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Why Are My Garlic Leaves All Streaky?

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

Depending on the season, we receive a few calls each year as garlic harvest time draws closer. Garlic leaves have yellow streaking. Worse ones have yellow blotches too. Usually not too many plants show these symptoms, but some seasons tend to have more than others. This season is one of the busier ones.

There are several virus diseases that show up in garlic. The symptoms are hard to tell apart without a lot of lab work. It has become easier to simply lump together the onion dwarf virus with leek yellow stripe, and several other minor viruses. Some term this garlic virus group as garlic mosaic due to the leaf symptoms or Potyvirus. The yellow streaking along with various degrees of yellow splotches can be found on some younger plants but also as the plants get into the bulb sizing days of June.

If the disease comes in on later in the season, bulb size isn't too much affected. If the virus hits in the earlier leaf growth stage, plants can become stunted along with diminished bulb size. Weakened plants are more easily stressed by harsh weather and post-harvest quality can be reduced. The culprits responsible for transferring the virus are aphids. Aphids can carry several different diseases affecting numerous vegetable crops like summer squash, for example. It is, therefore, hugely important that aphids are kept under control from the outset.



Streaking, striping on leaves of garlic infected with virus complex. *Photo: University of Maine Cooperative Extension*

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.



The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

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 July 5, 2023.

Accumulated Growing Degree Days, 6/26/23

Julie Kikkert, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - June 26, 2023

•			
Location**	2023	2022	2021
Albion	734	868	836
Appleton	687	801	778
Arkport	606	709	677
Bergen	679	830	774
Brocton	712	845	824
Buffalo*	763	841	865
Ceres	550	683	677
Elba	655	784	740
Fairville	678	799	752
Farmington	698	810	789
Fulton*	698	777	741
Geneva	742	833	816
Hammondsport	661	801	762
Hanover	676	837	805
Jamestown	624	715	707
Lodi	782	927	728
Lyndonville	693	723	789
Niagara Falls*	803	886	812
Penn Yan*	743	861	860
Rochester*	737	846	816
Romulus	761	849	829
Sodus	772	877	843
Versailles	675	NA	NA
Waterport	692	782	757
Williamson	632	780	732
* Airport stations			· ·

Airport stations

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

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It is important to keep an eye out for the symptoms when they show up on plants. The virus can move down into the bulb. If the bulb is saved for seed and is planted out the next season, the new plant that emerges will already have the virus. Non-virus laden aphids can feed on these plants picking up the virus and spread it to surrounding plants. This is how a small problem can easily turn into a big problem. Rogue out all garlic plants that appear to have these stripes and blotches. If aphids are carrying the virus, using an insecticide will not do much to reduce the spread of the disease because the aphids need to feed on the plants in order to ingest the insecticide. A little bit of feeding will pass the virus even if the aphid succumbs to the spray.

Sweet Corn Pheromone Trap Network Report, 6/27/23

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

Statewide, 21 sites reported this week. European corn borer (ECB)-E was caught at 4 sites. ECB-Z was caught at 6 sites and the hybrid ECB was only caught at the Hurley site (11). Corn earworm (CEW) numbers are up with 9 sites reporting and a high catch of 27 at Kinderhook. No fall armyworm (FAW) caught this week, but 3 sites had their first western bean cutworm (WBC), Hurley, Kinderhook, and Unadilla.

Fields are in both the tassel emergence and silking stage. The thresholds when scouting differ for these two stages of corn. For tassel emergence corn, the threshold is 15% infested plants. As the tassels begin to emerge larvae will leave the tassel and move down the plant looking for protected places to feed. Insecticide applications need to be timed to kill larvae before they bore into a new feeding location where they will be protected from sprays. For silking corn, the threshold drops to 5% infested plants. Scout the ear zone, two leaves above and one leaf below the ears, for egg masses, damage and larvae.

Many sites also reported CEW catches this week. CEW is difficult to scout for but pheromone trap catches may be used to time sprays in silking corn according to the table to the right. Add one day to the recommended spray interval if daily maximum temperatures are less than 80 °F for the previous 2-3 days.

WNY Pheromone Trap Catches: June 27, 2023

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC
Batavia (Genesee)	0	0	NA	0	0	0
Bellona (Yates)	NA	NA	NA	NA	NA	NA
Eden (Erie)	0	0	NA	1	0	0
Geneva (Ontario)	0	0	0	0	0	0
Hamlin (Monroe)	0	2	NA	3	0	0
Leroy (Genesee)	0	0	NA	0	0	0
Lyndonville (Orleans)	1	0	NA	1	0	0
Oswego (Oswego)	NA	NA	NA	NA	NA	NA
Panama (Chautauqua)	2	0	NA	2	0	0
Penn Yan (Yates)	0	1	0	0	0	NA
Portville (Cattaraugus)	NA	NA	NA	NA	NA	NA
Ransomville (Niagara)	0	0	NA	0	0	0
Stanley (Ontario)	0	0	0	0	0	0
Williamson (Wayne)	NA	NA	NA	NA	NA	NA

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

Avera	age Corn Earworm		
Per Day	Per Five Days	Per Week	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.

Be Aware of Wild Parsnip

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

Wild parsnip—a common weed that is now in bloom along roadsides and field borders—should not be touched! Chemicals in the sap make the skin more sensitive to ultraviolet light for many years. Skin contact with the sap in combination with sunlight can cause a severe burn that will appear within 24 to 48 hours. The best way to protect yourself from wild parsnip is to learn to identify the plant at different growth stages and to avoid walking through infested areas. If you do need to work around wild parsnip, wear gloves, long-sleeved shirts, pants, boots and eye protection to prevent skin contact with sap. Synthetic, water resistant materials are recommended.

Wild parsnip is in the carrot family. Flowering plants are easy to spot because this time of year they shoot up a single yellow-green stalk with a flat-topped cluster of yellow flowers. Queen Ann's lace has a similar appearance, but with bright white flowers. Wild parsnip can grow up to five feet tall. It has hollow, grooved stems that are hairless. Leaves look very similar to celery leaves. They are yellowish green and coarsely toothed. For more information on the identification of wild parsnip, see <u>Wild Parsnip</u> <u>| Cornell Weed Identification.</u>

Wild parsnip can be mistaken for similar species including cow parsnip, Angelica, poison hemlock, and giant hogweed which also causes phytophotodermititis. See the following website which contains information on how to identify these species, including giant hogweed, and distinguish them from each other <u>http://www.dec.ny.gov/animals/72766.html</u>



Flower stalk of wild parsnip. *Photo: Leslie J. Mehrhoff, Univ. of Connecticut, Bugwood.org*

2022 Fungicide Research Highlights for Stemphylium Leaf Blight in Onion

Field Performance, Fungicide Resistance and Implications for Management

Christy Hoepting, CCE Cornell Vegetable Program, and Frank Hay and Daniel Heck, Department of Plant Pathology, Cornell AgriTech

Nothing is the Best for SLB Anymore

Stemphylium leaf blight (SLB) is a foliar disease of onion that causes target spot lesions, spore colonization of necrotic leaf tip tissue "dirty tips" and leaf dieback (Fig. 1). Since its first detection in New York in 2012, it has developed fungicide resistance to FRAC (Fungicide Resistance Action Committee) groups 2, 3, 7, 9 and 11, to varying degrees. Although control of SLB can still be achieved with fungicides, the top-performing fungicide treatments are not as effective as they once were before fungicide resistance.



Figure 1. Symptoms of Stemphylium leaf blight of onion include target spot lesions that may be tan, black (left) or purple in color, spore colonization of necrotic leaf tip tissue (middle) that may be tan of black in color "dirty tips", and leaf dieback (right). *Photos: C. Hoepting, CCE*

Top-performing Treatments

In 2022 on-farm onion fungicide trials, the top performing treatments for reducing SLB target spots, SLB spore colonization of necrotic leaf tissue and preventing leaf dieback were:

- 1. Double FRAC 3-product treatments that included Tilt (3a) and/or Viathon (3c + P07) such as Viathon + Tilt/Inspire Super (FRAC 3b + 9)
- 2. Miravis Prime (FRAC 7 + 12) + Oso 6.5 fl oz (FRAC 19)/Rovral (FRAC 2)

It is very good news that there are two types of treatments that have different FRAC groups that may be used in rotation in a spray program to provide acceptable control of SLB. At least for 4-5 weeks anyway.

FRAC 3 Products Separating Out

FRAC 3 Products Ranked for Control of SLB Based on Irial Result

Ranking	Trade Name	FRAC Code	Trial Results
#1	Tilt	3a	 As good as top-performing treatments for reducing SLB target spots by 47-84%. Significantly better than the untreated, but not as good as the top-performing treatments for reducing SLB spore colonization of necrotic leaf tissue and for preventing leaf dieback.
#2	Viathon	3c + P07	 Significantly better than the untreated, but not as good as the top-performing treatments for reducing SLB target spots and SLB spore colonization of necrotic leaf tissue. As good as the top-performing treatments for preventing leaf dieback.
#3	Inspire Super	3b + 9	Generally, significantly better than the untreated, but not as good as the top-performing treatments for all three SLB variables.
#4	Quadris Top	3b + 11	 Not significantly different than the untreated for reducing SLB target spots and SLB spore colonization of necrotic leaf tip tissue. Significantly less leaf dieback than the untreated under low SLB pressure.
#5 – WORST	Cevya	3d	Not significantly different than the untreated for any SLB variable.

- When the FRAC 3 active ingredients were tested individually, 3a (propiconazole) was better than 3b (difenaconazole) and 3c (tebuconazole), 3b and 3c were the same, but better than 3d.
- It is possible that the FRAC 9 in Inspire Super may still have some useful activity on SLB. By comparison the FRAC 11 in Quadris Top, appeared to add little to SLB control, which is understandable as we have detected the gene mutation associated with resistance to FRAC 11 active ingredients in SLB in NY since 2015.
- Alone, FRAC P07 significantly reduced SLB target spots compared to the untreated by 34-72%, depending on pressure, as well as resulted in significantly greener foliage/less leaf dieback than the untreated, but was not as good as the best treatment. FRAC P07 had no effect on SLB spore colonization of necrotic leaf tissue. Thus, it appears that the FRAC P07 component of Viathon is contributing to the improved efficacy of this product over 3c alone.

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FRAC 3 vs. FRAC 3 + 3 vs. FRAC 3 + 3 + 3 - A Slippery Slope

- Since Tilt and Viathon were the best single FRAC 3-product treatments, tank mixes with both or either of them were the best treatments for SLB control in the trial. Double FRAC 3-product tank mixes that included Viathon or Tilt were usually numerically better than their single counter parts.
- Since single FRAC 3b containing product treatments Quadis Top and Inspire Super were mediocre at best, the tank mix of the two (FRAC 3b + 3b) did not improve efficacy or plant health over that of its counterparts.
- Triple FRAC 3-product treatment Viathon + Tilt + Quadris Top was as good as the best treatments in the trial for all SLB variables, but not statistically better than double FRAC 3-product treatments that included Tilt or Viathon. However, it was statistically better than FRAC 3b + 3b Quadris Top + Inspire Super.
- After 8 consecutive weekly fungicide sprays in a field trial, fungicide sensitivity bioassay results in the laboratory indicated that 1x rate of 3c (tebuconazole) allowed highly insensitive isolates (= highly resistant to fungicides) to survive, unlike the untreated or 3x rate of 3c (2x rate of tebuconazole not available). These results indicate that currently the use of double FRAC 3-product tank mixes such as Viathon + Tilt are maintaining sensitive (= normal rates of fungicide effective) and moderately sensitive (= high rates of fungicides may effectively control) SLB isolates compared to a single FRAC 3-product treatment such as Viathon alone.
- The risk of using double FRAC 3-product tank mixes is that eventually they will select for the highly insensitive isolates. When that happens, all control of SLB will be lost. SLB control with FRAC 3 fungicides is on a slippery slope.

FRAC 3a (in Tilt) Appears Less Prone to Fungicide Resistance than Other FRAC 3 Active Ingredients

Every year, at the end of the spray season, we collect leaf samples with SLB spores and spots from each of the commercial muck onion fields that are in the CVP onion scouting program and send them to the Pethybridge-Hay lab at Cornell Agri-Tech for fungicide sensitivity testing. We now have the fungicide sensitivity profile for FRAC 3a (propiconazole), 3b (difenaconazole) and 3c (tebuconazole) from Elba, Wayne and Oswego regions from 2018, 2020, 2021 and 2022.

- Of the three FRAC 3 active ingredients, 3a (Tilt) is the only one where we have not seen a significant decrease in sensitive (fungicides effective) isolates or an increase in insensitive isolates (fungicides ineffective) between 2018 and 2022, in contrast to FRAC 3b and 3c active ingredients.
- Previous testing of SLB insensitive isolates failed to detect the presence of a mutation in the Cyp51 gene that can be associated with the development of FRAC 3 resistance in fungi. This means that SLB is overcoming FRAC 3 fungicides in another way. For example, moderately insensitive isolates and insensitive isolates may be producing more of the target proteins that FRAC 3 fungicides attack, or insensitive isolates have enhanced ability to detoxify FRAC 3 fungicide toxins. Perhaps, SLB isolates are not as able to overcome FRAC 3a active ingredient.
- Perhaps there are other FRAC 3 active ingredients that are less prone to fungicide resistance?

FRAC 3 Fungicide Resistance Related to Fungicide Use

- In Elba and Wayne muck onion growing regions, we were very pleased to see relatively no change in the levels of sensitive and insensitive isolates between 2020, 2021 and 2022 for any of the FRAC 3 active ingredients tested (3a, 3b and 3c).
- Unfortunately, in Oswego region, there has been a steady decline in the proportion of sensitive isolates and steady increase in the proportion of insensitive isolates between 2020, 2021 and 2022 for FRAC 3b and 3c. FRAC 3a has remained fairly level, as discussed previously.
- In 2022, no more than 2 applications of FRAC 3 fungicides were used in 87.5%, 60% and 33% of fungicide spray programs in Elba, Wayne and Oswego regions, respectively.
- In 2022, of the total number of FRAC 3 fungicide sprays, 75%, 92% and 41% were double FRAC 3-product tank mixes in Elba, Wayne and Oswego, respectively.
- In 2022, of the total number of FRAC 3 fungicide sprays, 25%, 8% and 48% were single FRAC 3-product treatments in Elba, Wayne and Oswego, respectively.
- These results suggest that minimizing FRAC 3 use to no more than 2 applications of double FRAC 3-product tank mixes has delayed the development of fungicide resistance in Elba and Wayne regions.
- While double FRAC 3 product tank mixes are now necessary to achieve adequate SLB control, there is a risk of selecting for highly insensitive SLB isolates with this approach.

FRAC 19 and P07 Have Utility in SLB Fungicide Program

- As previously described, FRAC P07 fungicide treatments had activity on reducing SLB target spots and keeping onion foliage healthy.
- In previous trials, Oso 6.5 fl oz/A (FRAC 19) alone had some activity on SLB but failed to prevent leaf dieback and treated plots were visually similar to the untreated at the end of the trial.

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- In 2022, Oso was trialed as a tank mix with FRAC P07, with the hopes that this would be an effective combination.
- Oso 13 fl oz/A + P07 was as good as the best treatment and significantly better than P07 alone for reducing SLB target spots and SLB spore colonization of necrotic leaf tip tissue. As expected, the combo was no different than P07 alone for keeping foliage green.
- Miravis Prime + Oso 6.5 fl oz/A was also one of the best treatments in the trial and numerically better than Miravis Prime alone for all three SLB variables.
- Since Oso and P07 have medium and low risks for fungicide resistance, these products will be recommended for use in 2023 onion SLB fungicide spray program.

Onion Fungicide "Cheat Sheet" for Control of Leaf Diseases in New York

The Cornell Onion (Dry Bulb) Fungicide "Cheat Sheet" for Control of Leaf Diseases in New York has been updated for 2023 and is now available online on the Cornell Vegetable Program website: CVP.CCE.CORNELL.EDU

Look forward to an article in next week's issue of VegEdge for fungicide spray program strategy.

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Summer Field Technician Supports Cornell Vegetable Program in WNY

Sofia Russo

"Hello! My name is Sofia Russo. I am an upcoming Junior at Canisius College currently working towards my BS in Animal Behavior, Ecology, and Conservation. I have joined the Cornell Vegetable Program team in hopes to expand my horticulture and ecological skillset. In my spare time, I enjoy tending to my garden and countless houseplants. Thus, piquing my interest in the technical care of the plants around me. I plan to focus on botany and ecology as I advance in my academic career, so I'm eager to learn more about agriculture and use these new skills and techniques to better prepare myself for post-undergrad-uate work. I look forward to meeting you all and I can't wait to get growing!"



CR P Insights

Observations from the Field and Research-Based Recommendations

BEETS

<u>Weeds</u> in beets can get out of control fast. Many fields did not receive adequate rainfall to activate preemergence herbicides. Weeds need to be controlled when they are tiny. The rates of postemergence herbicides used in beets are low compared to other crops because beets are sensitive to herbicide injury. A mixture of the postemergence broadleaf herbicides available such as Nortron, SpinAid, Stinger and UpBeet work together synergistically to improve control. Read labels for product application tips. Some processing fields were replanted because of heavy pressure of weed escapes. – JK

CARROTS

<u>Weed escapes</u> can be treated post-emergence with broadleaf herbicides Caparol 4L, Lorox or Metribuzin. Grass herbicides labeled in NY are Poast and Select Max or other labeled generics. Cultivation will also help. In all cases, the weeds must be small. Continue scouting for <u>leafhoppers</u> which may spread <u>Aster Yellows</u>. – JK

CUCURBITS

ALERT! Cucurbit downy mildew is surrounding us and will be coming soon to a field near you! Begin protective sprays now, if you plan to spray.

DRY BEANS

Earlier planted dry bean fields have started to emerge. This week, I noticed some early Japanese beetle damage in some fields as well as some leafhoppers moving in. Seed treatments should continue to control leafhopper numbers for now. – ML

GARLIC

Potyvirus showing popping up in fields around the region. See the cover article in this issue of VegEdge for details. – RH

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ONIONS

The crop is looking fantastic and growing very well! The onions are loving temperatures in the 70s and the rainfall over the past week, especially in Elba that did not get the 1.5+ inch rains the previous week. Direct seeded onions are at 5-7 leaf stage with bulbing just around the corner.

Onion thrips pressure increased over the past week, especially in Elba with most fields getting Movento/Senstar insecticide this week, if they had not gotten it already. In other regions where thrips pressure (0.6 to 1.0 thrips per leaf) does not trigger first application of Movento, crop stage timing is early bulb swell to 0.5" bulb for first application. As long as the second application is on by 1" bulb stage, you should be good. The earlier you apply Movento, the earlier it runs out in the plant and the sooner you will have to apply the next insecticide in sequence. With 2 apps each of Agri-Mek (not a viable option in Elba), Radiant and Exirel, one could easily run out of effective sprays in 4-6 weeks. Applying the second application of Movento 10 days after the second allows the two applications to "stack"/overlap and can extend the residual before another insecticide needs to be applied in sequence.

Botrytis leaf blight halos increased this week. The spray threshold is first detection for mancozeb 1 lb and 1.0 BLB halo lesions per leaf (count BLB on outer 3 plant leaves only) for mancozeb 2-3 lb and all other products. Omego (FRAC 29) is the best product for BLB halos, while some of the FRAC 7 fungicides especially Miravis Prime and Merivon, and FRAC M5 Bravo also have very good activity on BLB halos. As of 2021, Rovral (FRAC 2) and Scala (FRAC 9) had good activity on BLB halos in Oswego and Elba, respectively, with the combo having good activity. All of these fungicides except Bravo are compatible with Movento. BLB necrotic spots and the odd Stemphylium leaf blight (SLB) lesion were detected this week. The revised for 2023 Cornell Onion (Dry Bulb) Fungicide "Cheat Sheet" for Control of Leaf Diseases in New York is now available online on the CVP website. See article on page 4 for 2022 research highlights on fungicide field performance and fungicide resistance for SLB.

Thank you to all the onion growers, allied industry representatives and Cornell researchers who participated in the Muck Onion Twilight Meeting last Thursday in Oswego – it was a great success! – CH

PEAS

Slugs are a typical problem in rainy weather and are best observed in twilight hours or at nighttime using a flashlight. – JK

POTATOES

Colorado potato beetles have laid eggs which have started to hatch in many fields this week. Treating when small larvae are present is often most effective, so monitor fields for ~50% egg hatch to time your treatments accordingly. Potato leafhoppers adults are also active in many fields. – ML

This week's late blight forecasting indicates that **Arkport, Ceres, Dansville, Fulton, Penn Yan, Sodus, and Wellsville have reached the 30 blight units (BU) needed to trigger a spray for late blight this week, with a few others forecasted to reach the threshold by the end of the week.** 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 June 21. 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. Nationally, no late blight has been reported this year. – ML

SNAP BEANS

Rainfall this week will get plantings growing and activate herbicides applied to recent plantings. Weed escapes will be problematic in earlier planted fields where herbicides were not activated. – JK

TOMATOES

Herbicide Damage on Field Tomatoes

With a cool, delayed planting season many field crops are growing slowly. The good news is weeds are also growing slowly. Farmers therefore were able to postpone post-emergent herbicide applications. With the return of rain to the forecast, farmers have hastened to apply herbicides in the last week to ensure activation, particularly in soybeans. This has resulted in an uptick in drift and/or volatization of materials such as glyphsosate, glufosinate, and/or 2,4-D. These can all be damaging to tomatoes (and other produce) causing distorted growth, discoloration and flower abortion, and—in worst case scenarios—crop loss.

Location	Blight Units 6/21-6/27 ¹	Predicted Blight Units 6/28-6/30 ²
Albion	25	30
Arkport	32	44
Baldwinsville	23	35
Bergen	23	30
Brant	20	32
Buffalo	27	40
Burt	-	-
Ceres	36	46
Dansville	39	57
Elba	23	30
Fairville	18	24
Farmington	27	34
Fulton	30	49
Geneva	20	20
Hammondsport	27	27
Knowlesville	19	26
Lyndonville	19	29
Medina	13	13
Niagara Falls	23	41
Penn Yan	40	59
Rochester	28	46
Sodus	33	40
Versailles	20	27
Wellsville	38	58
Williamson	19	19

Late Blight Risk Chart, 6/28/23

Calculated using a May 31 crop emergence date. Last fungicide application June 21 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)

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Symptoms can easily be confused with virus, however upward cupping of leaves is particularly diagnostic (Fig. 1). There is no treatment to relieve these symptoms, aside from continued crop care including irrigation and fertilization. Produce growers with fields of herbicide resistant corn and soybeans are advised to consider wind (for drift), temperature and humidity (for volatization), and those in field crop country might benefit from a friendly conversation with their neighbors. – JR

HIGH TUNNEL

Thrips (generally Western Flower Thrips) are in abundance at the moment. Damage to foliage includes white patches, flecked with black dots (Fig. 2). Damage to fruit includes yellow flecking. Thrips also bring the risk of virus transmission including Tomato Spotted Wilt and Impatiens Necrotic Spot Virus. We recommend beneficial insects for thrips control in high tunnels. These could include species such as *Neosulis cucumeris* and *Amblyseuis swirskii*. – JR

<u>Blossom end rot</u> (Fig. 3), a calcium deficiency of tomato fruit can move Number 1 fruit to the canning category, possibly decreasing revenue by over 50%! Avoid this with consistent soil moisture which is essential for the uptake of calcium in tomatoes. High tunnels with poor ventilation are at higher risk for BER, as high temperatures increase water demand. – JR

Botrytis gray mold is also on the rise in high tunnels this week with high humidity and rain favoring outbreaks. Foliar symptoms are brown lesions, often, but not always, with concentric rings (Fig. 4). These can be distinguished from Early Blight by a much lighter color. Under high relative humidity the lesions may produce small gray spores. On fruit, Botrytis produces 'ghost spots', faint white rings that persist after maturation (Fig. 5). Gray mold can also cause a complete rot of fruit. Gray mold flourishes on dead tissue and is often associated with other problems such as nutrient deficiencies. Prevention includes pruning of foliate below lowest hanging fruit cluster, greenhouse ventilation and proper nutrition. Decree 50 WDG (group 17) fungicide has a specific greenhouse tomato label for Gray Mold (not for field use) with a 0 day PHI. Endura 70 WDG (group 7) with a 0 day PHI is for field use only. Luna Tranquility (groups 7 and 9) with a 1 day PHI is approved for both greenhouse and field use. - JR



Figure 4. Foliar symptoms of Botrytis gray mold are brown lesions, often, but not always, with concentric rings. *Photo: J. Reid, CCE*



Figure 1. Herbicide damage causes distorted growth, discoloration and flower abortion. Upward cupping of leaves is particularly diagnostic. *Photo: J. Reid, CCE Cornell Vegetable Program*



Figure 2. To scout for thrips, look for white 'scraped' areas on foliage, black droppings and the tiny, yellow thrips themselves. *Photo: J. Reid, CCE Cornell Vegetable Program*



Figure 3. The tan depressions on the blossom end of this fruit is the initial stages of blossom end rot. Most soils in our region contain abundant calcium, so the solution is not more Ca, rather consistent water. *Photo: J. Reid, CCE Cornell Vegetable Program*



Figure 5. On fruit, Botrytis produces 'ghost spots', faint white rings that persist after maturation. *Photo: J. Reid, CCE*

Upcoming Events

WNY Vegetable Field Walks

July 11, 2023 (Tuesday) | 6:30 pm - 8:30 pm Andy E Yoder's Farm, 2051 Rt 62, Frewsburg, NY 14738

July 19, 2023 (Wednesday) | 6:00 pm - 8:00 pm Johnson Creek Produce, 12625 Roosevelt Hwy, Lyndonville

Walk from crop to crop, learning hands-on pest, disease and weed ID and scouting techniques. IPM control tactics for both preventative and reactive management will be discussed in group dialogues. 2.0 DEC credits offered (categories 1a, 23).

Vegetable Pest & Cultural Management Field Meetings for Auction Growers

Finger Lakes Produce Auction Meeting July 12, 2023 (Wednesday) | 7:00 pm - 9:00 pm Kenneth Hurst Farm, 9499 Co. Rt. 87, Hammondsport, NY

Seneca Produce Auction Meeting August 2, 2023 (Wednesday) | 7:00 pm - 9:00 pm David Peachey Farm, 5426 Rt. 414, Romulus, NY 14541

These meetings gather produce auction growers together to tour another farmer's produce farm. Cornell Vegetable Program staff will instruct participants and facilitate peer-based learning. Details on each topic will focus on field observations at the farm. 1.75 DEC credits offered (categories 10, 1a, 23, 24).

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. Take advantage of this opportunity to network, learn, and empower yourself with the latest insights and practices in



soil health. Register at https://fielddays.newyorksoilhealth.org

July 13, 2023 (Thursday) | 10:00 am - 3:00 pm Rodman Lott & Son Farms, Seneca Falls, NY Topics: cover crops, reduced tillage, soil health, pest management

This event offers great speakers, cover crop plots, soil health demonstrations, 2.0 DEC credits (10, 1a, 21, 23) and CCA credits, a raffle, and a delicious BBQ lunch! \$10 per person; register online or call Seneca Soil and Water Conservation District at 315-568-4366 to RSVP.

August 24, 2023 (Thursday) | Time TBD Martens Farm, Penn Yan, NY Topics: organic, cover crops, reduced tillage

August 31, 2023 (Thursday) | 9:00 am - 3:00 pm Branton Farms, 6536 Main St, Stafford, NY 14143 Topics: planting green, biostrip till, weed management

At this field day, hear practical, field-tested results of advanced soil regenerative practices targeted to dairy, field and specialty crop farmers. CCA credits available. FREE and lunch provided. Read more information on this field day 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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