Pennsylvania Vegetable IPM Weekly Update

September 9, 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 VARIABLE THIS WEEK

The number of traps reporting this week is lower than usual, partially due to some traps being damaged in the weekend storms or inaccessible due to flooding. Corn earworm numbers caught in traps reporting data this week were variable but exceeded 350 moths for the first time this season, pushing that location into the tightest recommended spray interval. Franklin County experienced average catch per night of 50 moths, which would mean a spray interval of every 2-3 days would be suggested for corn that's tasseling or silking. Sites in Lancaster, Luzerne, and Washington Counties experienced average catch per night of 20-30 moths, which means a spray interval of 3-4 days would be suggested. Centre, Clinton, and York Counties experienced average catch per night of 6-9 moths which means a spray interval of 4-5

Fig 1. A corn earworm trap containing over 400 soggy moths after the weekend's storms.

days would be suggested. Butler and Lycoming Counties experienced average catch per night of 3-5 moths which means a spray interval of 5-6 days is recommended. 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.

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, as pyrethroid resistance has increased in migrating corn earworm populations. Particularly, we tend to see more resistance later in the season, as moths migrate from further south in the United States up to our region. Consider consulting the Mid-Atlantic Commercial Vegetable Recommendations guide for products to use. Diamides and spinosyns do not provide effective control of other pests such as sap beetles, stink bugs, 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. Fall armyworm feeding damage on corn

Fall armyworm catch remains very low this week with 3 or fewer moths caught in Bedford, Centre, and Franklin Counties, and zero caught in all other counties reporting this week. By managing for corn earworm, fall armyworm should be adequately controlled, as well. Fall armyworm damage can occur on the ear, as well as on the foliage. Foliage feeding will leave ragged edges and waste that resembles sawdust.

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.

County	Site	CEW			FAW		
		Aug22	Aug29	Sep7	Aug22	Aug22	Sep7
Bedford	Curryville	4.9	4.7	Null	0.9	0	0.3
Blair	Sinking Valley	10.4	23.1	Null	0	0	Null
Bucks	Doylestown	25	34.3	Null	0.4	0.3	Null
Butler	Cabot	1.4	0	4.5	No trap	No trap	No trap
Centre	Harner	0.6	2.4	5.1	0	0.3	0
Centre	Rock Springs	5.3	8.7	9.9	1.8	0	0.4
Clinton	Kaufman	3	1.7	5.5	0.3	0	0
Franklin	Shippensburg	11	24.7	46	0.1	0	0
Franklin	Waynesboro	30.3	38.3	50.1	0.1	0.1	0.9
Indiana	Indiana	1.6	0.4	Null	0.4	0	Null
Juniata	Happy Breeze	Null	2	Null	Null	0.3	Null
Lancaster	Landisville	5.3	24.3	25.1	0	0	0
Lancaster	New Danville	12.6	15.4	23.8	0	0	0
Lancaster	Neffsville	7	34	30.3	0	0	0
Lehigh	Germansville	6.6	33.5	Null	0	0	Null
Luzerne	Drums	0	1.4	13.8	0	0	0
Lycoming	Linden	Null	1.8	Null	Null	0.4	Null
Lycoming	Montoursville	Null	0.1	2.9	Null	0.6	0
Mifflin	Streamside	6	10.1	Null	0.1	0.9	Null
Montgomery	Souderton	31.1	37.4	Null	0	0	Null
Northampton	Easton	Null	30.3	Null	Null	0	Null
Washington	Bebout	8	15	20	No trap	No trap	No trap
York	York	5	9.3	9.3	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 for September 7, 2022

Beth Gugino, Penn State

GENERAL UPDATES:

- **Reports of downy mildew on jack-o-lantern pumpkin** continue to increase across the surrounding region. It has also been reported on summer squash in New Jersey and watermelon on Long Island, NY in the past few days. These hosts are primarily affected by clade 1 isolates of the pathogen. Up until the past couple of weeks, downy mildew has primarily been affecting cucumber and cantaloupe which are largely affected by clade 2 isolates. It is important to continue to manage for downy mildew on all cucurbit hosts especially if trying to maintain the foliage until later in the season. Downy mildew will not directly affect the fruit but rather defoliate the plant prematurely. The recent wet conditions have been very favorable for downy

Characteristic symptoms of downy mildew on the upper and lower leaf surface of pumpkin (Photo credit: Beth K. Gugino).

  mildew development across Pennsylvania. In PA, downy mildew has been confirmed in western PA on cucumber in Washington Co. and cantaloupe in Mercer Co. and on cucumber in Adams, Cambria, Centre, Huntingdon, Mifflin, Dauphin, Lehigh, Juniata, Snyder, Lancaster, Berks, Bucks, and Delaware Co. 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://cdms.ipmpipe.org.

- **No new cases of late blight** have been reported on tomato or potato across the region this past week. On potatoes with these recent rains, it is important to maintain a regular fungicide program to protect the leaves as the tubers enlarge. Protectants being applied to help with management of other foliar diseases such as early blight will also help protect against late blight. 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. We are also always interested in a sample to genotype. For over the past decade, US-23 has been the predominant genotype affecting both tomato and potato in the northeastern and mid-Atlantic regions of the U.S.

White sporulation characteristic of late blight on the underside of potato leaflets (Photo credit: Beth K. Gugino).

- **Post-harvest cucurbit fruit rots** are likely on the rise with the recent wet weather. Frequently, infection occurs in the field and then the symptoms develop post-harvest in the bin. Minimizing injury during harvest is critical. Injuries create critical opening that many pathogens can use to enter the fruit. Also focus on harvesting mature fruit. Fruit harvested due to plant decline rather than maturity will have reduced storage life. If the temperatures are warm enough, consider curing harvested pumpkins and winter squash in the shade at 80 to 85°F for 7 to 10 days. This will help the skin harden. If there are fruit rot issues this will also allow them to be detected before going to market. For longer term storage, pumpkins and winter squash are best stored between 50 and 55°F with 50 to 75% relative humidity. Some common cucurbit fruit rots include Fusarium fruit rot, Phytophthora fruit rot, Pythium fruit rot, black rot (gummy stem blight) and anthracnose.

Fruit rots caused by Phytophthora blight (left) and Fusarium (right) (Photo credit: Beth K. Gugino and Tom Ford, Penn State respectively).

If you observe **fruit rot occurring in the field or post-harvest**, take steps to identify the cause so that can be factored into your crop rotation and subsequent management. Different fruit rotting pathogens have different host ranges so crop rotation can be one

strategy for reduce disease pressure in the future. For example, gummy stem blight/black rot only affects cucurbit crops so rotating affected fields to crops such as sweet corn, cauliflower, and tomato (different crop families) before coming back in with butternut squash would be recommended. Also remember that it is very easy for secondary soft rotting bacteria and fungi to infect damaged fruit and lead to additional losses. When done with harvest, disk under the crop to facilitate decomposition of the crop residue. Next season, also consider growing cucurbits in a reduced tillage system or use straw mulch in the row middles to reduce direct contact of the fruit with the soil and to also reduce soil splashing onto the fruit.

Clinic Corner: Findings from the Penn State Plant Disease Clinic

Jennie Mazzone Penn State Research Technologist and Assistant Diagnostician

What Type of Sample Does the Plant Disease Clinic Want?

Are you having trouble deciding what to send to the Penn State Plant Disease Clinic? Instructions to Select and Send Plant Disease Specimens are available on the Penn State Plant Disease Clinic website. Our general recommendations include collecting several cuttings (or entire plants) showing the symptoms of concern. Sample from the transition zone. Most pathogens are present in the transition between living and symptomatic/dead tissue. Prepare a sample that shows a range of symptoms (e.g. early, intermediate and late or more advanced symptoms). Fill a gallon-sized plastic bag with plant material, if possible. Fill out the entire specimen information form, both front and back, and include one with each sample.

Package samples to minimize degradation and damage during shipping. Wrap each specimen in a dry, absorbent paper towel and place in a plastic bag. Package samples carefully and separately wrap roots/soil to prevent soil from getting onto the upper part of the plant and causing deterioration during shipping. Do not expose samples to high temperatures and store them in the refrigerator prior to mailing, if possible. It is best to avoid shipping samples at the end of the week to avoid having them deteriorate in shipping over the weekend.

Wrap roots and soil separate from foliage, add a dry paper towel, and place the sample in a plastic bag to prepare for shipping (Photo credit: Jennie Mazzone).

Submit at least 1 cup of roots collected from multiple locations around the plant, or submit whole plants, for root rot analysis (Photo credit: Tosh Mazzone).

If you suspect root disease, send the entire plant if possible, or at the very least the crown and roots. We request this because we need the lower, main stem of tomatoes/potatoes, etc. to isolate for vascular wilt fungi like Verticillium and to also check for discoloration of the vascular and stem tissues. If the sample is from a perennial plant, collect a handful of roots (about 1 cup) from multiple locations around the plant. Select a mix of large roots and fine feeder roots showing root rot symptoms (necrosis, sloughing). Sample live and dead roots. If roots are completely dead, keep in mind that we may no longer be able to detect root rot pathogens, even if they were responsible for plant death.

Additional instructions on selecting and sending plant disease specimens is available on the Plant Disease Clinic website. If you have further questions about how to handle a sample, first check with your local extension office. Contact the Clinic for all other questions, plantclinic@psu.edu or 814-865-2204.