PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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Pennsylvania Vegetable IPM Weekly Update

July 13, 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 REMAINS LOW THIS WEEK

Corn earworm numbers caught in traps reporting data this week were quite low. Sites in Franklin and Lycoming Counties experienced average catches per night of 3-4 moths which means a spray interval of 5-6 days would be suggested for corn that's tasseling or silking. One site in Centre County experienced average catch per night of 6 moths, which means a spray interval of 4-5 days would be suggested. All other sites could reduce spray intervals to every 7 days or so, based on moth catch. As a reminder, corn that is tasseling or silking is very attractive to corn earworm, as eggs are laid on silks, and control must be achieved while larvae are recently hatched before they've entered the ear.

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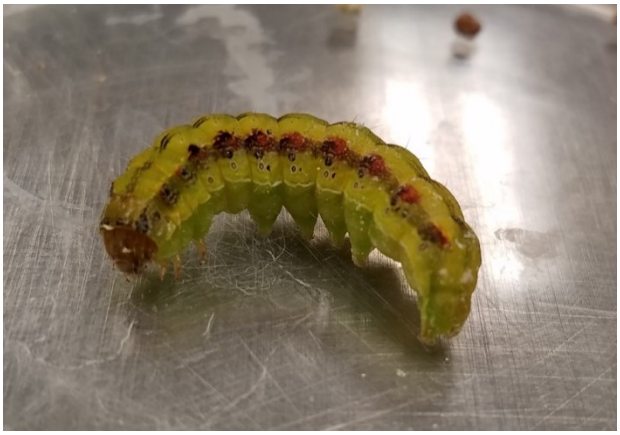


Fig 1. A larval corn earworm

If you're monitoring for corn earworm and live in an area where spongy moth (*Lymantria dispar*) occurs, be sure that you are correctly identifying the moths you catch. This week, we learned that spongy moth can find its way into corn earworm traps and be mistaken for corn earworm at first glance. While both moths can be light in color with two U shaped markings on the forewings, corn earworm will have a row of small dots along the wing and slender antennae whereas spongy moth will instead have bushy antennae. The high catches we reported at the Clinton County trap last week turned out to be spongy moth rather than corn earworm. Spongy moth is typically a forest pest rather than vegetable pest but has been documented to feed on vegetables when populations are very high, as they have been in northern and central PA this year.

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.

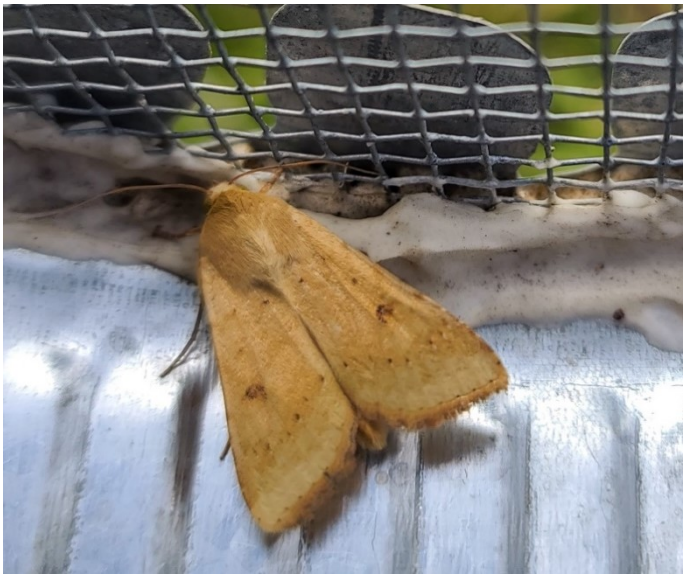


Fig 2. (left) Adult corn earworm moth caught in monitoring trap

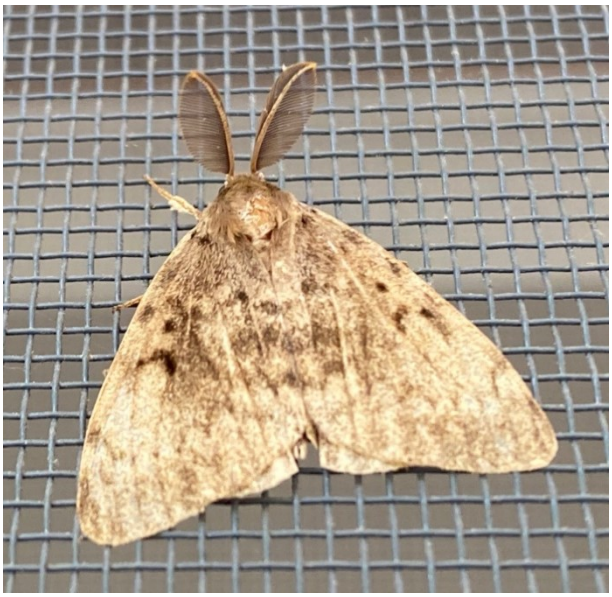


Fig 3. Adult male spongy moth, Photo Credit: Tom Butzler

We're still not seeing many fall armyworm caught for this season in Pennsylvania, though one site in Centre County averaged 1.3 moths caught per night this week. By managing for corn earworm, fall armyworm should be adequately controlled, as well.

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 27**	**July 5**	**July 11**	**June 27**	**July 5**	**July 11**
Bedford	Curryville	0.9	Null	0.2	0	Null	0
Blair	Sinking Valley	2.9	1	1	0	0	0
Butler	Cabot	Null	Null	1.4	Null	Null	0
Bucks	Doylestown	0.4	Null	0.8	0	Null	0
Centre	State College	6	1.6	6	0	0	0
Centre	Rock Springs	2.8	0.5	1	0	0.6	6
Clinton	Loganton	0.3	0	0	0	0.1	1.3
Franklin	Shippensburg	7	1.4	1.8	0	Null	0
Franklin	Waynesboro	5	8.4	3.6	0	Null	0
Indiana	Indiana	0.5	0.4	0.9	0	0	0
Juniata	Port Royal	Null	2.4	3.1	Null	0	0
Lancaster	Landisville	0.4	0.6	0.7	0	0	0
Lancaster	New Danville	0.1	0	0.5	0	0	0
Lancaster	Neffsville	0.6	0.1	0.7	0	0	0
Lycoming	Linden	2	Null	2.8	0	Null	0
Lycoming	Montoursville	0.9	0.9	2.1	0.9	Null	0
Mifflin	Belleville	6	Null	Null	0	Null	0
Montour	Washingtonville	2.6	1.6	Null	No trap	No trap	No trap
Washington	Venetia	2.3	Null	4	0	Null	0
York	York	1	0.8	0.3	0	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

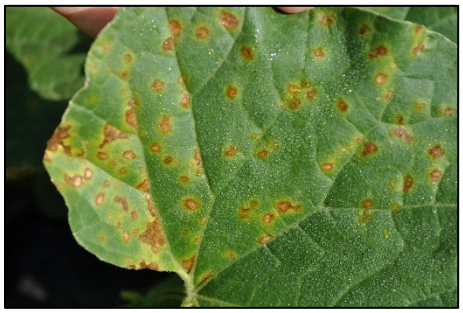
Vegetable Disease Updates

Beth Gugino, Penn State Extension Vegetable Pathologist

GENERAL UPDATES:

- Currently 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 bkgugino@psu.edu or by phone at 814-865-7328 or contact your local Extension Office.

- In the past few days, **cucurbit downy mildew** has been reported on cucumber in western Massachusetts, southwestern Connecticut and in Orange and Ulster Counties in southeastern New York, in Hunterdon , New Jersey adjacent to Bucks and Northampton Counties as well as northeastern Ohio. Today it was confirmed on cucumber in Juniata County, and I suspect it is out there in other regions that have seen some rainfall. It will take 7 to 10 days for symptoms to appear after infection. Of the cucurbit crops, cucumber and cantaloupe are still at highest risk and a regular fungicide program is recommended if conditions are favorable. Downy mildew is a little more difficult to identify on cantaloupe because the lesions are not as angular as on cucumber and it does not produce as many spores on the underside of the leaf. A 20X hand lens can be helpful for seeing spores. If you suspect cucurbit downy mildew 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. For the latest reports and forecasts check out https://cdm.ipmpipe.org/.



Symptoms of downy mildew on the upper and leaf surface of a cantaloupe leaf. (Photo credit: Beth Gugino)

- **Blossom end rot** is showing up on tomato but can also affect pepper, eggplant, and cucurbits. The symptoms develop because of a calcium deficiency in the fruit but often this is not the result of an actual calcium deficiency in the soil but rather irregular watering or very rapid growth due to excess nitrogen. Although most common on the blossom end, the symptoms can develop on the side of the fruit and eventually cover the entire fruit. Blossom end rot is most often associated with the first flush of fruit.

Blossom end rot on watermelon (left) and on tomato fruit (right). The leaf curling is due to heat stress. (Photo credit: Beth Gugino (right) and PA vegetable grower(left))

- **Southern blight** is a disease that is more common in the southeastern U.S. however, it ranges as far north as Maryland and Delaware. It has been confirmed a several times in PA including this season on pepper. The fungal pathogen, *Sclerotium rolfsii*, has a very wide host range similar to white mold/timber rot and includes over 500 plant species. It also produces a sclerotia as an overwintering survival structure that enables it to persist in the soil several seasons however survival is reduced at temperatures below 14°F. The disease is favored by high temperatures (77 to 95°F) and wet conditions. Water soaking typically develops on the lower leaves and stems followed by thick mats of white fungal growth and then very round sclerotia will develop. Infected plants will also wilt and collapse similar to other root, crown, and vascular diseases. Once symptoms are observed, carefully removing the entire plant including the roots while being careful not to dislodge any sclerotia is recommended. There are fungicides available for managing Southern blight, but they are best used preventatively.

Southern blight on tomato characterized by dense white fungal growth and round sclerotia at the base of the plant (Photo credit: Tracey Olson, PDA).

Clinic Corner: Findings from the Penn State Plant Disease Clinic

Jennie Mazzone Penn State Research Technologist and Assistant Diagnostician

HERBICIDE INJURY ON TOMATO

The Penn State Plant Disease Clinic received a tomato sample from a home garden in Washington County, Pennsylvania in July. The sample showed symptoms of stunting, strapping, cupping, curling and distortion on the youngest leaves. The sample was tested for the viruses Cucumber Mosaic Virus (CMV), Tomato Spotted Wilt Virus (TSWV), Impatiens Necrotic Spot Virus (INSV) and Tobacco Mosaic Virus (TMV) using Agdia's ImmunoStrip tests and results were negative for all of these viruses. No pathogens or insect pests were found on the tomato sample. The client reported that all tomato plants were affected, and herbicides had been applied to the surrounding landscape. Together, this information suggests that the plants have been exposed to some type of plant growth regulator herbicide.

Tomato sample showing extreme distortion and stunting of new growth (top) and strapping and distortion (bottom) due to herbicide injury. (Photo credits: Jennie Mazzone)

Often herbicide injury on nontarget plants is due to drift of a material that was used nearby. Herbicide carryover can be a problem in soils amended with manure, hay, mushroom compost or grass clippings. Herbicide residue can also be present in spray tanks and hoses that are not rinsed out well. The Penn State Plant Disease Clinic does not test samples for the presence of chemicals such as herbicides, but commercial companies can test for herbicide residue in plant tissues and soils. This testing is expensive and done by chemical so knowing the herbicide or chemical family in question is important. If the herbicide is unknown, the testing is more difficult and may not be cost effective.

Use deductive logic to diagnose herbicide injury. Check the site history to identify products that have been used, application rates, timing, injury patterns and plant species affected. Herbicide injury typically occurs within days (sometimes weeks) after application. Thoroughly read herbicide labels before applying the product. Avoid spraying on excessively windy or hot days to limit drift and volatilization (liquid transforming to gas form) of herbicides, respectively. A plant may or may not recover from herbicide injury depending on the overall plant health and dosage it received. Please refer to this Penn State Extension article on Herbicide Drift and Drift Related Damage for more information on avoiding and diagnosing herbicide injury.