



Tar Spot in Sweet Corn

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Keep Watch for Tar Spot in Sweet Corn

Sarah Pethybridge, Cornell AgriTech; Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program; and Darcy Telenko, Purdue University

We need your help to keep an eye out for a new disease of sweet corn in New York - tar spot! Caused by the fungus *Phyllacho-ra maydis*, **tar spot has the potential to severely reduce yields of susceptible corn varieties**. The disease commonly occurs throughout South and Central America, and the Caribbean, but is relatively new to the United States, first found in field corn in northern Illinois and Indiana in 2015. In the past few weeks, tar spot has been confirmed in Indiana, Iowa, Kansas, Missouri, Nebraska, and immediately around us in southeastern Michigan, and Pennsylvania. **Tar spot was detected in western NY in a small number of western NY field corn plantings in 2021 and 2022**.

Tar Spot Symptoms & Identification

Tar spot produces small, raised, black spots that appear randomly across the upper and lower surfaces of the leaves. The black spots are fungal structures that contain spores. The spots are typically 1/16th to 3/4th of an inch in diameter and typically extend through the leaf so that they can be viewed on both sides. These black spots can also appear on corn husks and leaf sheaths. In addition to the black spots, tan to brown lesions with dark borders ('fisheye') may also appear around the fungal structures. The black



Symptoms of tar spot on corn leaves. Photos: Darcy Telenko, Purdue University

About VegEdge

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.



We're interested in your comments. Contact us at: CCE Cornell Vegetable Program 480 North Main Street, Canandaigua, NY 14224 Email: cce-cvp@cornell.edu Web address: cvp.cce.cornell.edu

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The next issue of VegEdge newsletter will be produced on August 16, 2023.

Accumulated Growing Degree Days, 8/7/23

Julie Kikkert, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - August 7, 2023

-			
Location**	2023	2022	2021
Albion	1660	1775	1809
Appleton	1569	1694	1638
Arkport	1381	1545	1407
Bergen	1554	1727	1624
Brocton	1562	1742	1673
Buffalo*	1688	1785	1783
Ceres	1355	1445	1462
Elba	1504	1631	1548
Fairville	1539	1665	1560
Farmington	1578	1670	1610
Fulton*	1577	1654	1562
Geneva	offline	1749	1660
Hammondsport	1513	1675	1561
Hanover	1523	1724	1648
Jamestown	1359	1501	1449
Lodi	1726	1918	1365
Lyndonville	1609	1627	1646
Niagara Falls*	1751	1863	1728
Penn Yan*	1625	1810	1746
Rochester*	1628	1780	1680
Romulus	1697	1805	1713
Sodus	1705	1819	1703
Versailles	1499	NA	NA
Waterport	1568	1688	1622
Williamson	1491	1646	1544
* Airport stations			

** For other locations: <u>http://newa.cornell.edu</u>

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spots may be mistaken for older common rust pustules (which progress from orange-red to black with age), or insect droppings. Unlike rust pustules and insect droppings which may be easily scraped away from the leaf, **black spots of tar spot cannot be scraped off**. Another way to identify tar spot is the 'spit test'. If the black spots cannot be rinsed off the leaves the structures are 'embedded' in the plant and are most likely the pathogen causing tar spot.

Scouting

Tar spot is most likely to be found in fields with a history of sweet or field corn where corn has been planted in low lying areas and near windbreaks. Consider scouting fields on a weekly basis. The disease is likely to be first found in the lower part of the plant canopy in fields with a history of foliar diseases.





Disease Cycle

The **pathogen can survive between seasons on infested sweet and field corn residue left on the surface** of the soil. During the growing season, the disease is made worse by high relative humidity, foggy days, and long dew periods, just like conditions we are experiencing across New York state now! The fungal **spores are dispersed by wind and rain splash**. Canopy closure also modifies the environment making conditions conducive for the disease. Early disease detection will enable us to plan for subsequent outbreaks and develop protocols for minimizing crop loss.

If you see any suspicious black, tar spots on sweet corn leaves, please notify Sarah Pethybridge (Plant Pathologist, Cornell Agri-Tech; sip277@cornell.edu; 315-744-5359) or Julie Kikkert (Cornell Vegetable Program; irred@cornell.edu; 385-394-3977 x404).

Cross-Striped Cabbage Worm

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

In nearby states in New England and in eastern Ohio, there is a pest damaging brassicas. Plant damage is severe per plant with many holes chewed through the tissue. Unlike the usual cabbage culprits (loopers and imported cabbage worm) the cross-striped cabbage worm lays its eggs in clusters rather than singularly. Egg masses are found on the underside of leaves. When larvae hatch, there are many on the plant where they feed. Damage happens quickly and intensely. You see cross-striped cabbage worm more frequently on later season plants. There can be as many as 3 generations in a season.



Cross-striped cabbage worm damage on Brussels sprouts. *Photo: UMass Extension Vegetable Program*



Cross-striped cabbage worm. *Photo: Thomas Kumar, Virginia Tech*



Some control can come from spraying for Imported cabbage worm including Bt and Spinosid along with several others. Be sure to check the labels for cross-striped cabbage worm listing and follow directions and precautions. For best results manage larvae when very small and get complete coverage on plants. Remember, some plants will be infested while many won't but untreated, the problem will spread.



Mississippi State University

Adults are non-descript

looking moths. *Photo:* Chuck Sexton. from

Cross-striped cabbage worm egg mass. Photo: G. Higgins, UMass Extension

After each brassica harvest, till under all plants to bury residue with eggs and worms to reduce spread of this pest.

If you spot this pest or think it might be the cross-striped cabbage worm, please contact the Cornell Vegetable Program.

CR P Insights

Observations from the Field and Research-Based Recommendations

BEETS

<u>Cercospora leaf spot (CLS)</u> is widespread in the region. A period of moderate to high risk of infection was achieved on Aug 7 and 8 at several locations according to the CLS Decision Support System (Table 1). Fungicide applications are generally only warranted if disease is present in the field, there is moderate or high risk based on the weather conditions, and the field has a significant time until harvest by top-pulling machines or the beets are being sold with the tops on (bunching beets). – JK

CARROTS

Our team will be out scouting processing carrot fields over the next few weeks to look for and collect foliar diseases. Growers will be contacted by graduate student Olga K. with the Pethybridge lab or Cornell Vegetable Program Specialist Julie Kikkert before field scouting commences. – JK

COLE CROPS

Seeing <u>Alternaria leaf spot</u> on cabbage and broccoli on urban farms. Symptoms can start as black pin-sized specks. The classic leaf spots are dark circular target or bull's eye lesions with a yellow halo (Fig. 1). Symptoms are typically seen on older, lower leaves first. Symptoms can be seen on leaves, stems, and heads. This disease can reduce yields and cause symptoms that make crops unmarketable. It can survive in the soil for a few years. This fungal disease loves cooler weather and humidity, we usually see it in the fall. Yet, we can see it earlier in the season when environmental conditions are right. – LK

Table 1. Cercospora Leaf Spot 2-Day Risk

Risk of Cercospora leaf spot on table beet from August 6 to Aug. 11 using a forecasting model. Risk classification of CLS is based on cumulative 2-days/risk, and the forecast is based on weather data from Network for Environmental and Weather Applications (NEWA) models.

	achieved			forecast				
Location	Aug 6	Aug 7	Aug 8	Aug 9	Aug 10	Aug 11		
Albion	0	5	9	4	1	1		
Bergen	2	2	5	3	0	0		
Elba	0	5	9	4	1	1		
Geneva	0	4	6	2	0	0		
Lyndonville	0	6	10	4	3	3		
Medina	0	3	6	3	3	3		
Sodus	0	0	0	0	0	1		
Sodus (Lake)	1	0	1	1	0	0		
Waterport	0	5	8	4	1	0		

Low \leq 3; Moderate 4 to 6; High \geq 7.

Data from newa.cornell.edu accessed 9:00 am on 8/8/2023.



Figure 1. Alternaria leaf spot on cabbage appears as target leaf spot with yellow halo on leaves. *Photo: Lori Koenick, CCE*

DRY BEANS

Earliest planted beans are starting to yellow. <u>Mexican bean beetles</u> are still the pest in highest numbers in fields this week. With beans entering maturing stages, keep an eye on beetle numbers. If they get too high in number they can start causing yield losses and damage directly to bean pods.

Western Bean Cutworm Report

Most trap locations appear to be hitting <u>Western bean cutworm</u> (WBC) peak flight this week, while some others (LeRoy, Wayland Hill, Wyoming Hill) appear to have reached peak flight last week (indicated by the red number in the chart). Scouting is recommended in all dry bean fields starting 7-10 days after peak flight regardless of cumulative moth numbers. [See the July 26, 2023 issue of VegEdge (page 6) or the August 2, 2023 issue (page 5) for tips on how to scout for WBC. ed. A. Ochterski, CVP] Table 2. Western bean cutworm adult moth numbers by date for each dry bean trap location.

Dry Bean Location	July 3	July 10	July 17	July 26	Aug 2	Aug 8	Cumulative Moths
Avoca Hill (Steuben Co.)	2	5	8	47	78	83	223
Avoca Valley (Steuben Co.)	1	0	12	58	58	91	220
Avon (Livingston Co.)	0	1	6	23	22	55	107
Caledonia (Livingston Co.)	1	0	8	46	68	79	202
Churchville (Monroe Co.)	0	1	11	30	42	43	127
LeRoy (Genesee Co.)	1	0	31	83	112	106	333
Penfield (Monroe Co.)	0	3	11	51	60	84	209
Penn Yan (Yates Co.)	0	1	2	19	60	62	144
Scottsville (Monroe Co.)	0	0	6	6	18	18	48
Wayland Hill (Steuben Co.)	0	1	11	47	78	56	193
Wayland Valley (Steuben Co.)	3	4	14	30	50	28	101
Wyoming Hill (Wyoming Co.)	0	2	24	72	73	69	240
Wyoming Valley (Wyoming Co.)	0	1	18	41	28	32	120

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ONIONS

Onions are bulbing nicely with many of the direct seeded fields having 2 inch bulbs and lodging starting. Weather has been variable with Elba and Oswego receiving about an inch of rain and Wayne Co. about a half inch. Thus, **onion thrips and leaf disease pressure are quite variable across the region and among fields within a region**. Generally, thrips pressure is lower than usual in Elba with sideways rain events and all-day rain days surely contributing to lower thrips counts by washing the tiny insects right off of the plants. Thrips pressure has been low in Oswego all season. In Wayne Co., which has been a bit drier, thrips are approaching spray thresholds (1.0 thrips/leaf) this week. For more information on selecting an insecticide for onion thrips, see article in July 26 issue of VegEdge and spray decision chart online at CVP website (https://cvp.cce.cor-nell.edu/submission.php?id=903&crumb=crops|crops|onions|crop*20).

Leaf disease pressure is also quite variable across the region with Stemphylium leaf blight (SLB) being mostly secondary in Wayne Co. fields and in select fields in Oswego and Elba, while fresh primary lesions can be found in most fields in Elba and Oswego. Similarly, Botrytis leaf blight (BLB) necrotic spots increased substantially in Elba and in select fields in Oswego, but remain low in Wayne. Co.

We started to evaluate our on-farm fungicide trial in Elba this week, and we did not have any treatments that did not have some primary SLB target spots and it was not uncommon to count BLB necrotic spots 30-100 spots/leaf (counts taken from outer 3 leaves/plant) with the **nontreated having 100 BLB necrotic spots/leaf**. Viathon + Tilt (FRAC 3 + 3) was noticeably not as good at controlling BLB necrotic spots as they used to be (37 BLB necrotic spots/leaf = 63% control). **Viathon 3 pt + Tilt 8 fl oz + Bravo 3 pt was one of the best treatments in the trial (25 BLB necrotic spots/leaf = 75% control)**. Although it is tricky to separate leaf dieback caused by SLB and BLB necrotic spots, **it appeared that 20 BLB necrotic spots/leaf did not result in leaf dieback.** Note, that this is all preliminary data from a trial with fairly high disease pressure, and it is **too soon to draw any conclusions.** In our scouting fields, we have examples of Viathon + Tilt, Bravo 3 pt + Rampart and FRAC 7 premixes + Rovral/Oso +/- Rampart +/- Bravo keeping SLB and BLB necrotic spots in check.

Timing the second FRAC 3 + 3 treatment (usually Viathon 3 pt + Tilt 8 fl oz) for SLB and BLB necrotic spots has been very tricky since our goal is to not make more than 2 applications per season to prevent further development of fungicide resistance to the most effective treatment we have for SLB. Ideally, the first of these applications would go on just as tipburn is starting and before SLB becomes primary, and the second would be saved for the last fungicide spray at 50% lodging for the best send-off during and after lodging to keep foliage green as long as possible to ensure the bulbs soak up as much green foliage as possible to reach maximum yields. However, **once the crop exceeds 10% tipburn, it is very hard to hold or stop leaf dieback from progressing**, and in a worst-case scenario, the onion plants will "die standing up". Thus, many growers have selected to **apply their second application of Viathon + Tilt between 1 tipburn and 10% tipburn.** Then, the fungicide spray season will have to rely on Bravo 3 pt + P07 and keeping onion thrips in check. Time will tell how this works.

A protectant against downy mildew (DM) should be included in each tank mix at this time. Since SLB chases DM and our fungicides to control SLB are "broken", a DM-SLB complex could be devastating. Note, that the activity of FRAC P07 products on DM is mostly plant defense and they do not prevent DM infections. This is fine when risk of DM is none to low, but you should consider adding mancozeb for DM protection at this time of year. Note, that mancozeb does not prevent leaf dieback/keep onion foliage green, like FRAC P07 products do.

There is a lot of variability in pest pressure, scout your fields prior to making spray decisions. - CH

PEPPERS

Many viruses can infect pepper and symptoms can look similar between them. If you are seeing unusual chlorotic mosaic patterns, yellow-green mottling, ringspots or discoloration on leaves, brown sunken spots or discoloration on fruit, a virus might be the cause. Saw these symptoms on peppers this week (Fig. 2 and 3) and received diagnosis from Cornell plant pathologist as tobacco mosaic virus (TMV). TMV differs from many plant viruses as it does not use an insect vector for transmission. TMV can be spread manually through contact with tools, workers, clothing, and infected plants. This persistent virus has a wide host range and is seedborne, it can survive in tobacco products and can persist in infected crop debris for years. Once a plant is infected, it should be destroyed and sanitary measures should be taken to stop the spread of the virus. Viral symptoms can be hard to distinguish from one another and other causes, diagnosis can be confirmed by submitting a sample to a diagnostic lab. - LK



Figure 2. Tobacco mosaic virus symptoms on jalapeno and cayenne peppers can show as brown sunken spots, ringspots, and discoloration. *Photo: Lori Koenick, CCE*



Figure 3. Tobacco mosaic virus symptoms on pepper leaves can show as unusual chlorotic mosaic patterns, yellow-green mottling, ringspots, or discoloration. *Photo: Lori Koenick, CCE*

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POTATOES

<u>Early blight</u> continues to spread through some fields. With <u>late blight</u> found in Yates County last week, and continued storm systems moving through Western NY, it is important to be diligent with your fungicide programs this year.

Baldwinsville, Buffalo, Ceres, Fairville, Fulton, Lyndonville, Niagara Falls, Penn Yan, Rochester, and Wellsville have reached the 30 blight units (BU) needed to trigger a spray for late blight. However, with wet weather this week and confirmed late blight now in western NY, all locations should consider their fungicide programs. If the weather station closest to you has not yet reached 30 BU and the forecast indicates that it will in the next 2-3 days, a spray is still recommended. The chart assumes use of a susceptible potato variety Reba, and an application of chlorothalonil on August 2. For locations that are not close to a weather station, forecast information should only be used as a general indication of how favorable weather has been for late blight. Forecast BUs are subject to changes as the weather forecast changes, so check forecasting tools regularly to see if disease forecasts have changed. On a state and national level, no new late blight has been reported this week. Past reports include on potato in Ontario Canada, and on tomato in Yates County, NY. – ML

SNAP BEANS

Mid-August through September presents the highest risk period for white and gray mold in snap beans because of prolonged wetness in the plant canopies and morning dews. Fields with a history of Sclerotinia <u>white mold</u> and with dense canopies are most at risk for developing white mold. Rainy weather is highly favorable! Flowers become infected and disease spreads to the rest of the plant. A first fungicide should be applied to fields at risk when there is an average of 1 open flower/plant in 10% of the plants; a second application may be considered at 100% bloom (this may happen within a day or two in some varieties in warm weather). Research in the Pethybridge group at Cornell focused on the products Endura, Topsin 4.5 FL, and Omega 500F. Each of these products is highly efficacious when applied at optimal timing and there was

Late Blight Risk Chart, 8/9/23

Location	Blight Units 8/2-8/81	Predicted Blight Units 8/9-8/11 ²
Albion	25	31
Arkport	24	30
Baldwinsville	31	45
Bergen	17	23
Brant	21	26
Buffalo	31	51
Burt	-	-
Ceres	37	55
Dansville	23	44
Elba	21	32
Fairville	49	56
Farmington	20	26
Fulton	34	55
Geneva	21	21
Hammondsport	19	25
Knowlesville	25	31
Lyndonville	30	50
Medina	19	25
Niagara Falls	32	53
Penn Yan	33	47
Rochester	36	57
Sodus	16	16
Versailles	23	28
Wellsville	33	54
Williamson	24	24

Calculated using a May 31 crop emergence date. Last fungicide application July 26 on susceptible cultivar Reba. Numbers in red indicate locations that have or will surpass the 30 BUs needed to trigger a fungicide application.

1 Past week Simcast Blight Units (BU)

2 Three-day predicted Simcast Blight Units (BU)

no significant difference in the disease control between the products. In further teasing out the optimal application timings, our research has shown that the optimal timing of Topsin 4.5 FL is at 10% bloom, and that this product is not effective when applied at 100% bloom. Furthermore, there is no benefit to a second application. Conversely, disease control with Omega 500F was not related to timing (10% or 100% bloom) and there was no benefit from a second application even when applied at 100% bloom. For growers who were not able to put on a spray at 10%, then Omega 500F would be the choice product to use. The timing of the other possible fungicides was not tested. For organic growers, the most efficacious and reliable product from year to year is Double Nickel (*Bacillus amyloliquefaciens* strain D747). Both the LC and 55 formulations are equally effective. While labeled at the rate of 1 to 2 quart/acre, there was no benefit of the higher rate, and thus 1 quart/acre is recommended. – JK

SWEET CORN

<u>Northern corn leaf blight</u> is present at low levels in some sweet corn plantings. Field crops scouts are reporting <u>gray leaf spot</u> in field corn, and it may also show up in sweet corn. Keep an eye out for tar spot (see general article) and common rust as well as other diseases. Continue to scout for insects. Western Bean Cutworm (WBC) trap catches were really high this week (see the sweet corn trap network report). The start of the harvest of processing sweet corn is scheduled for this week and the crop is looking good overall. – JK

TOMATOES

More <u>late blight</u>. The disease continues to spread in Yates County on field tomatoes. Look for soft brown spots surrounded by lighter green tissue on leaflets. This disease is particularly important to manage as it damages fruit more than others. On the fruit, we find large sunken brown spots that make it completely unmarketable. Does pruning help? Not really. This disease is blown in on storms and often appears higher in the canopy than early blight and rapidly destroys green tissue. In a high tunnel, pruning may reduce relative humidity which could reduce leaf moisture and infection period. See photos on the next page (Fig. 4, 5 and 6). – JR



Figure 4. On the fruit we find large sunken brown spots that make it completely unmarketable. *Photo: Judson Reid, CCE*



Figure 5. Late blight arrives in NYS on storms from other affected regions. This is why defoliation can happen throughout the canopy and fruit. *Photo: Judson Reid, CCE*



Figure 6. Look for soft brown spots surrounded by lighter green tissue on leaflets. *Photo: Judson Reid, CCE*

In the midst (and mist) of the ongoing rain, we face a myriad of tomato diseases beyond late blight. <u>Bacterial canker</u> is a moisture loving disease that often presents itself with marginal necrosis, or a scorched look, to tomato foliage (Fig. 7). Bacterial canker can affect fruit as well, causing a white ring with a dark brown center. This disease can overwinter in the soil and used tomato stakes. We highly recommend new stakes for this reason. But, prevention begins in the greenhouse.

From Cornell Recommends:

"All tables, flats, containers, hoses, etc. should be disinfested prior to use. Only sterilized potting mix or soil and pots or flats should be used. Some growers have successfully cleaned surfaces using products such as Green-Shield II and ZeroTol 2.0"

What to do if an outbreak of Canker occurs in the field? There are several sprays, including organic options. AgriPhage-CMM is an organic, biological material, similar to a beneficial virus, in that it attacks and replicates within the bacterium that causes canker. It is not a plant pathogen. Tanos (3 day PHI) and Mankocide (5 day PHI) are conventional fungicides labeled for bacterial diseases. This disease is easily spread by water, so avoid working in wet fields, or moving between infected and clean areas. – JR

<u>Herbicide damage</u> can easily be confused for virus in greenhouse tomatoes (Fig. 8). Viruses generally present persistent symptoms once the infection begins, whereas tomatoes can grow through herbicide damage. Remember that herbicides damage tomatoes not just through drift, but also volatization, where an applied herbicide moves in a gas form. 2, 4-D in particular can damage tomatoes some distance from applications sites. – JR



Figure 7. Bacterial canker is a moisture loving disease that often presents itself with marginal necrosis, or a scorched look, to tomato foliage. *Photo: Judson Reid, CCE*



Figure 8. Herbicide damage can easily be confused for virus in greenhouse tomatoes. 2, 4-D damage causes dark green, distorted leaves. *Photo: Judson Reid, CCE*

Cucurbit Powdery Mildew Control Recommendations for 2023

Charles Bornt, Cornell Cooperative Extension, Eastern NY Commercial Horticulture Program

With much of the pumpkin, winter squash and fall ornamentals starting to set and size fruit, fungicide applications targeting Cucurbit Powdery Mildew (CPM) need to be initiated. Setting and sizing fruit is a major stress for most plants and makes them more susceptible to diseases. Many of you know the frustration of trying to control CPM due to its ability to develop resistance quickly to labeled fungicides. Determining which products to use is the first challenge and getting good coverage is the second! When using fungicides, spend time to review which FRAC (Fungicide Resistance Action Committee) Group (or family) each fungicide belongs too. This is important because this allows you to know which fungicides have the same or similar modes of action. This is even more important because many pre-mixes of materials on the market contain several different FRAC Groups. These Groups assist us in rotating the different modes of action and hopefully reduce the ability of the pathogen to gain resistance.

Every year we try to give you the breakdown of what's working and what's not according to our recently retired Plant Pathologist, Dr. Meg McGrath. These are the fungicides and the FRAC Groups they belong to that she found to still be working: Vivando (metrafenone, Group 50), Prolivo (pyrilfenone, Group 50), Approvia Top (difenoconazole Group 3 + benovindiflupyr Group 7), Proline (prothiconazole, Group 3) and Miravis Prime (fludioxonil, Group 12 + pydiflumetofen, Group 7). Re-entry times, rates, use limits, and pre-harvest intervals can be found in the <u>2023 Cucurbit Powdery Mildew Fungicide Table</u>.

Potential Spray Programs

Potential spray programs could look like:

Week 1: Vivando plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 2: Vivando plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 3: AproviaTop plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 4: AproviaTop a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 5: Vivando plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Another program could be:

Week 1: Proline plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 2: Vivando plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 3: Proline plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 4: Vivando plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 5: Procure plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Week 6: Vivando plus a protectant (chlorothalonil, sulfur, mineral oil or biopesticide)

Dr. McGrath also said in her final presentation to us in February 2023, you could also use one application of leftover Quintec (quinoxyfen, Group 13) or Torino (cyflufenamid, Group U6) that you may have. However, Gatten (flutianil, Group U6) has not proven to be very effective in trials. However, these fungicides have had a high level of resistance the last 2 years in her trials.

Organic Control

Organically, sulfur alone or Stargus + Regalia alternated with sulfur provided some control as did Theia alternated with sulfur. Also, potassium bicarbonate products (Armicarb, Milstop etc.) started early before disease starts have also been effective as is JMS Stylet oil.

The other thing to keep in mind that the above materials, with the exception of chlorothalonil, have no activity on Cucurbit Downy Mildew. For this pathogen, there is a whole other list of targeted fungicides that would need to be included with the CPM materials if it is a concern.

Resources

More information on Dr. McGrath's research not just on Powdery Mildew, but on Downy and other diseases of cucurbits can be found by visiting: <u>https://blogs.cornell.edu/livegpath/research/cucurbit-powdery-mildew-research/</u>

Changes in pesticide registrations occur constantly and human errors are possible. Read the label before applying any pesticide. The label is the law. No endorsement of companies is made or implied.

Beneficial Insects Thriving in Unexpected Habitats

Sam Anderson, Urban Agriculture Specialist, Cornell Cooperative Extension, Harvest NY

Purchasing and releasing insect predators and parasitoids is a proven strategy to reduce pest pressure in certain situations. However, many such biocontrols are already doing this work for free, migrating onto crops from surrounding ecosystems—even in urban environments.

You may know that across our region, naturally occurring predators such as ladybeetles, lacewings, syrphid flies, and minute pirate bugs seek out and feed on insect pests, often reducing or eliminating the need for additional control measures. More surprisingly, a Cornell project found that all of these are also present on urban farms across New York City, even on rooftops, and that they commonly provide complete control of aphids, thrips, and mites on most vegetable crops in NYC.

Certain beneficial insects appear to be less common in this urban environment, such as assassin bugs and predatory stink bugs, but we're also seeing some unexpectedly specific and effective predators and parasitoids. For example, cabbage whitefly (*Aleyrodes proletella*), a top pest of brassicas in NYC, has attracted a parasitoid of its own: an *Encarsia* wasp, similar to those sold for whitefly control in greenhouses, but apparently an entirely different species that is not commercially available.

We've also recently found *Stethorus* beetles naturally occurring on several urban farms, a tiny black ladybeetle that feeds aggressively on twospotted spider mite (TSSM). TSSM has been one of the top pests of cucumbers in the city, but *Stethorus* adults and larvae appear to be controlling them very effectively on cucumber leaves—which explains why these same beetles are sold to greenhouse growers under the name "Spider Mite Destroyer."

If these beneficial insects can thrive in the most urbanized part of the country, they can likely hack it in many other settings, too. It may be worth taking a few minutes to walk down some rows, flip some leaves, and look closely for signs of the insect allies right under your nose.

Tips for Recruiting and Retaining Insect Predators and Parasitoids

- Use IPM methods other than pesticides when possible.
- Apply pesticides judiciously, limiting use when and where it may affect non-target insects (e.g. avoiding broad-spectrum controls or long periods of residual activity).
- Create habitat with a diversity of plantings, especially flowers that produce plenty of pollen with season-long blooms.
- Maintain perennial areas for beneficials to overwinter, including trees, shrubs, and perennial grasses.



A tiny *Encarsia* wasp laying its eggs in cabbage whitefly nymphs. *Photo: Sam Anderson, CCE Harvest NY*



A hover fly (syrphid fly) larvae feasting on aphids on a broccoli leaf. *Photo:* Sam Anderson, CCE Harvest NY

Sweet Corn Pheromone Trap Network Report, 8/8/23

Marion Zuefle, NYS Integrated Pest Management Program, Cornell; <u>https://sweetcorn.nysipm.cornell.edu/</u>

Statewide, 32 sites reported this week. European corn borer (ECB)-E was caught at 7 sites, while ECB-Z was caught at 6 sites. Corn earworm was caught at 11 sites, with 9 sites showing counts high enough to warrant a 4, 5, or 6-day spray schedule (refer to the table below). Fall armyworm (FAW) was caught at 3 sites, and Western bean cutworm (WBC) was caught at all sites where trapping was conducted. The highest count for the week, 616, was recorded at the Lyndonville site. When considering data from previous years, it is possible that this year might yield the highest average trap catch of WBC in NY since 2010, which marked the initiation of trapping near sweet corn. Western bean cutworm likely reached its peak this week.

Avera	age Corn Earworm		
Per Day	Per Five Days	Days Between Sprays	
<0.2	<1.0	<1.4	No spray (for CEW)
0.2-0.5	1.0-2.5	1.4-3.5	6 days
0.5-1.0	2.5-5.0	3.5-7.0	5 days
1-13	5-65	7-91	4 days
over 13	over 65	over 91	3 days

Add one day to the recommended spray interval if daily maximum temperatures are less than 80°F for the previous 2-3 days.

Use the <u>Western bean cutworm flight completion model</u> on NEWA to get the estimated flight completion for your area based on the nearest weather station or use the <u>NEWA Western Bean Cutworm Flight Emergence Lookup Table</u> and the degree day accumulation for your site. Remember, WBC is most attracted to pre-tassel corn. Make sure to scout all pre-tassel fields for egg masses and larvae. After the eggs hatch, larvae will first feed in the tassel before making their way to the ears. Be sure to scout fields that are in the whorl or early tassel stage for WBC egg masses, with a 4% threshold for processing sweet corn and a 1% threshold for fresh market sweet corn. WBC eggs take between 5 to 7 days to hatch. It is critical that sprays are timed before the larvae have a chance to enter the ear. The egg mass will turn purple approximately 24 hours before hatching. For more guidance, refer to this <u>video on scouting for WBC egg masses</u> and larvae from Purdue.

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC
Batavia (Genesee)	0	0	NA	0	0	6
Bellona (Yates)	0	4	1	0	0	54
Eden (Erie)	0	0	NA	0	0	86
Geneva (Ontario)	0	1	0	2	0	10
Hamlin (Monroe)	1	0	NA	0	0	40
Leroy (Genesee)	0	0	NA	0	0	41
Lyndonville (Orleans)	0	0	NA	0	0	616
Oswego (Oswego)	0	0	NA	0	0	17
Panama (Chautauqua)	1	0	NA	0	1	9
Penn Yan (Yates)	0	0	0	2	0	10
Portville (Cattaraugus)	NA	NA	NA	NA	NA	NA
Ransomville (Niagara)	0	0	NA	0	0	25
Stanley (Ontario)	0	1	0	0	0	2
Williamson (Wayne)	0	0	NA	1	12	101

WNY Pheromone Trap Catches: August 8, 2023

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm

Advice for Berry Growers in Mid-August

Anya Osatuke, WNY Berry Specialist, Cornell Cooperative Extension, Harvest NY

Growers harvesting fruit from blueberries, raspberries, blackberries, and elderberries can continue monitoring for spotted wing drosophila (SWD) using salt floats in marketable fruit. To conduct a salt float berry evaluation, dissolve 1 tablespoon salt in 1 cup water; add 100 lightly crushed berries and wait for 15 minutes. After 15 minutes, count white larvae that emerge. It helps to use a transparent container and place it against a black background.

Growers can consider applying insecticides to manage SWD in smaller segments of their planting when rain is forecasted, to keep the product from washing off; a rule of thumb is to aim for a minimum of 2 hours without rain. Many products will have information on the "rainfastness" of the formulation on the label—this is the measure of how much time must pass between application and rainfall for the efficacy to remain the same.

In plantings of raspberries and blackberries, scout for wilting and collapsing canes in patches of the field susceptible to flooding. The oomycete that causes phytophthora root rot is likely to attack brambles in standing water. To stop the spread, growers ought to remove affected plants. This season, an application of Phostrol or Rampart to prevent further spread of this disease. Heavy mulching will exacerbate phytophthora in susceptible fields.

Resources and Further Reading

SWD Insecticide chart for berry crops | Greg Loeb, Anna Wallis, Laura McDermott, Peter Jentsch, Juliet Carroll, Cornell University and NYS IPM | 2023

Salt Water Test for Spotted Wing Drosophila (SWD) Larvae | Jim Jasinski, OSU Extension | 2017

Rainfastness of Insecticides and Fungicides on Fruit | Wendy McFadden-Smith, Kristy Grigg-McGuffin | 2019

Raspberries: Phytophthora Root Rot | Anya Osatuke, Kathy Heidenreich, Marvin Pritts | 2021 |

Upcoming Events

Agronomic Weed Management and Cover Crop **Field Session**

August 15, 2023 (Tuesday) | 3:30 - 7:15 pm sessions; program followed by dinner Across from 5701 Burton Rd, Orchard Park, NY 14127

Organized by the Cornell Weed Ecology Lab. DEC credits in CORE, 1a, 10, 21 and 23. Topics include:

- Emerging problem weed species
- Dealing with changing herbicide efficacy and the impact of • erratic weather
- Managing spray water to improve herbicide efficacy .
- Demo: Calibrating and using a dual seed box drill to establish cover crop
- Erie Soil & Water's soil health equipment lending program
- Field demo of various cover crops

Cost: \$10. Register online through CCE Erie County by August 11. For more information, contact Elizabeth Buck at 585-406-3419.

Chipping Potato Twilight Meeting

August 24, 2023 (Thursday) | 6:00 pm - 7:00pm with dinner to follow

Mahany Farms, 10046 NY-36, Dansville, NY 14437

Learn about updates in insect pest control in potatoes and view this year's chipping potato variety trial! 1.0 DEC credit available.

2023 Soil Health & Climate Resiliency Field Days

Join the New York Soil Health team and partner organizations at a soil health field day! The statewide event series takes place through September 2023. Register at https://fielddays. newyorksoilhealth.org

August 24, 2023 (Thursday) | 10:00 am - 3:00 pm Martens Farm, 1443 Ridge Rd, Penn Yan, NY

Learn about organic no-till systems and discuss adaptive management strategies for improving resilience on the farm. The afternoon session will include equipment demos, a grain cleaning facility tour and the NY Soil Health Trailer demonstration. Registration required: \$10. Lunch provided. CCA credits available. <u>Register online</u> or by call the CCE Yates County office at 315-536-5123.

August 31, 2023 (Thursday) | 9:00 am - 3:00 pm Branton Farms, 6536 Main St, Stafford, NY 14143

Hear practical, field-tested results of advanced soil regenerative practices targeted to dairy, field and specialty crop farmers.

- Carbon Market and Biochar Research in New York
- Weed Management
- Minimal Disturbance Manure Drag Lining
- Research Updates from the Planting Green Field Trials
- Use of Biologicals from Pivot Bio

CCA credits available. FREE and lunch provided. Register by August 25. Read more information and register online or call Aaron Ristow, American Farmland Trust, at 315-748-5029.

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VegEdge is the highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas, and research results from Cornell University and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

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Cornell Cooperative Extension Cornell Vegetable Program

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