray interval (4-5 day) for silking corn. Tasseling and silking corn will be very attractive.



ECB feeding

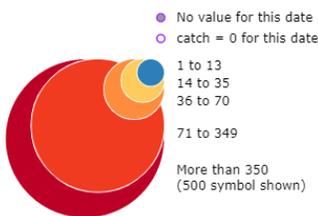


CEW counts are rising in the southern part of the state. Close to a third of the sites exceeded spray thresholds.

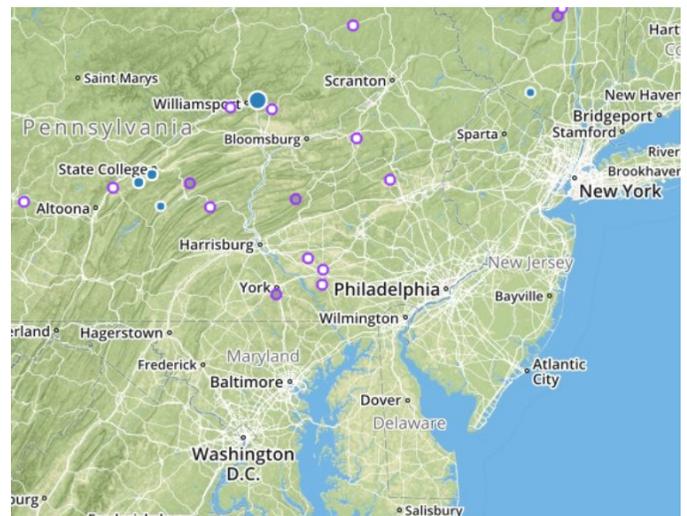


ECB first generation flight has ended. A 2<sup>nd</sup> generation flight has begun, and a site in Juniata exceeded spray thresholds.

European corn borer (ECB) adult counts are beginning to show back up, indicating a 2<sup>nd</sup> generation flight has begun. Although most locations are low, one site in Juniata county rose to above spray thresholds for ECB. Several sites are showing higher counts for the New York (E) strain than the Iowa (Z) strain of ECB.



Circle color aligns with CEW thresholds; size is proportional to catch.



FAW counts remain very low.

**TRAP COUNTS - Moving average for the last 7 days.** The catch/number of nights trapping, divided by the number of nights with data, times 7. Weeks where all the average-catch-per-night values are nulls are treated as if no data exist for that week. Shaded cells indicate no trap for that site.

County	Trap Name	CEW			ECB			FAW		
		1-Jul	8-Jul	15-Jul	1-Jul	8-Jul	15-Jul	1-Jul	8-Jul	15-Jul
Blair	Tyrone	0	0	0	3	0	0	0	0	0
Bucks	Bedminster	13	4	---	0	0	---			
Centre	State College	---	14	25	---	0	---	---	2	---
Centre	Rock Springs	6	2	2	0	3	9	2	0	2
Clinton	Loganton	0	6	8	6	1	8			
Erie	Fairview	7	1	---				0	0	---
Erie	Lake City	37	10	---				0	0	---
Indiana	Brush Valley	---	1	2				---	0	0
Indiana	Creekside	1	3	24	0	0	0	0	0	0
Juniata	Port Royal	---	15	18	---	4	30	---	0	0
Lackawanna	Ransom	---	0	0	---	3	3			
Lancaster	Landisville	36	53	19	2	2	1	2	1	0
Lancaster	Neffsville	3	1	11	1	0	0	0	0	0
Lancaster	New Danville	8	9	14	0	1	0	0	0	0
Lehigh	Germansville	---	2	3	---	0	0	---	0	0
Luzerne	Drums	1	0	0	2	5	0	---	---	0
Luzerne	Plains	2	0	---	11	5	---			
Lycoming	Linden	0	0	---				0	0	---
Lycoming	Montoursville	1	2	---				0	5	---
Lycoming	Muncy	---	4	---				0	0	---
Mifflin	Belleville	28	35	40	1	0	4	4	3	1
Montour	Washingtonville	4	2	10	1	2	4			
Schuylkill	Tower City	2	1	---	3	4	---	0	1	---
Susquehanna	Montrose	1	0	1	16	12	0	0	0	0
Union	Winfield	---	2	1	---	0	1			
Union	Lewisburg				0	2	0			
Washington	Venetia	24	18	54						
York	York	17	4	---	0	0	---	0	0	---

**THRESHOLDS:** Reproductive (tassel/silk) and late vegetative corn attracts moths. Shorten spray schedules when populations increase. If CEW is not a problem, then consider ECB.

	CEW			ECB	
	Catch/Week	Spray Frequency		Catch/Week	Spray Frequency
Very very low	1-13	7 - or no spray		<15	7 - or no spray
Very low	14-35	5-6		15-35	6
Low	36-70	4-5		36-70	5
Moderate	71-349	3-4		>70	4
High	>350	2-3			