



# PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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## Pennsylvania Vegetable IPM Weekly Update

July 17, 2019

The information supplied in these Updates is from Penn State Extension Specialists and Educators.

These Updates are a service of the Pennsylvania Vegetable Marketing and Research Program which, in cooperation with the Pennsylvania Vegetable Growers Association, supports vegetable research at Penn State University and other institutions.

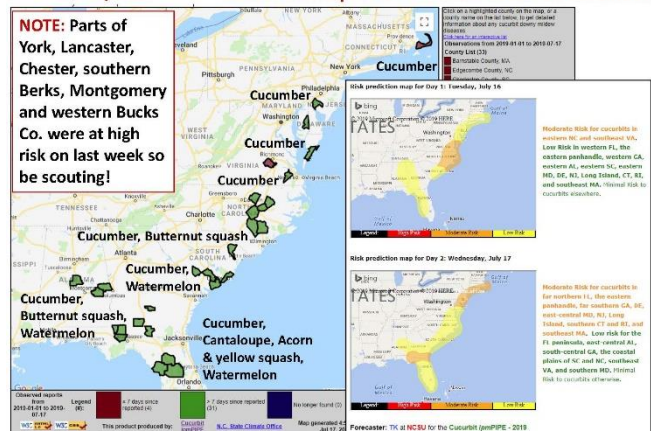
### VEGETABLE DISEASE UPDATES

Dr. Beth Guginio, Extension Vegetable Pathologist, Penn State University

#### GENERAL UPDATES:

- 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 [bkguginio@psu.edu](mailto:bkguginio@psu.edu) or by phone at 814-865-7328 or contact your local Extension Office.
- **Common summer diseases** such as early blight and Septoria leaf spot are being reported on tomato as well as Phytophthora blight on peppers and cucurbits in fields that were wet earlier this season. Bacterial diseases on a number of vegetable crops including tomato, pepper, onion and various cucurbits are also being reported. In some cases, the source of bacteria can originate from seed while in others, the bacterial pathogens can be maintained on the farm associated with crop residue, weedy hosts and un-sanitized equipment including wooden stakes when being reused.
- **Cucurbit downy mildew** was confirmed on cucumber in eastern Massachusetts yesterday. Other nearby reports over the past few weeks include New Jersey, Maryland and Virginia. It is important for growers to be scouting cucumber and muskmelon fields. Currently consider using a protectant spray program on cucumber at the very least. We are actively monitoring for this disease so please either contact me (information above) or your local Extension office for confirmation. All reports aid in our ability to successfully forecast disease risk. Check the [CDM ipmPIPE website](http://CDM.ipmPIPE website) for the latest reports and forecasts that are updated three times per week.
- **Cucurbit powdery mildew** is becoming a common sight and is not deterred by hot, dry conditions like many other diseases. The single-site mode of action fungicides used to manage powdery mildew are not the same as those for downy mildew so proper identification is important. Managing for fungicide resistance by rotating between FRAC codes and tank mixing with protectants is important. See the [2018 Cucurbit Downy and Powdery Mildew Efficacy Table](#) for a list of recommended conventional fungicides and their efficacy.

Cucurbit downy mildew reports as of 17 July 2019 **Currently no reports in Pennsylvania; Closest new report is in Massachusetts on cucumber**



## LATE BLIGHT LOOK-ALIKE: FOLIAR BLIGHT CAUSED BY *PHYTOPHTHORA NICOTIANAE*

There have been several reports of late blight-like symptoms on both tomatoes and potatoes in Pennsylvania and surrounding states. The foliar symptoms bear a strong resemblance to late blight on both tomato and potato with irregular water-soaked lesions that are grey-green in color however, the center of the lesion can be a little more tan in color and easily visible sporulation is not apparent on the underside of the leaf. Fruit symptoms can also look a lot like late blight, buckeye rot and Phytophthora blight caused by various other species of Phytophthora. The symptoms in the most recent reports were attributed to *Phytophthora nicotianae*, the pathogen that also causes black shank in tobacco and can also affect ornamentals such as petunia. It is favored by warm, wet weather compared to late blight which is favored by cooler conditions. Under favorable conditions, the white sporulation characteristic of late blight will not develop with *P. nicotianae* (see pictures). Typically, *P. nicotianae* is soilborne and since both mating types are common, it can survive in the soil as oospores and chlamydospores and be a reoccurring problem. In comparison, the pathogen which causes late blight dies as soon as the plant material is dead and therefore does not survive overwinter unless associated with living potato tubers in the field or in cull piles. In some fields, there is resistance to mefenoxam is reported to *P. nicotianae* however other fungicides targeted for oomycete pathogens such as late blight should provide some level of efficacy. Since abundant spores are not produced, it does not spread as easily or rapidly as late blight in the field especially under dry conditions.



Foliar lesions characteristic of *Phytophthora nicotianae* on the upper leaf (A) and lower leaf surface (B) of potato. Photo credit: Meg McGrath, Cornell. Lesions characteristic of *Phytophthora infestans*, the cause of late blight, on the upper (C) and lower (D) leaf surface of tomato. Note the white sporulation on the lower surface of the tomato compared to the potato leaf which is a distinguishing characteristic between the two disease. (Photo credit: A, B Meg McGrath, Cornell and C, D Beth Gugino).



# VEGETABLE AND BERRY CURRENT ISSUES

*Penn State Extension Specialists and Educators*

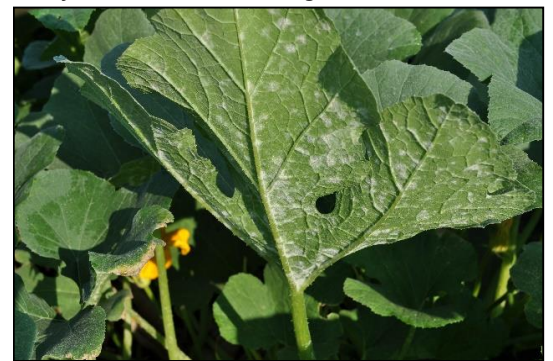
**General conditions:** The warm and dry conditions are continuing to prevail although pop-up summer thunderstorms are affecting pockets across the state.

## INSECT PEST UPDATE

The second generation of **striped cucumber beetles** are active in cucurbit fields across the state and adult **western corn rootworm** is now also appearing. They can be distinguished by their abdomen which is yellow if it is a corn rootworm and black if it is a striped cucumber beetle. Despite low **sweet corn trap counts** across many parts of the state, some spots are high and many sites in Delaware are very high, and some growers are still experiencing worm issues in the ears in locations with low trap counts. In some cases, this is likely due to the development of pyrethroid resistance from immigrating populations in southern locations, plus in fields where growers have relied on pyrethroids without rotating to other modes of action for resistance management. Be scouting for **Japanese beetle**. Also **squash bugs** are starting to hatch out of the characteristic bronze eggs laid in a diamond pattern on the underside of the leaf. The youngest nymph stages are most sensitive for insecticide applications. In general, the hot and dry weather also favors thrips and mites on many different crops and there have been higher populations of **potato leafhoppers** are being observed.



*Female squash bug laying eggs on a pumpkin leaf. Photo credit: Beth Gugino.*



*Powdery mildew on the underside of a pumpkin leaf. Photo credit: Beth Gugino.*

## GENERAL DISEASE UPDATE

**Cucurbit powdery mildew** is being more common especially with the drier conditions. Remember that protectant fungicides will only the surface to which they are applied so when scouting be sure to check the undersides of the leaves and stems. It is recommended that fungicide programs be initiated when one lesion is present on 50 scouted leaves. **No reports of late blight** to date. Although *P. nicotianae* was confirmed on tomato. It can cause buckeye rot on the fruit and a foliar blight with symptom very similar to late blight on the leaves but there will be no sporulation. Be scouting for **Alternaria leaf spot on broccoli, cauliflower** and other cole crops. This disease was very problematic last year due to the wet conditions. Alternaria can also cause early blight on tomato and potato however, it is a different species than the one affecting cole crops. Just today, **cucurbit downy mildew** was confirmed in a commercial cucumber field in eastern Massachusetts to add to the other nearby reports in New Jersey, Maryland and Virginia. This past week it was confirmed on butternut squash in central North Carolina.

## BERRIES

**Spotted wing drosophila** numbers are increasing in blueberry and bramble fields. Harvest is underway, so insecticides used now must have a short pre-harvest interval. Growers should be aware that the PHI for Delegate on blueberries may be reduced from 3 days to 1 day if additional restrictions are followed as specified on the label <http://www.cdms.net/ldat/ld8DM013.pdf>. Also there are Special Local Needs labels in PA for Malathion 8F that allow use at an increased rate with a 2-day PHI on blueberries for SWD management

<http://www.cdms.net/ldat/ld833007.pdf> and that allow one more application on brambles than the full label allows <http://www.cdms.net/ldat/ld833027.pdf> if used for SWD. This product needs to be used at the maximum rate for best control and may need to be reapplied following rain. With increased use of insecticides for SWD management in brambles, **two-spotted spider mite** flare-ups are occurring. Symptoms of **potato leafhopper** damage are being seen in strawberry fields, as are strawberry leaves curling inward from **powdery mildew**.

**Raspberry caneborer** is present in plantings. To manage this pest, cut wilted cane tips just below the lower set of punctures that encircle the stem as soon as wilting is noticed and remove the tips from the field. The larvae, even if hatched already, will not yet have had time to tunnel downward in the cane. Defoliation of blueberry plants from **yellow necked caterpillar** has been seen; the caterpillars usually have moved elsewhere in the planting by the time damage is noticed. With some bright sun at last, **sunscald** is being seen to a greater extent in raspberries and blackberries.



*Potato leafhopper feeding injury results in leaf yellowing and distortion. Photo credit: Kathy Demchak.*



*Wilted tip of raspberry cane due to raspberry cane borer; an egg was laid between the two rings of punctures. Photo credit: Kathy Demchak.*



*Section of raspberry cane located between rings of raspberry cane borer punctures. Note recently hatched yellowish larvae which is only about 1/16 of an inch long. Photo credit: Kathy Demchak.*

## **SWEET CORN INSECT PEST MONITORING**

*Dr. Shelby Fleischer, Extension Vegetable Entomologist, Penn State University*

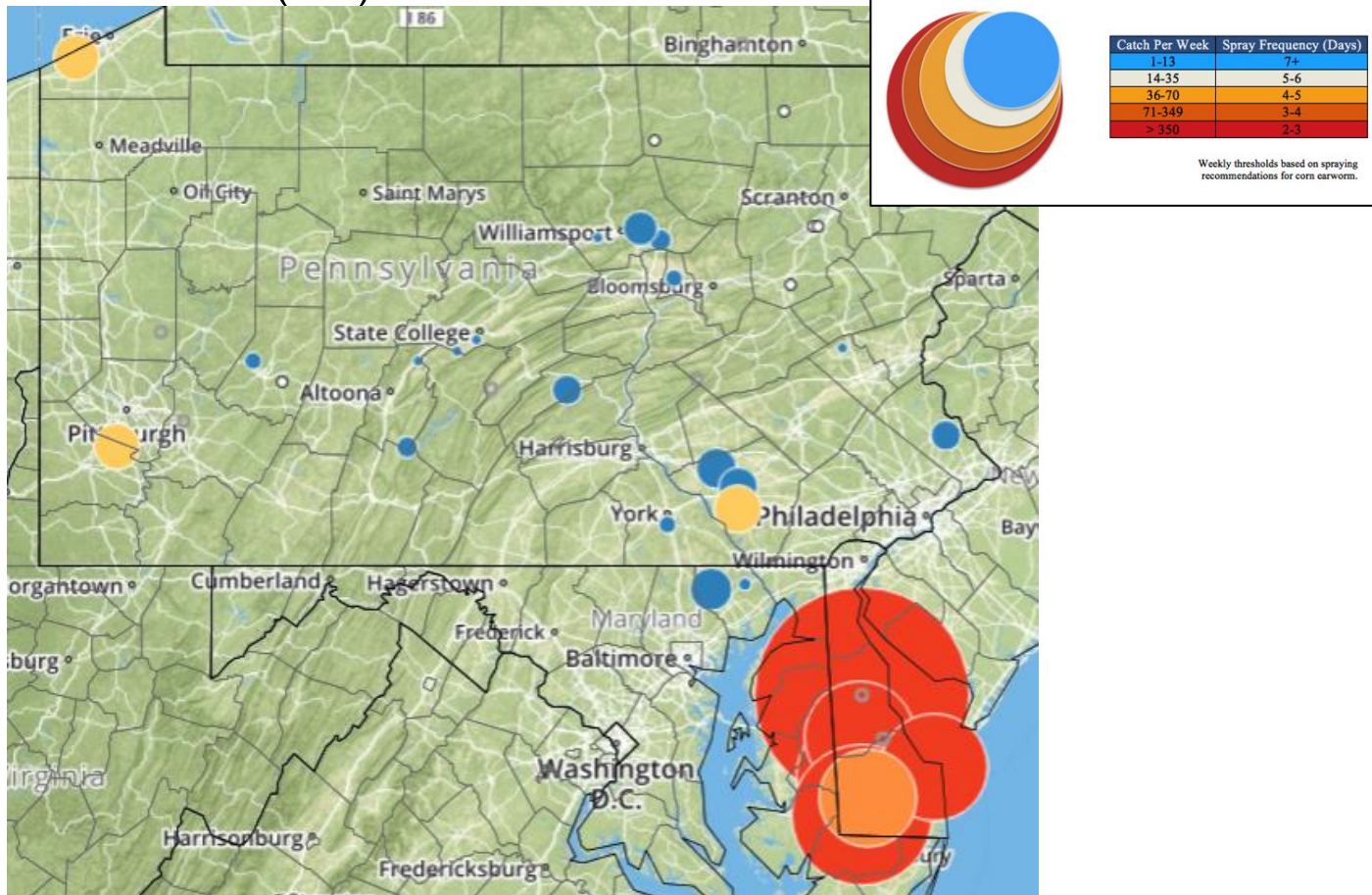
**Corn earworm (CEW) captures are rising to our southeast and southwest.** Although most locations in PA suggest low or no spray intervals, some sites are at 5-6 day intervals, and one site in southwestern PA reported a very high catch recently. Counts in Delaware started spiking. Some growers have reported earworm damage to sweet corn even though trap counts were low. This may have been due to pyrethroid resistance. Populations migrating in from southern locations have been reported to carry pyrethroid resistance.

**European corn borer (ECB)** counts are moderate in the eastern part of the state.

**Fall armyworm (FAW)** counts are low.



## CORN EARWORM (CEW)



## European Corn Borer (ECB)



## Fall Armyworm (FAW)



## 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 Threshold			ECB Thresholds		
	Catch Per Week	Spray Frequency		Catch Per Week	Spray Frequency
Almost absent	1-13	7+	Almost absent	< 14	7+
Very low	14-35	5-6	Very low	15-35	6
Low	36-70	4-5	Low	36-70	5
Moderate	71-349	3-4	Moderate	> 70	4
High	> 350	2-3			

*Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture. Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.*

**Average weekly catch** – a moving average for the last 7 days. The average catch per night (catch, divided by the number of nights trapping), divided by the number of nights where data exist, multiplied by 7. Weeks where all the average-catch-per-night values are nulls are treated as if no data exist for that week.

County	Town/Farm	CEW			ECB			FAW		
		Jul 3	Jul 10	Jul 17	Jul 3	Jul 10	Jul 17	Jul 3	Jul 10	Jul 17
Blair	Curryville	5.4	3	3	0	0	0	0	0	0
Blair	Tyrone	4	4	1	0	0	0	0	0	0
Bradford	Sechrist Farm	null	10.5	0	null	1.2	2	null	0	0
Bucks	Buckingham	null	null	6			8			
Butler	Cabot	19	210	null				0	0	null
Centre	State College	0	1.2	0.9	1	2.3	0.9	5	1.2	0
Centre	Rock Springs	2	3.3	0.9	1	1.8	0	0	0	1.3
Clinton	Loganton	0.9	1	null	0	0	null			
Erie	Lake City	null	null	14				null	null	1
Indiana	Brush Valley	null	0	0				null	0	0
Indiana	Creekside	null	11	2	null	0	0	null	0	0
Juniata	Millerstown	2.5	3.5	6				0	0	0
Lackawanna	Ransom	null	null	0	null	null	0			
Lancaster	Landisville	0	2	11	0	2	4	0	0	0
Lancaster	Neffsville	0	4	10	0	3	5	0	0	0
Lancaster	New Danville	13	1	15	0	0	0	0	0	0
Lehigh	Germansville	0	0	1	null	0	1	0	0	0
Luzerne	Drums	0	0	0	2	0	1	null	null	0
Luzerne	Plains	2	0	0	4	0	1			
Lycoming	Linden	1	1	0.5				0	0	0
Lycoming	Montoursville	44	20	12.9				0	0	0
Lycoming	Muncy	12	2	2.8				2	1	0.5
Mifflin	Belleville	32	18	null				0	1	null
Montour	Washingtonville	1	null	2	2	0	2			
Schuylkill	Tower City	null	0	null	null	0	null	null	0	null
Susquehanna	Montrose	2	1	0	null	8	7	0	0	0
Washington	Venetia	26	21	14						
Westmoreland	Jeannette	12.7	null	null	0	null	null			
York	York	4	3	2	0	0	1	0	0	0