



# PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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## *Pennsylvania Vegetable IPM Weekly Update*

June 26, 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 are currently **no reports of late blight** on tomato or potato in the region. Foliar symptoms similar to late blight were observed in a potato field on the eastern shore of Virginia. Very little sporulation was observed on the lower leaf surface and molecular analysis determined that the symptoms were caused by *Phytophthora nicotianae*. *P. nicotianae* is typically considered a soilborne pathogen and is favored by wet conditions and high temperature compared to *P. infestans* (causes late blight) which is favored by wet and cool conditions. 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.

#### CUCURBIT DOWNY MILDEW IS AT OUR DOORSTEP: ARE YOU READY?

Downy mildew on cucumber is at our doorstep with the most recent report coming yesterday from Carolina County, MD on the DelMarVA Peninsula. Last week the DelMarVA region was at moderate risk from movement of the pathogen up the east coast from North and South Carolina and less than a week later, symptoms were observed in only 3% of a field thanks to vigilant scouting. A suspect report is also in the process of being verified in eastern Virginia. The past couple years the first reports in Pennsylvania have occurred shortly after those in MD, DE and NJ in early the mid-July. Early symptoms include slightly yellow (chlorotic) lesions that are limited by the leaf veins. Early in the morning the underside of the lesion will be water-soaked and as the dew dries, purple sporulation can be observed.



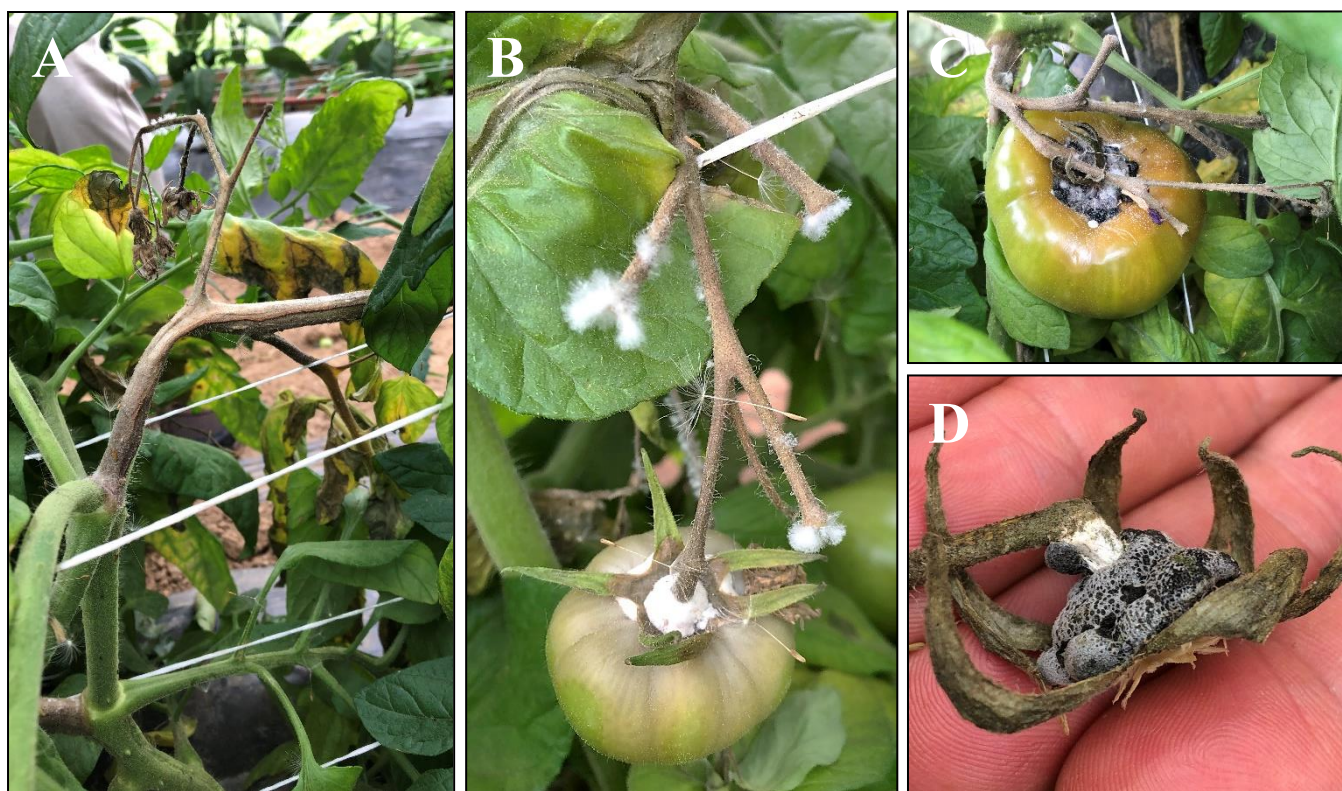
*Early stage individual angular lesions caused by downy mildew on the upper surface of a cucumber leaf in the center of the image. Initially they are pale yellow before becoming tan/necrotic. (Photo credit: Beth Guginio).*

**Fungicides are an important tool for** effective management of the disease. The drier conditions in the short-term forecast will be less favorable for disease development but it will be important to have cucumber and muskmelon crops protected when conditions become favorable. Protectant fungicides that you may be applying for other diseases will help protect against downy mildew but they will only protect the surface that they come in contact with. Downy mildew specific fungicide options for non-organic production include Orondis Ultra (FRAC U15 + 40), Orondis Opti (U15 + M5) and Ranman 400SC (21) which can be rotated with Previcur Flex 6F (28), Zampro 525SC (40 + 45), and Elumin (22). See the [2019 Mid-Atlantic Commercial Vegetable Production Recommendations](#) for a more complete list of recommended products. For resistance management, rotate between FRAC code groups and tank mix with protectant fungicide. The latest resistance management recommendations can be found [here](#) electronically.

**Organic management of downy mildew** is more challenging. Copper-based products are still the primary tool but can also cause phytotoxicity on some cucurbit crops. Other organic options include the microbial biopesticides Actinovate, Double Nickel 55, Serenade and Sonata as well as the biochemical biopesticides MilStop, Organocide, Oxidate, Regalia, Sporatec and Trilogy. Zonix is an OMRI-approved rhamnolipid surfactant which has shown some efficacy when included in a regular spray program. At this time, it is important to have thought through a fungicide program and be prepared to initiate a spray program on cucumber and muskmelons once the conditions become favorable. A preventative spray program is most effective.

Since downy mildew disease forecasting is an important tool utilized by growers, extension educators, crop consultants and other industry stakeholders, confirming reports especially early in the season and on different cucurbit crops is important at both a local and regional level. If you suspect downy mildew on your farm please let me know either by email at [bkgugino@psu.edu](mailto:bkgugino@psu.edu) or by phone at 814-865-7328 or contact your local Extension Office. Check the [CDM ipmPIPE website](#) for the latest information about confirmed reports.

## HOW TO DIAGNOSE TIMBER ROT IN HIGH TUNNELS



*Characteristic symptoms of timber rot in high tunnel tomatoes include brown/tan stem lesions (A); dense white fungal growth under humid conditions (B); and the formation of sclerotia within stems and on fruit (C, D). (Photo credit: Beth Gugino).*

Although the weather is starting to turn hot and dry, the predominant cool (< 80°F) and wet weather in June created conditions favorable for timber rot in high tunnel tomatoes. It is caused by the same fungal pathogen that causes white mold in snap bean and soybean as well as numerous other crop and weed hosts. The spores land on dying plant tissue to obtain the nutrients needed to infect or penetrate through the plant surface. As the disease progresses the stems become brown/tan in color (A) and then under humid conditions white dense mycelium or fungal growth develops (B). As the stem tissue dies, the dense white mycelium will develop into dark black sclerotia within the stem and at the calyx/petal end of the fruit (C, D).

**Management of timber rot** can be challenging especially once it gets established. It is important to rogue symptomatic plants or plant parts before the sclerotia develop or if already developed take measures to prevent them from dislodging and falling to the soil. The sclerotia can survive in the soil and initiate the disease again next year. During the season, Fontelis (FRAC 7) is one of the few products registered for greenhouse/high tunnel use and has *Sclerotinia* spp. on the label. Contans is a microbial-based product with an active ingredient that consists of another fungus, *Coniothyrium minitans*, which can feed on the dense white mycelium and sclerotia. It is most effectively used when applied to the soil early in the season, lightly incorporated in the top 2-inches of soil and then

watered in. It can also be applied to the crop residue post-harvest. See the label for additional details. Contains is approved for certified organic production. Plastic mulch and landscape fabric can create a physical barrier preventing sclerotia that may be in the high tunnel soil from germinating and releasing ascospores into the crop canopy. However, keep in mind that the spores may be coming in from the field surrounding the high tunnel especially if near-by snap bean and soybean fields have had a history of white mold. Scout surrounding fields for symptoms and signs of white mold can help to identify where the source of pathogen inoculum may be coming from.

## Sweet Corn Insect Pest Monitoring

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



**Corn Earworm** is present throughout the state.

**Corn earworm (CEW)** captures continue to scattered and low in most of the state, but higher captures are starting to in southwestern PA, and to the southeast and north of the state. Tasseling and silking corn will be very attractive. Moths will also lay eggs on many hosts, especially when corn is not available. Tomatoes make a good host (CEW is also known as “tomato fruitworm”).

**European corn borer (ECB)** counts are scattered, but localized hot spot exists in Luzern and Montour counties. Scout for feeding damage in vegetative corn.

**Fall armyworm (FAW)** counts are low. Captures in FAW traps this time of year may also be due to non-target capture of wheathead armyworm,

which is not a pest. See details here: <https://ento.psu.edu/extension/factsheets/armyworm-pheromone-captures>.



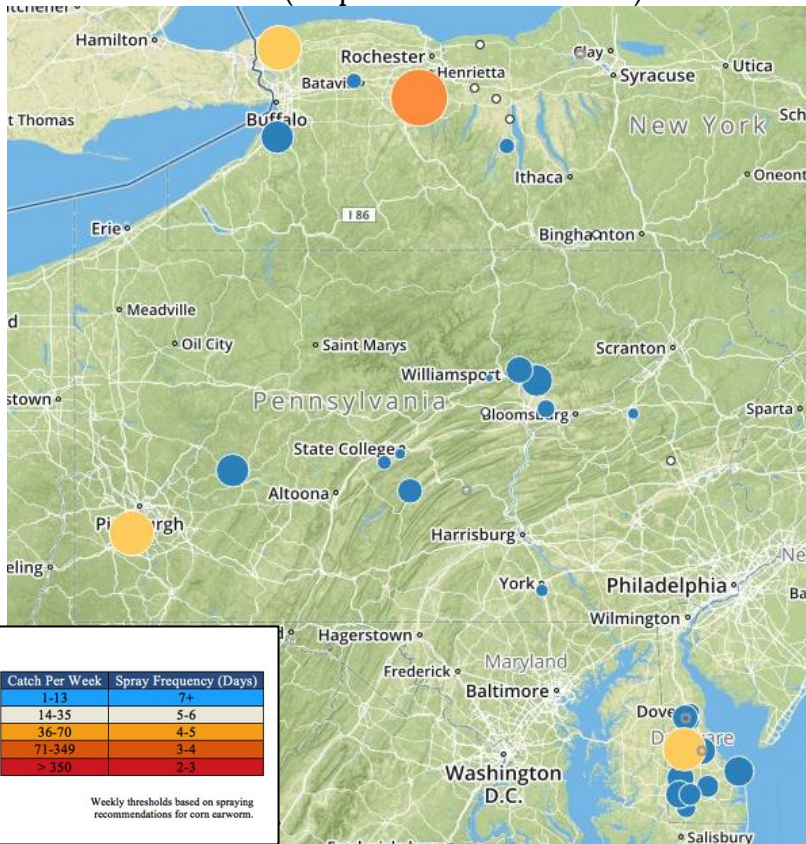
**European corn borer** feeding.



**Fall Armyworm** in vegetative corn.

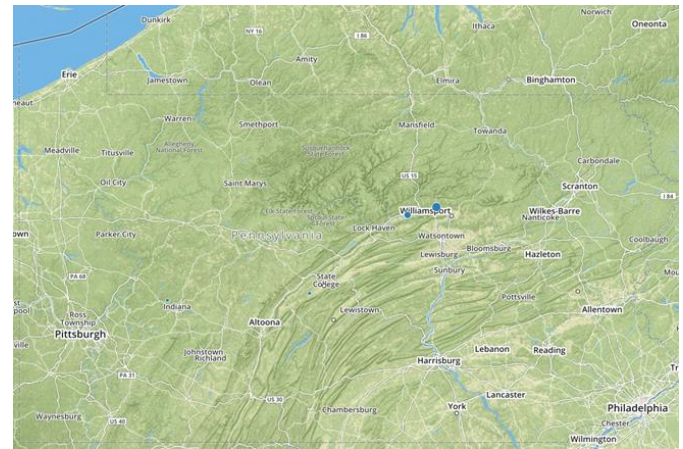
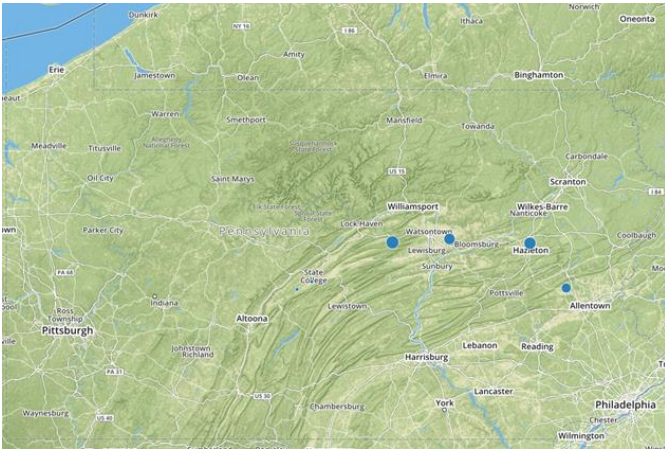
**In summary**, CEW is scattered and low in most of the state, but picked up near Pittsburgh, and are higher in areas to the southeast and north of PA. Tasseling or silking corn is at risk. CEW eggs laid develop into adults in about a month, so the low levels we’ve be seeing for the last few weeks may start producing adults in about 2 more weeks. If CEW larvae are on vegetative plants, they will feed on leaf tissue, but the damage is not expected to be economically significant.

### CORN EARWORM (map shown for June 25)



## European Corn Borer (ECB)

## Fall Armyworm (FAW)



**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	
		Jun 19	Jun 26	Jun 19	Jun 26	Jun 19	Jun 26
Centre	State College	10.0	0	1.5	1.0	0.0	0.0
Centre	Rock Springs	1.9	2.6	0.0	1.0	0.0	0.0
Clinton	Loganton	2.8	0	4.9	9.1		
Indiana	Creekside	11.0	13.0	0.0	0.0	null	1
Juniata	Millerstown	11.0	null				
Lehigh	Germansville	8.4	0	9.8	5.3	0.0	0.0
Luzerne	Drums	11.0	0	15.0	8.0		
Lycoming	Linden	0.9	null			2.6	null
Lycoming	Montoursville	8.8	null			4.4	null
Lycoming	Muncy	12.3	null			0.0	null
Mifflin	Belleville	null	7.5			null	0.0
Montour	Washingtonville	null	4.0	null	7.0		
Washington	Venetia	12	24.0				
York	York	0.0	2.0	0.0	0.0	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 Threshold				ECB Thresholds		
	Catch Per Week	Spray Frequency			Catch Per Week	Spray Frequency
Almost absent	1-13	7+				
Very low	14-35	5-6		Almost absent	7+	
Low	36-70	4-5		Very low	6	
Moderate	71-349	3-4		Low	5	
High	> 350	2-3		Moderate	4	

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