



PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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Pennsylvania Vegetable IPM Weekly Update

September 4, 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

BASIL DOWNY MILDEW

Downy mildew on basil has been reported in the US since around 2008. It primarily affects the sweet basil but other ornamental types of basil are also susceptible. Similar to other downy mildews, this one, *Peronospora belbahrii*, is also host specific. Symptoms include yellowing or chlorosis of the foliage which looks very similar to a nutrient deficiency. However, when conditions are cool (50 to 78°F) and wet (or > 85% relative humidity) purplish-gray to black sporulation of the pathogen can be visible on the underside of the leaf (similar in appearance to cucurbit downy mildew). The pathogen does not survive in the absence of a plant host and therefore does not survive overwinter in field production (or home garden) situations. Management primarily focuses on planting pathogen-free seed, selecting less susceptible cultivars and applying fungicides. Fortunately, conventional breeding efforts have resulted in some resistant cultivars being released from several different breeding programs including those at Rutgers (cvs. Devotion, Obsession, Passion and Thunderstruck), Johnny's Selected Seeds (cv. Prosper) and Proven Winners (cv. Amazel).

Scouting and initiating fungicide programs for managing basil downy mildew when symptoms are first observed is important for successful disease management. Similar to cucurbit downy mildew, reporting of this disease aids with area-wide monitoring efforts that growers can use to help time fungicide applications based on when the disease is confirmed in the region (<https://basil.meas.ncsu.edu/>). This site can also be used to help time harvest to avoid the disease as well. Conventional fungicides including Ranman (FRAC 21), Revus (FRAC 40), Quadris (FRAC 11), Armicarb (FRAC NC) and phosphorous acid (FRAC 33) fungicides are registered for basil downy mildew. A number of OMRI-approved products are also labelled for basil downy mildew including but not limited to Procidic, Actinovate, Double Nickel, MilStop, Regalia, Cueva, Trilogy and OxiDate. Practices that minimize leaf wetness and reduce humidity will also help manage disease. Once



Downy mildew on basil. Characteristic yellowing on the upper leaf surface and purplish dark sporulation on the lower leaf surface. Photo credit: Beth Gugino.

Once

done with harvest, disk under or burn down the crop with an herbicide to eliminate potential sources of inoculum for other plantings.

LATE BLIGHT REPORTED ON TOMATO IN BLAIR CO., PA

The latest report of late blight this past week was on tomato in Blair Co., PA. This makes ten reports on tomato and/or potato in PA so far this season including reports from Erie, Indiana, Clinton, Centre, Cambria and now Blair Counties. Other states with more than one report include Wisconsin and New York with nine and five reports, respectively on tomato and potato. All samples that have been genotyped across the country this year have been US-23. The cooler day and nighttime temperatures in the upcoming week are very favorable for late blight. Keep in mind that protected culture tomatoes being grown in high tunnels are still susceptible to late blight due to the extended dew periods common this time of year. Once the plant tissue is dead so is the pathogen. Late blight does not overwinter in the soil or associated with dead crop debris only living tissue – typically infected potato tubers which are either left in the field or culled. 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

This season cucurbit downy mildew has been confirmed in 98 counties in the eastern US with the most recent reports in PA being on cucumber. The current list of cucurbit hosts with confirmed reports in PA includes jack-o-lantern pumpkin, winter squash/processing pumpkin, cucumber, and cantaloupe. Current counties with confirmed reports include York, Lancaster, Snyder, Centre, and Chester. Based on the weather patterns and increasing inoculum pressure, it is likely present and unreported in other counties in PA. As the season winds down and fruit reach maturity, downy mildew tends to become less of a concern since it does not directly infect the fruit and lead to a fruit rot. It is primarily a foliar disease that reduces the ability of the plant to photosynthesize and thus fully ripen and mature the fruit. Plants can also become defoliated leading to sunscald on the developing fruit.

As included in the update last week, 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.



Effect fungicide applications on the management of downy mildew on cucumber in 2019. No fungicide applications (top) or a weekly conventional fungicide program (bottom). Photo credit: Beth Gugino.

SWEET CORN INSECT PEST MONITORING

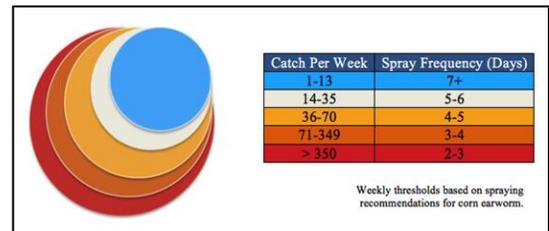
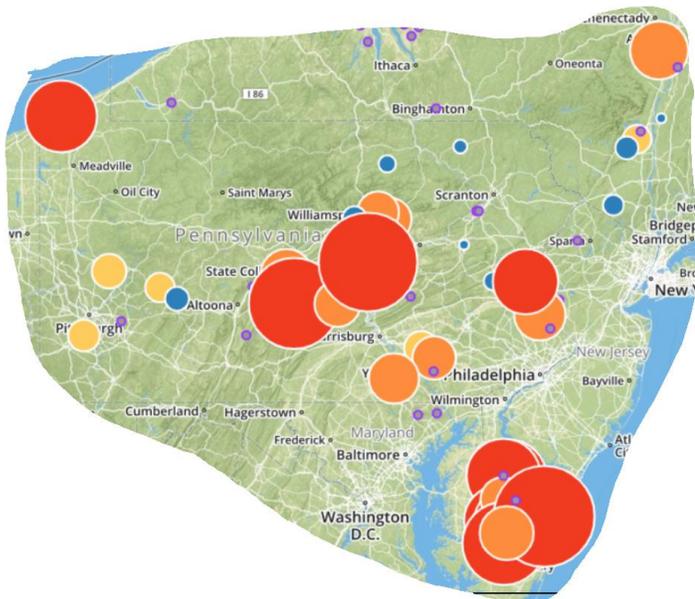
Dr. Shelby Fleischer, Extension Vegetable Entomologist, Penn State University

Corn earworm (CEW) captures continued to be high in most locations, although southwestern sites stayed low. Sites exceeding 70 moths/week, suggesting a tight (3-4) day spray interval occurred in Erie, Mifflin, Northampton and Union counties. Sites with 36-70 moths/week, suggesting a 4-5 day interval, were reported in Bucks, Centre, Juniata, Lancaster, Lycoming and York counties. Additional sites had lower counts but still above a spray threshold. Six 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 very low. Sprays targeting CEW will control ECB.

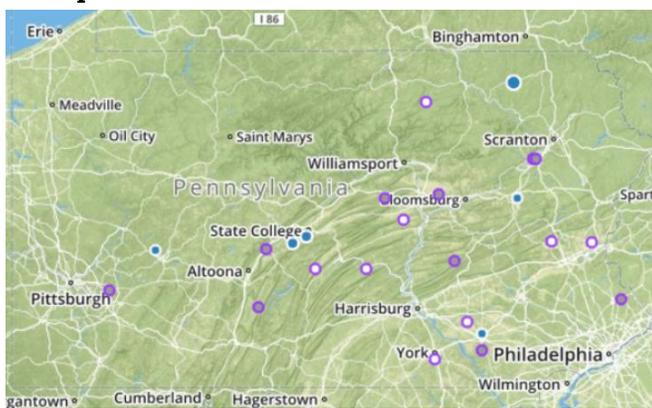
Fall armyworm (FAW) captures continued very high in Erie county, and increasing in central PA (Blair, Butler, Centre, Indiana, Mifflin, and Union counties). A non-target called Intermediate Cucullia, or Intermediate Hooded Owllet, is also showing up in the FAW traps.

Corn Earworm

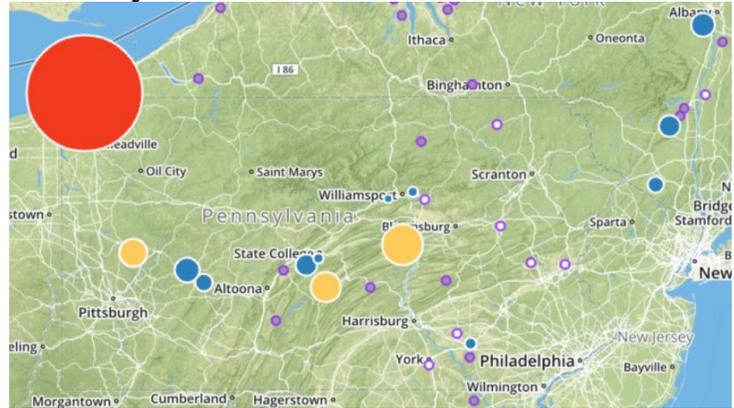


● No value for this date
● catch = 0 for this date

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		
		21-Aug	28-Aug	4-Sep	21-Aug	28-Aug	4-Sep	21-Aug	28-Aug	4-Sep
Blair	Curryville	21	23	null	0	0	null	0	0	null
Blair	Tyrone	45	51	null	0	0	null	null	21	null
Bradford	Sechrist Farm	0	8	6.1	2	2	0	0	null	null
Bucks	Bedminster	220	168.9	54.6						
Bucks	Buckingham	75	125	null	6	3	null			
Butler	Cabot	null	11.2	25				null	8.4	15
Centre	State College	58	113	57	2	13	2	2	13	2
Centre	Rock Springs	9.8	32	20	1	1	2	1	3	9
Clinton	Loganton	1.8	19	null	10.5	5	null			
Erie	Fairview	39	42	19.3				20	54	84
Erie	Lake City	56	55	106.8				35	300	259
Indiana	Brush Valley	8	14	12				0	4	6
Indiana	Creekside	3	13	18	0	0	1	5	19	12
Juniata	Port Royal	12	52.5	43.8	0	2.3	0	0	0	null
Lancaster	Landisville	25.7	20	24.5	3.5	2	0	0	0	0
Lancaster	Neffsville	56	54	39.4	0	1	0.9	0	0	2.6
Lancaster	New Danville	111	175	null	0	0	null	5	1	null
Lehigh	Germansville	6	null	7	1	null	0	0	null	0
Luzerne	Drums	41	28	2	0	4	1	0	2	0
Luzerne	Plains	21	24	null	0	0	null			
Lycoming	Linden	null	28	12				null	0	1
Lycoming	Montoursville	null	23.6	36				null	0	2
Lycoming	Muncy	null	42.9	38				null	0	0
Mifflin	Belleville	165	225	170.6	3	3	0	5	5	17.5
Montour	Washingtonville	20	null	null	4	null	null			
Northampton	Nazareth	46.4	72.3	88.4	0	1.2	0	0	0	0
Schuylkill	Tower City	45	108	null	2	5	null	0	0	null
Susquehanna	Montrose	0	4	4	13	3	3	null	null	0
Union	New Berlin	78	103	202	4	1	0	3	8	32
Washington	Venetia	10	19	21						
Westmoreland	Jeannette	null	22.5	null	null	8	null			
York	York	60	45	52.5	0	1	0	4	2	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	< 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