



PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

2301 NORTH CAMERON STREET, HARRISBURG, PENNSYLVANIA 17110-9405

717.694.3596

Pennsylvania Vegetable IPM Weekly Update

August 28, 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 Gugino, Extension Vegetable Pathologist, Penn State University

ALTERNARIA LEAF SPOT ON COLE CROPS

Alternaria leaf spot is caused by the fungal pathogens *Alternaria brassicae* and *A. brassicola* which affect all types of cole crops as well as weeds such as mustard. The lesions start as small dark spots that can expand into 2 to 3-inch tan lesions with a concentric ring pattern. The concentric ring pattern results from changes in the environmental conditions that either favor or disfavor the production of spores of the pathogen. Affected broccoli and cauliflower heads have small black to brown discolored spots that can easily be colonized by secondary soft rotting bacteria. The disease is favored by extended periods of wetness and temperatures between 75 to 82°F.



Alternaria leaf spot on cabbage and Shepherd's purse both members of the cole crop (brassica) plant family. Photo credit: Julie Kikkert, Cornell Cooperative Extension.

The pathogen survives readily on crop residue and cruciferous weeds and may also be seedborne. Many of the cultural practices recommended for the other diseases will also help to manage Alternaria leaf spot. Some research has shown that mulches and other barriers that reduce soil splash can help with disease management. Protection of the broccoli and cauliflower heads is important especially once symptoms are observed in the field. Previous research from New York found differences in fungicide sensitivity between fungal isolates collected from different fields. The isolates also varied in their ability to cause disease with some being more severe while others less severe. Despite these differences, fungicides programs can be effective, but timing is critical. Once the disease becomes established, it can be difficult to manage so scouting is an essential part of disease management. Although at varying price points per acre, products that have been demonstrated to be effective include Priaxor (FRAC 7 + 11), Switch (FRAC 9 + 12; more commonly used in strawberry production), Endura (FRAC 7), Quadris (FRAC 11) as well as Quadris Top (FRAC 3 + 11). Always double check the fungicide label to make sure the specific cole crop you are treating is labelled and rotate FRAC codes for resistance management. For example, Luna Experience is only labelled on brassica leafy greens which includes kale, spinach bok choy, etc. and not broccoli, cauliflower and cabbage.

ADDITIONAL REPORTS OF LATE BLIGHT ON TOMATO

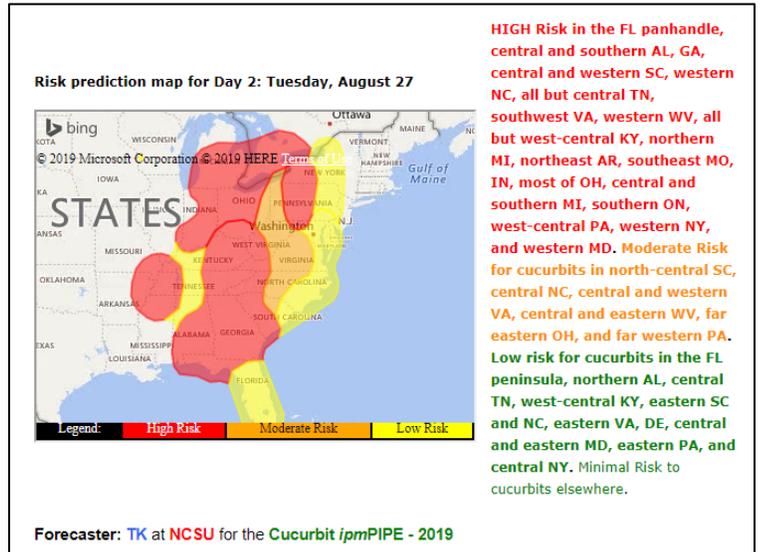
Over the past week there have been additional confirmed reports of late blight on tomato in both home gardens and commercial fields. To-date it has been confirmed on tomato in Erie, Indiana, Clinton, Centre Counties and most recently Cambria County. There have also been several reports on both tomato and potato in central and western New York state. All the PA samples have been genotyped as US-23, the predominant lineage over the past five years. Currently, the crops most at risk are those that have not received any fungicide applications (including protectant fungicides) or those where spray intervals may have been extended. Scouting the most at risk locations on the farm is recommended. Check the USAblight.org website or call the 1-800-PENN-IPM hotline for the latest reports. If you suspect late blight please contact your local Penn State Extension Office, the Penn State Plant Disease Clinic or me at bkgugino@psu.edu or 814-865-7328 for confirmation.

CUCURBIT DOWNY MILDEW STATUS UPDATE

Reports of downy mildew are continuing to build all along the east coast and now across the midwest in Missouri, Arkansas, Indiana, Kentucky, Wisconsin, Michigan and Ohio. The overcast moist conditions on Tuesday were highly favorable for downy mildew infection especially on cucumber across central and western PA (see map). Current cucurbit hosts include jack-o-lantern pumpkin, winter squash/processing pumpkin, cucumber, and cantaloupe. There have also been an increasing number of reports on butternut squash on Long Island, NY and in Massachusetts. Protectant fungicides that are being tank mixed into powdery mildew fungicide spray programs will provide some efficacy against downy mildew, but inclusion of downy mildew specific fungicides is recommended if not close to harvest.

For those growing late season high tunnel cucumbers, it will be very important to keep them protected from downy mildew. Even though protected from direct rain, extended dew periods and high humidity can favor downy mildew development in high tunnels and the plants are susceptible at any growth stage. Products like Ranman (FRAC 21) are labelled for use in a greenhouse and therefore high tunnel but should be rotated with other FRAC codes such as Previcur Flex (FRAC 28) for resistance management.

We are actively monitoring for this disease so please either contact me via email at bkgugino@psu.edu, by phone at 814-865-7328 or contact your local Extension office for confirmation. All reports small or large aid in our ability to successfully forecast disease risk. Check the CDM ipmPIPE website for the latest reports and forecasts that are updated three times per week.



Downy mildew affecting cucumbers growing in a high tunnel.
Photo credit: Tom Ford, Penn State Extension.

SWEET CORN INSECT PEST MONITORING

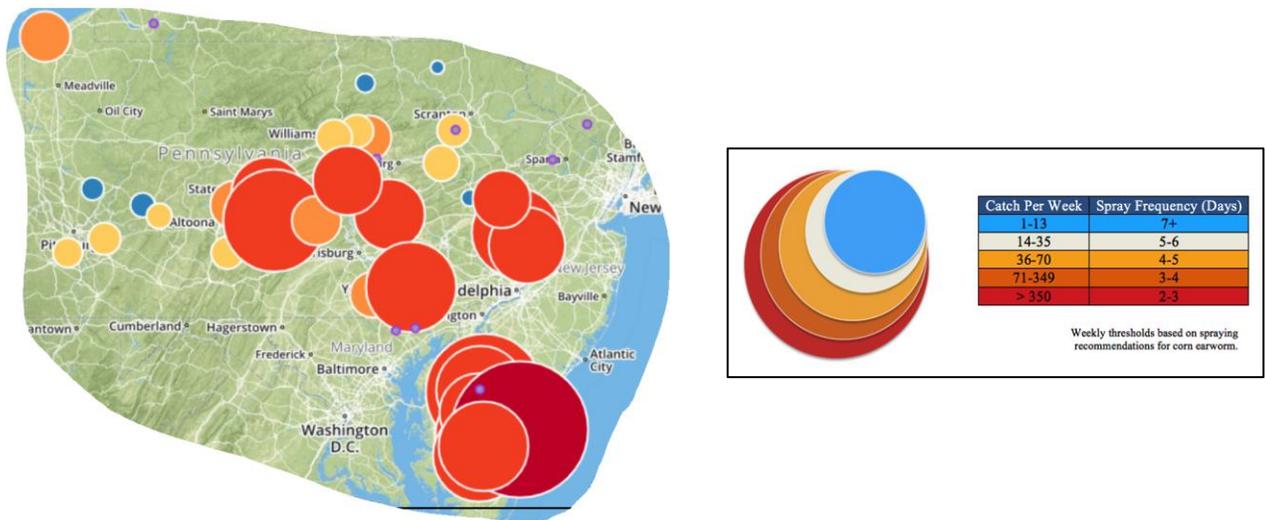
Dr. Shelby Fleischer, Extension Vegetable Entomologist, Penn State University

Corn earworm (CEW) captures continued to spike in most locations, although a few sites to the southwest remained low. Sites where sprays are applied may reduce counts, and moving traps close to silking corn will increase catch. Within the last 2 weeks, sites exceeding 70 moths/week, suggesting a tight (3-4) day spray interval occurred in Bucks, Centre, Lancaster, Mifflin, Northampton, Schuylkill and Union counties. Sites with 36-70 moths/week, suggesting a 4-5 day interval, were reported in Blair, Erie, Juniata, Lancaster, Lycoming and York counties. Additional sites had lower counts but still above a spray threshold. Only 3 of 32 sites stayed below threshold. Populations carrying pyrethroid resistance tends to increase in August. Non-pyrethroid options include Coragen, Blackhawk, and Radiant, however these will not control sap beetles, BMSB, or insects feeding on silk (Japanese beetles, adult corn rootworms). Adding a pyrethroid, or the premix Besiege, should help with pests that are not “worm” species.

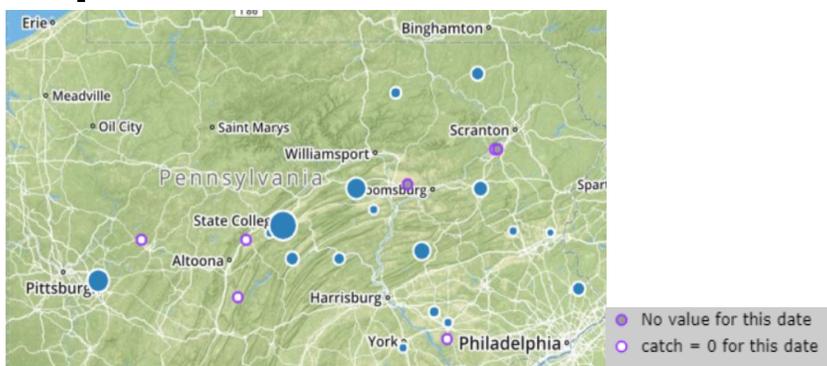
European corn borer (ECB) counts are low. Sprays targeting CEW will control ECB.

Fall armyworm (FAW) captures are spiking in Erie county, and also rose dramatically in central PA (Blair, Butler, Centre, and Union counties). A non-target called Intermediate Cucullia, or Intermediate Hooded Owllet, is also showing up in the FAW traps.

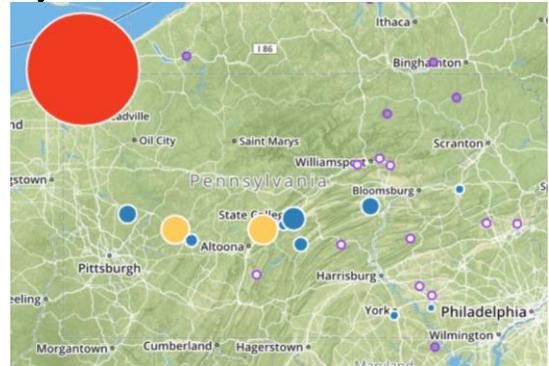
CORN EARWORM



European Corn Borer



Fall Armyworm



Average weekly catch –7-day moving average. 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		
		14-Aug	21-Aug	28-Aug	14-Aug	21-Aug	28-Aug	14-Aug	21-Aug	28-Aug
Blair	Curryville	6	21	23	0	0	0	0	0	0
Blair	Tyrone	3	45	51	0	0	0	0	null	21
Bradford	Sechrist Farm	0	null	8	14	null	2	0	null	Null
Bucks	Bedminster	65.1	220	168.9						
Bucks	Buckingham	27	75	125	6	6	3			
Butler	Cabot	null	null	11.2				null	null	8.4
Centre	State College	19	58	113	0	2	13	4	2	13
Centre	Rock Springs	3.6	9.8	32	1	1	1	0	1	3
Clinton	Loganton	null	1.8	Null	null	10.5	Null			
Erie	Fairview	41	39	42				2	20	54
Erie	Lake City	87	56	55				3	35	300
Indiana	Brush Valley	0	8	14				0	0	4
Indiana	Creekside	0	3	13	0	0	0	1	5	19
Juniata	Port Royal	5	12	52.5	3	0	2.3	0	0	0
Lancaster	Landisville	19.3	25.7	20	0	3.5	2	0	0	0
Lancaster	Neffsville	21	56	54	0	0	1	0	0	0
Lancaster	New Danville	196	111	175	1	0	0	7	5	1
Lehigh	Germansville	17.1	null	Null	6.2	null	Null	0	null	Null
Luzerne	Drums	13	41	Null	1	0	Null	null	0	Null
Luzerne	Plains	0	21	24	2	0	0			
Lycoming	Linden	1.6	null	28				0.9	null	0
Lycoming	Montoursville	6.1	null	23.6				0	null	0
Lycoming	Muncy	8.4	null	42.9				0.5	null	0
Mifflin	Belleville	70	165	225	0	3	3	4	5	5
Montour	Washingtonville	3	20	Null	3	4	Null			
Northampton	Nazareth	3	46.4	72.3	0	0	102	0	0	0
Schuylkill	Tower City	41	45	108	3	2	5	0	0	0
Susquehanna	Montrose	3	null	4	22	null	3	null	null	
Union	New Berlin	0	78	103	2	4	1	0	3	8
Washington	Venetia	11	10	19						
Westmoreland	Jeannette	6	null	22.5	10	null	8			
York	York	55	60	45	0	0	1	1	4	2

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	< 14	7+
Low	36-70	4-5	Very low	15-35	6
Moderate	71-349	3-4	Low	36-70	5
High	> 350	2-3	Moderate	> 70	4