PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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Pennsylvania Vegetable IPM Weekly Update

June 15, 2022

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.

Pest Watch Report

Karly Regan, Penn State Extension Educator

MOTH CATCH LOW ACROSS THE STATE BUT STARTING TO PICK UP IN SOUTH CENTRAL PA

Fig 1. A late-instar corn earworm can be identified by the orange head capsule with a honeycomb-like white pattern over it, as well as the brightly colored body with spines. Photo credits: Karly Regan

Trapping began in most areas of Pennsylvania this week, with a few sites having started last week. So far, no sites are above threshold except for southern Franklin County near Waynesboro. With a nightly catch of 8 per night, a spray interval of 4-5 days would be suggested for corn that's tasseling or silking in southern Franklin County. However, northern Franklin County is still below threshold, as are all other sites that reported trap catches this week. Corn that is tasseling or silking is very attractive to corn earworm, so risk of damage will increase as corn reaches these growth stages.

Fig 2. Fall armyworm feeding damage, including shredded leaves and sawdust-like frass. Photo credits: Karly Regan

Once the spray threshold is reached, you can consider products from the pyrethroid class, diamide class, or spinosyn class for effective control. We tend to see the best efficacy from non-pyrethroid products such as Coragen, Blackhawk, and Radiant, as pyrethroid resistance has increased in migrating corn earworm populations. However, we tend to see more resistance later in the season than now, as moths migrate from further south in the United States up to our region. Diamides and spinosyns do not provide effective control of other pests such as sap beetles, brown marmorated stink bug, Japanese beetles, or adult corn rootworms. If you're seeing these pests as you scout your corn, consider adding a pyrethroid, or the premix Besiege to control those.

So far, no fall armyworm have been caught for this season in Pennsylvania, though some feeding damage has been observed. While corn earworm will typically target the reproductive parts of the corn plant, fall armyworm may cause damage to leaves, as well leaving behind shredded leaves and waste that resembles sawdust.

Our program is not monitoring for European corn borer this season, as area-wide numbers have been low for many seasons.

Average weekly catch – 7-day moving average. The average catch per night (total catch, divided by the number of nights trapping), divided by the number of nights where data exist, multiplied by 7. If no data exist for that week, null is reported.

		CEW		FAW	
County	**Site**	**June 6**	**June 13**	**June 6**	**June 13**
Blair	Curryville	Null	1.7	Null	0
Blair	Sinking Valley	Null	0.9	Null	0
Franklin	Shippensburg	Null	0.3	Null	Null
Franklin	Waynesboro	Null	8	Null	0
Lancaster	Landisville	0	0.1	0	0
Lancaster	New Danville	Null	0	Null	0
York	York	0.1	0.3	0	0

THRESHOLDS Reproductive (tassel/silk) and late vegetative corn attract moths. Shorten spray schedules when populations increase.

Threshold based on CEW	Catch per week	Spray Frequency
Almost Absent	1-13	7+
Very low	14-35	5-6
Low	36-70	4-5
Moderate	71-349	3-4
High	>350	2-3

Vegetable Disease Updates

Beth Gugino, Penn State Extension Vegetable Pathologist

GENERAL UPDATES:

- There are currently **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 bkgugino@psu.edu or by phone at 814-865-7328 or contact your local Extension Office.
- **Storm damage and copper injury on onion**. Storm damage results in white blotchy areas developing on the side of the leaves that was exposed to the heavy rain. When you look at the opposite side of the leaf, it will look healthy. Copper injury or phytotoxicity can look like storm damage but it is more yellow to bronze in color. These are distinct from thrips feeding damage that causes a silvering of the leaves on all sides. Storm damage and copper injury may make the plants more susceptible to diseases like bacterial center rot, purple blotch, and Stemphylium leaf blight so scouting, and the application of fungicides may be needed.

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.

Storm damage on onion foliage. The opposite side of this plant was undamaged, green, and healthy (left). Copper injury on onion (above) (Photo credits: Beth Gugino).

Symptoms of downy mildew on cucumber (top) and cantaloupe (middle) compared to angular leaf spot on cucumber (bottom). (Photo credits: Beth Gugino).

DOWNY MILDEW CONFIRMED ON CUCUMBER IN SOUTHERN NEW JERSEY

This past weekend, **downy mildew was confirmed on cucumber** in a commercial field Salem County, NJ; five days earlier than last year. It was caught early with only 5% of the field showing symptoms however, it is also suspected in at least one other county in southern NJ. Although growers have applied a few protectant fungicides on cucumbers, cucurbit downy mildew specific fungicides have not yet been included in many fungicide programs. It is very important that cucumber and cantaloupe growers in eastern PA be carefully and thoroughly scouting crops for downy mildew. At the very least a preventative spray program should be initiated. The plants are susceptible at any stage of growth. At this time spraying pumpkin, butternut squash (and other squashes) and watermelon for downy mildew is not recommended and would not be cost-effective.

Symptoms: Downy mildew on cucumber has angular lesions that are delineated by the leaf veins while those on cantaloupe tend to be more irregular. Leaf lesions typically appear 3 to 12 days after infection and are initially light yellow in color before during darker brown. On the underside of the leaves will be purplish-gray sporulation which confirms that the symptoms are caused by downy mildew. This can easily be confused with angular leaf spot which is a bacterial disease so spores will not develop on the underside of the leaves. Place suspect leaves in a plastic bag on the counter overnight and then check for spores the next day.

Management: There are many fungicides that are effective for preventatively managing downy mildew when used when conditions favor disease development. To manage for fungicide resistance, it is important to rotate between Fungicide Resistance Action Committee Codes (FRAC codes). These codes/numbers represent different modes of action so rotating among different FRAC codes as well as tank mixing with cholorothalonil or mancozeb (for single active ingredient products) will reduce the chance for resistance development and can help manage other diseases. Timing applications when pollinators are least active will also help to minimize any non-target effects. Fungicides for CDM include but are not limited to Ranman (cyazofamid, FRAC code 21), Gavel/Zing! (zoxamide, 22), Tanos/Curzate (cymoxanil, 27), Previcur Flex (propamocarb, 28), Forum/Revus (dimethomorph, 40), Zampro

(ametoctradin, 45), and Orondis (oxathiapiprolin, 49). For more specific information on recommended fungicides see 2022/23 Mid-Atlantic Commercial Vegetable Recommendations. Remember that these fungicides will not be effective for managing powdery mildew and that those effective for powdery mildew will not be effective for downy mildew. Therefore, an accurate diagnosis is important!

Organic management of downy mildew continues to be a challenge and continues to rely of fixed copper-based fungicides. There are however a couple of resistant cultivars (DMR 401 and NY 264) that have been recently released by Cornell and demonstrate excellent field-level resistance in the absence of fungicides. If not already doing so, consider planting these in the future.

With succession planting, have a plan to kill the older planting as soon as harvest is done to reduce disease pressure on subsequent planting. This can be done by disking the crop under, burning it down with an herbicide or removing and destroying the crop residue. Once dead the pathogen is dead.

Stay up to date: Weekly reports on the status of CDM are posted in the educational kiosks at many of the produce auctions, in PVGA and Penn State Extension updates like these as well as via the 1-800-PENN-IPM hotline. If you want to receive automatic alerts via text or email from the CDM ipmPIPE monitoring website, you will need to sign-up or re sign-up if you were signed up before due to a change in the IT platform hosting the website. For emails, EDDMapS Alert will now be the subject line from alerts@cdm.ipmpipe.org.

Clinic Corner: Findings from the Penn State Plant Disease Clinic

Jennie Mazzone Penn State Research Technologist and Assistant Diagnostician

TIMBER ROT ON TOMATO

A tomato sample from a high tunnel in Schuylkill County, PA was submitted to the Penn State Plant Disease Clinic in May with signs of timber rot (also known as white mold) caused by *Sclerotinia sclerotiorum*. The pathogen typically enters the plant at or above the soil line through leaf/stem axils or wounded plant parts. *S. sclerotiorum* produces a cottony, white mycelium on infected plant parts when conditions are hot and humid. The fungus also makes hard, black overwintering structures called sclerotia, which resemble mouse droppings. Sclerotia are often found inside the stem, so cutting open the stem to find these signs is important for diagnosis. Sclerotia are the survival structure that allows the pathogen to survive up to 10 years in the soil. Infected stems become light brown and dry. If the main stem is infected, the entire plant will wilt and collapse. Tomato fruit can also be infected and develop a watery rot with rings of sclerotia around the calyx.

Tomato stem lesion with timber rot and signs of white mycelium and black sclerotia (top; Photo credit: Penn State Plant Disease Clinic) and an agar media culture of the pathogen S. sclerotiorum *with white mycelium and black sclerotia (bottom; photo credit: Jennie Mazzone).*

Timber rot management can be especially challenging in greenhouses and high tunnels that produce tomatoes and other susceptible crops year after year. *S. sclerotiorum* has an extremely wide host range, affecting more than 400 plant species, including vegetables such as bean, cucurbits, crucifers, pepper, lettuce, potato, and tomato. Removing affected plant tissue is highly recommended for disease management as it removes potential inoculum for pathogen survival. Reducing humidity can also be helpful. Crop rotation with a non-host, like a grass or cereal, is recommended but may be difficult in greenhouses and high tunnels which commonly grow susceptible crops. More information on timber rot management is available in the 2022/23 Mid-Atlantic Commercial Vegetable Recommendations and this Penn State Extension article.