



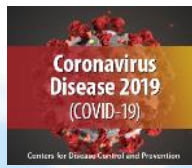
Tomato Spotted Wilt Virus (TSWV) is affecting field grown tomatoes. Find out more.

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Broccoli is susceptible to Alternaria leaf spot and head rot at this time. Get the latest fungicide recommendations.

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Have questions about COVID-19 on your farm? Upcoming office hours are the place to get answers.

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Can winter covers be used as cash crops? See our report.

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CORNELL COOPERATIVE EXTENSION
CORNELL VEGETABLE PROGRAM

Tomato Spotted Wilt Virus

Judson Reid, Cornell Cooperative Extension, Cornell Vegetable Program

Tomato Spotted Wilt Virus (TSWV) has recently been detected in outdoor tomatoes in our region. Symptoms include wilted new growth and ring-spots on fruit. This virus is transmitted by multiple species of thrips including Western Flower, Onion and Tobacco Thrips. Among viruses TSWV is unique in its ability to infect a wide range of hosts, including monocots (grasses). The infestation of thrips could begin in the transplant greenhouse, or possibly in the field.

It is important to understand that plant viruses are generally not treatable. Once within the plant the virus will reproduce until host death. This means prevention is the only control. Fortunately, there are several preventative measures:

- Avoid bringing in vegetative material to a greenhouse with transplants grown from seed.



Ringspot symptoms on tomato fruit.
Photo by Judson Reid, CCE Cornell Vegetable Program

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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:
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Help us serve you better by telling us what you think. Email us at cce-cvp@cornell.edu or write to us at Cornell Vegetable Program, 480 North Main Street, Canandaigua, NY 14424.



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The next issue of VegEdge will be September 2, 2020

Upcoming Events

View more events at CVP.CCE.CORNELL.EDU

Wayne County Fresh Market Potato and Onion Twilight Meeting

September 3, 2020 (Thursday) | 6:00 - 8:00pm
Williams Farms, 5060 Russell Rd, Marion, NY

This in-person event, hosted by CCE Wayne County, will cover the fresh market potato variety trial, and potato disease forecasting, as well as results from this year's onion thrips trial. 2.0 DEC recertification credits will be available for those who attend the full meeting.

The meeting will take place in the gravel lot outside the warehouse, and we will not be walking the field trials in order to make sure we are following Cornell guidelines on safe social distancing.

- Bring your own chair.
- No food will be provided. Please eat beforehand.
- Growers may bring their own bottle of water since beverages will not be provided.
- Masks will be required and growers will be expected to maintain 6 feet of distance and follow proper social distancing while in attendance.
- If growers have been feeling ill or have had contact with anyone confirmed to have COVID-19, we ask that they not attend the meeting.
- Attendees will be required to sign a COVID-19 check with contact information at sign-in at the meeting.

This event is FREE! For more information and to register, contact Margie Lund at 607-377-9109.

- Eliminate weeds in the greenhouse and field
- Control thrips

As most growers understand by now, managing thrips with insecticides is difficult. Thrips secretive nature and lifecycle reduce their pesticide exposure. Even so, they have developed resistance to a number of materials, creating an ever shorter list of effective sprays. Although Onion Thrips do transmit TSWV, Western Flower Thrips are the most common vector. This brings us back to the transplant greenhouse. Pylon (group 13) is labeled for fruiting greenhouse vegetables and is an insecticide class not commonly used in the field which may help delay insecticide resistance. Once in the field materials such as Assail (group 4A), Movento (group 23) and Exirel (group 28) are options. Pyrethroids (group 3A) are not a material of choice due to resistance and their contribution to aphid outbreaks. Organic growers may consider Entrust (group 5) or biological insecticides such as *Beauveria* strains.

The greenhouse also presents an opportunity for the release of biological controls including beneficial mites which prey on thrips. *Neoseiulus cucumeris* has performed well against thrips in our greenhouse trials. You don't have to be certified organic to use biologicals!

Although not considered common, it is possible for TSWV to infect the seed coat. Saving seeds from infected plants is discouraged.



The wilting of new growth, coupled with necrotic tissue is diagnostic of TSWV. Photo by Judson Reid, CCE Cornell Vegetable Program



(Left): The mottled leaves can be confusing to diagnose, but look closely for nearly perfect circles among the lesions. (Right): Feeding damage of thrips is evident from the silver and black discolored area. Look closely and several thrips are visible. Photos by Judson Reid, CCE Cornell Vegetable Program

The US Census: Why and How to Respond (<https://2020census.gov/en.html>)

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

It's not too late to complete your 2020 Census. The census provides critical data that lawmakers and many others use to provide daily services, products, and support for you and your community. Every year, billions of dollars in federal funding go to hospitals, fire departments, schools, roads, and other resources based on census data.

The 2020 Census counts everyone living in the United States and its five territories. One person should respond for each home. That person must be at least 15 years old.

How to Respond Online

Visit my2020census.gov. You must complete the census in one sitting.

How to Respond by Phone

To begin, call [844-330-2020](tel:844-330-2020)

How to Respond by Mail

Most households received their invitation to respond to the 2020 Census. These official Census Bureau mailings included detailed information and a return envelope is provided. There are several ways you can confirm that the 2020 Census questionnaire you received is legitimate:

The outer envelope's return address will say "U.S. Census Bureau" and "U.S. Department of Commerce," which is the Census Bureau's parent agency. The return address will also show: **U.S. Census Bureau National Processing Center 100 Logistics Avenue Jeffersonville, IN 47144**

The enclosed envelope for mailing the completed paper questionnaire will be addressed to either **Jeffersonville, IN**, or **Phoenix, AZ**, where the Census Bureau has mail processing centers.

The Census Bureau will never ask you for:

- Your full Social Security number.
- Your bank account or credit card numbers.
- Anything on behalf of a political party.
- Money or donations. ●

census facts

2020 Census data will help inform how billions of dollars are distributed to states and communities every year for the next 10 years.



United States
Census
2020

Fungicide Recommendations for Alternaria Leaf Spot and Head Rot in Broccoli

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

The 2018 growing season will go down in history for having one of the most devastating outbreaks of Alternaria leaf spot (ALS) and head rot in brassica crops (Fig. 1) with marketable portions of crop falling well below 50% in many fields. It is an experience that we never want to repeat and have been implementing extra diligence in fungicide use ever since.



Alternaria leaf spot (left) and head rot (right) of broccoli. Photos by Christy Hoepting, CCE Cornell Vegetable Program

ALS is caused by *Alternaria brassicicola* and is specific to brassica/crucifer/ Cole crops including broccoli, cabbage, cauliflower, Brussels sprouts, kale, etc. and weeds (e.g. mustards such as Shepherd's purse and field penny-cress). It can survive in soil and crop debris and can be spread onto plants from splashing soil and over longer distances aerially. Optimum temperatures for ALS are 75° to 82°F, but when leaf wetness is prolonged for 20 hours or more, ALS can produce many spores outside of the optimum range of temperatures. Downy mildew (DM) is similar to ALS in its survival, spread and requirement for leaf wetness, and its optimum temperature range is 50 to 60 °F. Beginning in August and throughout the fall, heavy dew and remnants of hurricanes usually result in favorable conditions for both ALS and DM.

Fungicide Recommendations for ALS in broccoli

Fungicide "Cheat Sheet" provides roster of fungicides labeled in Cole crops for use on ALS. The relative control of ALS was based on results from an on-farm trial conducted in 2018 under severe ALS pressure (Hoepting) – for more information on this trial, see newsletter article in *Veg Edge* May 15 2019 (https://rvpadmin.cce.cornell.edu/pdf/veg_edge/pdf161_pdf.pdf) and presentation at Empire Expo 2019 (<http://www.hort.cornell.edu/expo/pdf/20190115-all-day-hoepting.pdf>).

Fungicide "Cheat Sheet" for Alternaria Leaf Spot and Head Rot in Broccoli and Other Cole Crops

Product and Rate/A	Active Ingredient	FRAC ¹ Group	PHI	Restricted Use ²	Maximum Use	Rotation Restrictions (No. of apps before rotate to another FRAC group)	Cole Crops on Label	Disease Control	
								Relative Control of ALS ⁴	Activity on DM ⁴
Bravo Weather Stik 1.5 pt	chlorothalonil	M5	7 days	No	11.7 pts (= 7 apps)		ALL ³	Mediocre	Good
Quadris 6-15.5 fl oz	azoxystrobin	11	0 days	No	90 fl oz (= 5-15 apps)		ALL ³	Mediocre	Good
Switch 10-14 oz	cyprodinil + fludioxonil	9 12	7 days	No	56 oz (= 4-5 apps)	2	ALL ³	Excellent	None
Priaxor 6-8.2 fl oz	fluxapyroxad + pyraclostrobin	7 11	3 days	Yes	24.6 fl oz (= 3 apps)	2	ALL ³	Best	Good
Endura 6-9 oz	boscalid	7 11	0 days	No	18 fl oz (= 2 apps)	2	ALL ³	Excellent	None
Luna Experience 6-8.6 fl oz	fluopyram + tebuconazole	7 3	7 days	Yes	34 fl oz (= 4 apps)	2	broccoli, cabbage	Excellent	None
Luna Sensation 5-7.6 fl oz	fluopyram + trifloxystrobin	7 11	0 days	Yes	15.3 fl oz (= 2 apps)	2	ALL ³	Excellent	Good
Inspire Super 16-20 fl oz	cyprodinil + difenoconazole	9 3	7 days	No	80 fl oz (= 4 apps)	2	ALL ³	Very Good	None
Quadris Top 12-14 fl oz	azoxystrobin + difenoconazole	11 3	1 day	No	56 fl oz (= 4 apps)	1	ALL ³	Very Good	Good
Viathon 2 pt	tebuconazole + potassium phosphite	3 P07	7 days	No	8 pt (= 4 apps)		broccoli, cabbage	Good	Good

¹**FRAC:** Fungicide Resistance Action Committee group. Fungicides that belong to the same FRAC group are at risk for developing cross-resistance. For best fungicide resistance management practices, fungicides belonging to different FRAC groups should be rotated.

²**Restricted Use:** DEC spray license required to use.

³**ALL Cole crops** includes broccoli, cabbage, cauliflower and Brussels sprouts. Often, kale, collards, kohlrabi and mustard greens also on label.

⁴**ALS:** Alternaria leaf spot and head rot. Relative disease control based on 2018 on-farm fungicide trial. **DM:** downy mildew. Best control of DM is provided by Orondis Opti/Ultra, Revus and Presidio.

continued on next page

- Spray fungicides preventatively before disease establishes itself, because lower frame leaves serve as inoculum to infect heads. Bravo would be an economical choice at this timing.
- Once the canopy fills in, aeration is reduced and leaf wetness is prolonged. Begin application of systemic/translaminar fungicides with very good to excellent activity on ALS at this time.
- All fungicides listed in the Cheat Sheet except Bravo, are at risk of ALS developing resistance.
 - See ALS Fungicide Cheat Sheet/labels for rotation restrictions and seasonal maximum use rates.
 - Be mindful of pre-mixes that have more than one FRAC group per fungicide that need to be managed for fungicide resistance.
- For best fungicide resistance management practices:
 - 1) Do not apply more than 1-2 applications before alternating to another FRAC group.
 - 2) Do not use more than 2 applications per FRAC group per crop. Bravo is the exception to this, because its multi-site mode of action reduces its risk for fungicide resistance and may be used up to 7 times.
- Use an adjuvant with fungicides that have translaminar or systemic activity (all fungicides except Bravo) for improved efficacy.
 - Do not apply a copper bactericide in the same tank mix with an adjuvant, or excessive leaf burn injury may occur.
- Save products with 0 (Endura, Quadris, Luna Sensation), 1 (Quadris Top) or 3 days (Priaxor) PHI for close to and during harvest.
- Note that Luna Experience, Endura and Switch have no activity on DM.
- ALS fungicides with good DM activity include Bravo, those with FRAC 11 (Quadris, Quadris Top, Priaxor, Luna Sensation) and Viathon (FRAC P07).
- Best control of DM is provided by Orondis Opti/Ultra, Revus and Presidio. Note that these fungicides do not have activity on ALS.
- **Be aware that it is highly suspected (not officially confirmed) that ALS has developed fungicide resistance to Quadris (a.i. axoystrobin). Therefore, use of Quadris and other FRAC 11 fungicides (such as Cabrio) are not recommended for control of ALS.** Premixes with FRAC 11 that contain FRAC 3 or 7 (such as Quadris Top and Priaxor) are okay, because it is the FRAC 3 and 7s that are doing the work.
- **Do your fungicide spray program “puzzle” ahead of time.** Although there are a lot of fungicide options, it can be tricky to not exceed 2 apps per FRAC per crop, especially when so many products contain premixes of two FRAC groups (e.g. Luna Experience contains FRAC 3 and 7). It is a good idea to design a 4-week program to use from full canopy fill through harvest. Prior to this, Bravo should suffice. Start with the products that you want to use during harvest with 0 PHI and work backwards avoiding no more than 2 apps per FRAC. Although expensive, Switch (FRAC 9, 12) is an excellent rotation partner with the many FRAC 3 and 7 products.

Sample fungicide program for control of *Alternaria* leaf spot and head rot in broccoli.

Designed for high ALS disease pressure, this program uses best products from full canopy fill through harvest, no more than 2 apps per FRAC, no more than 2 apps before rotating to another FRAC, and avoids use of FRAC 11. When disease pressure is low, one can always back off from such a “strong/expensive” program.

Week	Crop Stage	Fungicide	FRAC Group	PHI (days)	Activity on DM
1 & 2	1-2 weeks after transplanting,	Bravo WS 1.5 pt	M5	7	Good
3	Pre-heading, large canopy	Switch 14 oz	9, 12	7	None
4	Heading begins	Switch 14 oz	9, 12	7	None
5	Harvest begins	Priaxor 8.2 fl oz (R)	7, 11	3	Good
6	During harvest	Endura 9 oz	7	0	None

R:Restricted Use - requires a DEC spray license to use. Substitute with Quadris Top (FRAC 3, 11) as a non-restricted use option.



BEETS

Seeing Phoma and bacterial infections in several fresh market plantings in the western portion of the region. -EB
Cercospora leaf spot has been slowly increasing in fields that have had fungicide sprays. Tilt fungicide has a 10-day reapplication interval. However, we recommend watching the forecasting system to determine if another spray is warranted and only apply if we are going into a moderate to high risk period and the field has several more weeks until harvest. Contact Julie if you need assistance.—JK

CARROTS

Alternaria is striking some fresh market plantings. So far this year there seems to be appreciable differences in varietal tolerance on the farms where I've observed the disease. - EB
Continue to scout for leaf spot diseases. The biggest leaf disease concern for late season is Alternaria leaf blight because the disease can blow up quickly. Alternaria first appears as dark brown to black irregular spots on the margins of the leaflets. Lesions on the petioles and stems are dark brown and girdle the stems, killing them. As the disease progresses, entire leaflets may shrivel and die. Lesions are more prevalent on older foliage. Cercospora leaf spot may also be present, although it is more prevalent in hot and humid weather. Cercospora lesions are small, circular, tan or gray spots with a dead center which appear along the leaf margins, causing them to curl. The Cercospora fungus attacks younger leaves. Bacterial lesions are small yellow areas on the leaflets with brown, dry centers which are often surrounded by a yellow halo. While sprays with Bravo fungicide (group M5) will control both Alternaria and Cercospora, rotation with a fungicide with a different mode of action is advisable for resistance management. Quadris (group 11) or Quadris Opti (group 11 + M5) control both fungi and also have a 0 day PHI. There are several other fungicides labeled for carrot and outlined in the 2020 Cornell guidelines. Choices should be based on what you are trying to control, cost, and PHI. - JK

COLE CROPS

Continuing to see Alternaria creep into cole crops plantings (See article on pages 4 and 5). Worms are still necessitating management, and cabbage aphids may begin to cause issues soon as we move into more September-like weather. Cabbage aphids are particularly troublesome in sprouts, be sure to scout the little heads, too, since the aphids like to set up shop underneath the wrapper leaves on the sprouts. Receiving more reports of swede midge damage in organic or lightly sprayed conventional plantings. Making note of where on the farm you see damage can help you avoid issues next year by informing rotational decisions and transplant handling/treatment procedures. Conventional growers can easily knock down a swede midge problem with most of the non-Bt insecticides that would be used to manage caterpillars. - EB

DRY BEANS

Many dry bean fields are experiencing white mold problems. White mold develops in fields with dense canopies under cool, wet conditions, and in fields with a history of white mold. Fields with bad infestations should be rotated into grains or corn if possible. – ML and JG

Western Bean Cutworm Report, 8/18/20

This week, we saw a large reduction in Western bean cutworm (WBC) numbers across the region as all locations have reached peak flight. Scouting in bean fields in all locations should continue for the next couple weeks. Growers should also scout adjacent corn fields when cumulative WBC have reached >50 moths per trap, which all locations have surpassed.

To scout for WBC, inspect 50 plants per field (10 stops, 5 plants per stop), looking at all pods present on the plant for holes. WBC chew directly into the pod and eat the seed. It can be difficult to scout dry beans for egg masses or caterpillars, since the caterpillars move from the pods to the soil during the daytime, so looking for signs of damage is the best strategy.

European corn borer damage (ECB) may be similar to WBC, but an ECB larva would likely still be present in the pod when inspected. If damage into the pod and seed is found with no larva present, it is possible this is WBC. A spray is recommended if dry bean pod damage is found. In addition, to the WBC traps listed in the sweet corn report, the following dry bean trap sites are being monitored this year (project funded by the NYS Dry Bean Endowment).

Western bean cutworm (WBC) trap set date and WBC adult numbers by date for each bean trap						
Dry Bean Location	7/21/20	7/28/20	8/4/20	8/11/20	8/18/20	Cumulative WBC
Avoca Hill (Steuben Co.)	23	67	80	21	3	194
Avoca Valley (Steuben Co.)	6	44	94	43	8	196
Caledonia S (Livingston Co.)	6	54	58	32	22	172
Caledonia SW (Livingston Co.)	8	100	101	48	21	278
Geneva (Ontario Co.)	13	38	42	52	11	158
Riga (Monroe Co.)	24	49	28	17	10	129
Stafford (Genesee Co.)	18	41	34	5	1	101
Wayland (Steuben Co.)	4	24	92	38	16	174

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ONIONS

Most fields are in various stages of lodging. In general, Stemphylium leaf blight (SLB), Iris yellow spot virus (IYSV) and onion thrips increased this week. Unfortunately, some fields are headed in the wrong direction as tipburn progressed to excessive leaf dieback, which is now progressing to the onions “dying standing up”. In some cases, this has been attributed to high thrips pressure, IYSV, weak roots/pink root and heat stress. Generally, once a field exceeds 30% leaf dieback there is no fungicide or insecticide spray that can slow the progression of dieback. When plants die standing up, it is tricky to judge lodging, so you have to physically check the necks and see if they are soft. If such a crop has reached 50% lodging and still has 3 green leaves than it may still uptake sprout inhibitor. Some growers like to roll fields that have died standing up. In a previous Cornell study, incidence of bacterial bulb rot doubled in onions that died standing up compared to those that lodged normally (Hoepting, 2015). Although, it has not been tested, theoretically, rolling could reduce incidence of bulb rot, because when the plants are no longer upright, the open necks would no longer be able to capture moisture that would be favorable for bacterial infection to occur. - CH

PEPPERS

Some plantings have been infested with European Corn Borers. Although the infestation occurred some time ago, often it is not detected until a soft, fruit rot follows the worms invasion.-JR

POTATOES

This week, all stations either passed or were within 2 Blight Units (BU) of the 30 BU threshold for triggering a late blight spray through the forecast period 8/21/20. Conditions overall have been dry with spotty precipitation, however conditions can change quickly in any given area and become favorable for late blight. The chart assumes use of a susceptible potato variety, a spray date of August 12, and an application of chlorothalonil. Because weather conditions can vary depending on topography and altitude, the recent disease information and disease forecasts will be most accurate very close to the weather station used. 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. Information for other weather stations can be found at: <http://newa.cornell.edu/index.php?page=potato-diseases>. On a national level, no new late blight has been reported this week. Past confirmations include FL, AL, NC, WI, and British Columbia, Canada, and all pathogens tested have been the US-23 genotype. No late blight has yet to be reported in NYS. If you find or suspect you have late blight on your farm, please contact a CVP specialist. – ML and JG

New Late Blight Risk Chart, 8/18/20

Location	Blight Units ¹	Blight Units ²	Location ¹	Blight Units ¹	Blight Units ²
	8/12-8/18	8/19 -8/21		8/12-8/18	8/19 -8/21
Albion	26	6	Hammond-sport	18	10
Arkport	17	16	Knowlesville	32	17
Baldwinsville	21	16	Lyndonville	38	17
Bergen	24	12	Medina	32	11
Buffalo	18	10	Niagara Falls	36	12
Burt	37	12	Penn Yan	38	15
Ceres	39	17	Rochester	31	17
Elba	32	17	Sodus	NA	NA
Fairville	28	17	Versailles	32	19
Farmington	35	19	Wellsville	32	19
Fulton	26	19	Williamson	25	19
Geneva	27	12			

¹ Past week Simcast Blight Units (BU)² Three day predicted Simcast Blight Units (BU)**WINTER SQUASH**

Aphids are starting to show up here and there. This is a pest to be on guard for. Aphids can carry virus periodically. The damage depends on the virus and the extent of infection in the field. Later season aphids can also cause market appearance issues. If numbers build up on plants, the honeydew they produce can get sooty mold on fruit making it unsightly. Washing the fruit will be needed which takes time and money. Squash bugs are another problem that can either be a persistent issue or only show up periodically if at all. The adult females lay copper colored eggs usually on the undersides of leaves between leaf veins. The juvenile stages feed heavily on the leaves. With enough of these pests, serious damage to the leaves can occur reducing the overall size of fruit or with the lack of cover, sunburn of fruit can occur. Several chemical products are labelled for both insect pests. Assail 30SG, Endigo ZC, and Warrior II. Surround kaolin clay can also have some benefit if repeated applications can effectively cover the leaves and stems. - RH

Bejo Seeds: Virtual Field Days, August 27-28th (Robert Hadad, CCE Cornell Vegetable Program)

The end of August brings with it the slowing of summer but the excitement of vegetable varieties showcased at Bejo Seeds field days in Geneva. Unfortunately, this year, the field days will not be held. Not held live in person that is. Instead, Bejo will have a two day virtual Open House from their plots at their Geneva, NY location. Take a virtual walk around the raised bed Kitchen Garden or look at larger plantings in the field plots. This event will run August 27-28 from 9am-6pm. Lots of new and interesting varieties will be highlighted. One feature will their Container Walkway. These will show off varieties made for successful growing in containers or with limited space. This will be of special interest to our urban growers. Another big highlight will be the Organic Oasis. This is a showcase of all of Bejo's organic vegetable choices available in North America. Visit www.bejoseeds.com/magazine for the upcoming details for accessing this event.

WNY Sweet Corn Trap Network Report, 8/22/17

Marion Zuefle, NYS IPM Program; <http://sweetcorn.nysipm.cornell.edu>

Statewide, thirty-three sites reported this week. Nine of the sites had European corn borer (ECB)-E and four sites had ECB-Z. Nineteen sites reported corn earworm (CEW) with eighteen high enough to be on a 3, 4, 5 or 6 day spray interval (see table at bottom of post). Fall armyworm (FAW) was caught at twenty-two sites and Western bean cutworm (WBC) was caught at twenty-two sites. The hybrid ECB moth was not caught at any of the six reporting sites.

Average corn earworm catch and recommended spray interval

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.



WNY Pheromone Trap Catches: August 18, 2020

Location	ECB -E	ECB -Z	ECB Hybrid	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	1	1	NA	0	1	4	3366
Bellona (Yates)	0	0	0	10	11	0	3412
Brockport (Monroe)	0	0	NA	0	0	0	3336
Eden (Erie)	0	0	NA	4	25	4	3379
Farmington (Ontario)	0	0	0	0	0	0	3487
Geneva (Ontario)	0	0	0	28	5	0	3416
Hamlin (Monroe)	0	0	NA	4	2	9	3379
Kennedy (Chautauqua)	NA	NA	NA	NA	NA	NA	3210
Leroy (Genesee)	2	0	NA	10	24	25	3352
Lyndonville (Orleans)	0	0	NA	0	1	29	3291
Oswego (Oswego)	0	0	NA	0	0	4	3151
Panama (Chautauqua)	0	0	NA	0	6	3	3019
Penn Yan (Yates)	0	4	0	9	0	0	3310
Portville (Cattaraugus)	2	0	NA	1	1	5	2990
Ransomville (Niagara)	0	0	NA	0	3	17	3529
Seneca Castle (Ontario)	0	0	0	0	3	2	3350
Williamson (Wayne)	0	0	NA	0	0	0	3194

ECB - European Corn Borer

CEW - Corn Earworm

FAW - Fall Armyworm

WBC - Western Bean Cutworm

NA - not available

DD - Degree Day (mod. base 50F) accumulation

Safe Harvest 2020: COVID-19 Office Hours for Agricultural Producers and Packers

Tuesdays beginning Aug 25th | 4:00 PM EST
Online

Beginning on Tuesday August 25th at 4:00 PM EST, Cornell CALS and CCE will host office hours for farmers and packers to answer any questions they might have about managing and responding during COVID-19. Participants will be able to log in from a computer or call in from a phone to ask questions or just to listen. A panel of experts will be available to answer questions immediately, questions that the experts cannot answer right away will be recorded, studied and answered later. The next 6 weeks are a critical time for the farm workforce as seasonal harvest ramps up, so the office hours will repeat every Tuesday at 4:00 PM EST through the end of September. Look for log in information and phone numbers in coming news releases and check this website: www.agworkforce.cals.cornell.edu.

COVID-19 Resources from Cornell Cooperative Extension and CALS

- General Questions & Links: eden.cce.cornell.edu
- Food Production, Processing & Safety Questions: instituteforfoodsafety.cornell.edu/coronavirus-covid-19
- [COVID-19 Decision Tree for the Food Industry](#)
- Employment & Agricultural Workforce Questions: agworkforce.cals.cornell.edu
- Cornell Small Farms Resiliency Resources: smallfarms.cornell.edu/resources/farm-resilience
- Financial & Mental Health Resources for Farmers: www.nyfarmnet.org

Winter Cover Crops as Cash Crops?

Caitlin Tucker, Cornell Cooperative Extension, Cornell Vegetable Program

Its peak produce season and the last thing you're probably thinking of is winter. I don't blame you! That word is normally stricken from my vocabulary until after the first frost. However, now is a great time to begin thinking about winter cover crops and soil health. Cover cropping has been researched, recommended, and adopted as a practice, because of issues with nitrogen depletion, reduced organic matter, decreased soil microbial health, increased incidence of soil borne disease...the list goes on. Aren't many of these issues similar to what high tunnel growers are dealing with? Why isn't cover cropping as common a practice in high tunnel settings?

Let's focus in on high tunnel tomato production, as more than 80% of our NYS producers that grow in "protected settings" grow tomatoes. These growers have limited options when it comes to implementing a cover crop into their crop rotation. In order to reap the benefits of cover crops, they require cold hardy species that germinate quickly in the fall, produce biomass throughout the winter, and are easy to terminate and incorporate in the spring. Even if suitable species are identified, is winter cover cropping a good fit for high tunnel tomato systems? In Fall of 2018, Judson Reid and I began a multi-year trial to answer just that.

More specifically, some of the questions we're hoping to answer include:

- Which cover crop species or combination of species works best in a high tunnel setting?
- Can we grow our own nitrogen over the Winter, and in turn, reduce the amount of fertility we have to add during the tomato season?
- Do we see a positive effect from cover cropping on tomato yield and quality?
- In turn, can winter cover crops put more cash in your pocket?

In our current work, we're trialing two species: Austrian field peas and Triticale. Austrian field peas provide the benefit of nitrogen fixation through their relationship with Rhizobacteria, and Triticale may produce more biomass than winter wheat or barley and is less likely to produce volunteer plants. Establishing a winter cover crop after the tomato season

has ended requires a quick turnaround. An additional question we're seeking to answer is **how does planting date influence cover crop biomass production?** Our trials are planted in the month of October into two tunnels, two weeks apart. Finally, although the cover crop is being grown in a protected setting, NYS winters are cold and skies typically overcast. **Can the simple addition of row-cover create a warmer microclimate and in turn, increase biomass production?**

Below is a look at some preliminary data from Years 1 and 2.

Table 1: Fresh Weight Biomass Produced per Acre (lbs)

	Treatment	Biomass (lbs/Acre) Spring 2019	Biomass (lbs/Acre) Spring 2020
Early Planting	Triticale w/ cover	8,380	12,652
	Triticale no cover	7,973	9,243
	Triticale + peas w/cover	9,849	16,350
	Triticale + peas no cover	10,347	13,973
Late Planting	Triticale w/ cover	10,208	11,500
	Triticale no cover	4,552	3,169
	Triticale + peas w/cover	12,851	9,627
	Triticale + peas no cover	4,470	5,090

Table 2: Nitrogen Contributed by Cover Crop (lbs/Acre)

	Treatment	Nitrogen (lbs/Acre) 2019	Nitrogen (lbs/Acre) 2020
Early Planting	Triticale w/ cover	73	82
	Triticale no cover	72	47
	Triticale + peas w/cover	40	102
	Triticale + peas no cover	61	77
Late Planting	Triticale w/ cover	24	53
	Triticale no cover	19	30
	Triticale + peas w/cover	25	50
	Triticale + peas no cover	27	21

Summary

Preliminary data shows that there is a significant benefit to adding row cover. In both years, nearly every treatment produced more above-ground biomass under row cover. The benefit is even more pronounced in the later planting where biomass was 2 to 3X higher under row cover than without. While this may suggest that a late planted

continued on next page

cover crop can survive, and even thrive, biomass production is higher across most treatments when planted early. The benefit of an earlier planted cover crop is more easily seen when comparing estimated nitrogen contributions. Throughout the winter, nitrogen is either scavenged (by the winter grain) or fixed (by the legume). This nitrogen is then returned to the soil when the crop is mowed and incorporated. In both 2019 and 2020, estimated nitrogen contributions were 1.5 to 3.5X higher in the earlier planted cover crop. While biomass and nitrogen data may support the practice of cover cropping in high tunnels, we don't quite have a full picture. Tomato yield, foliar, and soil nitrogen data is still being collected. This data will help us to fully understand if the cover crop biomass, and in turn, nitrogen contribution is benefiting the tomato harvest in terms of increased yield or benefiting the grower, in terms of fertilizer reductions.

For more information, visit the Cornell Vegetable Program's YouTube page for our April 2020 update: <https://www.youtube.com/watch?v=Hr1K0qX-F7g&t=28s>

This work is supported by Federal Capacity Funds, The Sustainability Foundation at Cornell University, and a Specialty Crops Block Grant from the New York Farm Viability Institute.



High tunnel cover crop research has carried on safely and responsibly in the midst of the COVID-19 pandemic. Photo by Caitlin Tucker, CCE Cornell Vegetable Program.



Cover crop plots in late Winter 2020. Row cover is overlaid on the plots on the right. Photo by Caitlin Tucker, CCE Cornell Vegetable Program.



Plots in early March 2020. Left: Cover crop plots without cover. Right: Cover crop plots under row cover. Photo by Caitlin Tucker, CCE Cornell Vegetable Program.



Tomato plots that will be harvested from throughout the season are flagged out in one of our high tunnels. Photo by Caitlin Tucker, CCE Cornell Vegetable Program.

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 8/11/20– 8/17/20

Location**	Rainfall (inch)	Rainfall (inch)	Temp (°F)	
	Week	Month August	Max	Min
Albion	0.40	1.44	87	60
Arkport	0.10	0.24	87	56
Bergen	0.25	1.01	87	57
Brocton	0.03	1.61	86	61
Buffalo*	0.41	1.60	89	64
Burt	2.07	2.70	85	54
Ceres	0.91	1.11	87	53
Elba	0.17	0.65	87	58
Fairville	0.78	2.07	89	57
Farmington	0.38	1.03	87	58
Fulton*	0.02	0.82	92	58
Geneva	0.14	0.51	88	60
Hammondsport	0.33	0.77	89	59
Hanover	0.18	0.98	90	57
Lodi	0.17	0.75	88	61
Niagara Falls*	1.28	2.14	87	61
Penn Yan*	0.34	0.98	92	59
Rochester*	0.63	1.95	85	59
Sodus	0.15	1.83	90	59
South Bristol	0.02	0.45	84	59
Varick	1.11	1.47	86	60
Versailles	0.56	1.35	87	57
Williamson	0.87	1.99	88	57

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 – August 17, 2020

Location	2020	2019	2018
Albion	1995	1775	2086
Arkport	1743	1618	2034
Bergen	1951	1710	1978
Brocton	1916	1752	NA
Buffalo*	2064	1795	2155
Burt	1878	1622	1930
Ceres	1688	1679	1819
Elba	1866	1639	1966
Fairville	1909	1636	1925
Farmington	1929	1662	1968
Fulton*	1972	1643	1990
Geneva	1988	1758	2019
Hammondsport	1918	1675	1920
Hanover	1906	1737	NA
Lodi	2017	1795	2056
Niagara Falls*	1972	1725	2206
Penn Yan*	2059	1840	2094
Rochester*	1992	1888	2216
Sodus	NA	1605	1910
South Bristol	1894	1650	1923
Varick	2092	1852	2093
Versailles	1861	1707	1989
Williamson	1870	1591	1878

* Airport stations

** Data from other station/airport sites is at: <http://newa.cornell.edu/>

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VegEdge is the award-winning newsletter produced by the Cornell Vegetable Program in Western New York. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell 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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