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## Bactericides Not Effective for Control of Onion Bulb Rot in On-Farm Field Trials in New York

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

#### Nothing Worked in Three On-farm Bactericide Trials

Three on-farm small-plot research trials were conducted in muck-grown onions to evaluate the efficacy of 12 bactericides for control of bacterial bulb rot in 2020 and 2021 in New York. In all three trials, there were no treatments that significantly reduced incidence of bulb rot compared to the untreated (Table 1). Treatments included five different copper bactericide active ingredients, as well as copper bactericide + mancozeb, both as a premix (Mankocide) and as a tank mix (Kocide 3000-O + Manzate Max), two plant defense activators, a sanitizer, and antibiotic and a copper bactericide + plant defense activator (Kocide 3000-O weekly + Lifegard bi-weekly). There were also no consistent trends among treatments among the different trials. For example, in both of the 2020 trials, Mastercop had the lowest incidence of bulb rot, which was 55% and 37% lower than the untreated, but in 2021 trial, it had the same amount of bulb rot as the untreated.

As part of the USDA Multi-State Stop the Rot project, **six bactericide trials (WA 2020 and 2021, UT 2020 and 2021, CA 2021 and CO 2021)** also did not show any significant reduction in bacterial bulb rot with any of the similar products tested. The only trials that have shown significant reduction in bacterial bulb rot with bactericides were in GA 2020 and 2021 where copper bactericides were effective (60-85% control). Results with Oxidate sanitizer and plant defense activators were variable (e.g. Oxidate resulted in 74% control in 2020 and 0% control in 2021). The Stop the Rot team now has the belief that the reason that bactericides do not work anywhere other than GA is because the bacterial pathogens that dominate in GA infect the leaves where they can be targeted by a topical spray. In the rest of the major onion growing regions, the main types of bacteria that attack onions infect the onion plant in the neck where they are protected from topical sprays. Research is underway in WA in 2022 to study whether treating irrigation water with bactericides would reduce bulb rot. Theoretically, the higher water volume with irrigation would flood the neck area and better target the bacteria in the infection zone.

#### Foliar Symptoms of Bacterial Disease Not a Predictor of Bulb Rot

In the three NY trials, total foliar symptoms of bacterial disease prior to harvest was 2- to 4-times higher than actual bulb rot. In the 2021 trial, the untreated control had 55.8% plants with foliar symptoms of bacterial disease, the majority (41.2%) of which

## About VegEdge

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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 10, 2022.

## Accumulated Growing Degree Days, 8/1/22

Nina Gropp, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - August 1, 2022

Location**	2022	2021	2020
Albion	1619	1680	1635
Appleton	1542	1516	1557
Arkport	1396	1313	1403
Bergen	1568	1513	1591
Brocton	1586	1559	1575
Buffalo*	1625	1652	1672
Ceres	1310	1362	1359
Elba	1480	1436	1526
Fairville	1513	1446	1548
Farmington	1521	1498	1565
Fulton*	1497	1453	1591
Geneva	1592	1548	1617
Hammondsport	1520	1457	1554
Hanover	1568	1537	1565
Jamestown	1364	1353	1372
Lodi	1750	1271	1635
Lyndonville	1469	1525	1605
Niagara Falls*	1699	1602	1605
Penn Yan*	1648	1630	1675
Rochester*	1620	1564	1627
Romulus	1644	1600	1664
Sodus	1656	1577	1554
Versailles	1522	1471	1523
Waterport	1536	1500	1573
Williamson	1495	1434	1515
* Airport stations			

Airport stations

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

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were single leaf infections (Table 1, Fig. 1). Incidence of bacterial bulb infections prior to harvest was very low (< 5%), while the proportion of plants with multiple inner leaf infections (4.7 to 21%, Fig. 2) was of the same magnitude as bulb rot after harvest (6.9 to 13.5%), suggesting that these infections progressed to the bulbs.

Table 1. Results summary from 2020 and 2021 'Stop the Rot' on-farm bactericide trials conducted in muck-grown onions in New York, for control of bacterial bulb rot in onion (Hoepting et. al).

2020 and 2021 Bactericide Trial Parameters	2020 Naturally Infected	2020 Artificially Inoculated <sup>1</sup>	2021 Naturally Infected		
Total No. weekly bactericide applications <sup>2</sup>	6 4				
Spray volume	40 gpa				
Spray pressure	30-33 psi				
Nozzle type	8005 VS flat fan				
Adjuvant	No	ne	Dyne-Amic 0.125% v/v		
Irrigation	Not irr	igated	Not irrigated		
Rainfall	2.68 ii	2.68 inches 3.58 inche			
Average Temperature (Minimum - Maximum)	65°F (34	to 87°F)	71°F (48 to 96°F)		

1 Artificially inoculated with 106 cfu/ml each of *Pantoea ananatis* and *P. agglomerans*, 3 days after 4th spray and 7 days after the 5th spray. 2 Sprays generally started at first sign of leaf senescence and continued weekly until approximately 50% lodging.

				In-Field Foliar Symptoms <sup>1</sup> August 2021		Bulb	
Product and Rate/A	Active Ingredient	Bulb Rot (%) March 2021	Bulb Rot (%) March 2021	Single Leaf (%)	Multiple- Inner Leaves (%)	Rot (%) December 2021	
Non-treated		21.7 Foliar (58%)	22.5 Foliar (43%)	41.2	13.1	13.0	
Copper Bactericides:		•				~	
MasterCop 1 pt	Copper sulfate pentahydrate (21.46%) (5% Cu metallic eq.)	9.8*	14.2**	46.6	14.7	12.0	
Badge SC 2.75 pt	Copper oxychloride (16.81%) + copper hydroxide (15.36%) (20% Cu metallic eq.)	18.7	17.5	38.0	6.0**	13.5	
Kocide 3000 1.5 lb	Copper hydroxide (46.1% = 0.69 lb) (30% Cu metallic eq.)	20.8	17.9	38.7	21.0	13.3	
Mankocide 2.5 lb	Copper hydroxide (46.1% = 1.15 lb) + mancozeb (15% = 0.375 lb)	15.1	12.0**	51.3	12.0	9.1	
Kocide 3000-O 1.5 lb + Manzate Maz 2.4 qt	Copper hydroxide (= 0.69 lb) + mancozeb (2.4 lb)	19.2	14.6**	36.3	10.7	9.0	
Cuprofix Ultra 40 Disperss DF 2.5 lb	Basic copper sulfate (71.1%) (40% Cu metallic eq.)	17.3	12.7**	46.3	5.7**	9.8	
Nordox 2.5 lb	Cuprous oxide (83.9%) (75% Cu metallic eq.)	17.6	20.9	38.9	12.3	13.1	
Sanitizer:							
Oxidate 2.0 0.5% v/v	Hydrogen dioxide (27.1%) + peroxyacetic acid (2%)	23.7	14.8**	42.8	17.1	12.5	
Plant Defense Activators:							
Lifegard WG 4.5 oz/100 gal	Bacillus mycoides isolate J	17.5	16.9	44.7	8.3*	11.6	
Actigard 0.5 oz	Acibenzolar-S-methyl (50%)	14.1**	20.0	37.3	10.5	10.0	
Antibiotic:							
Harbour 200 ppm	Streptomycin sulfate (22.4%)	19.4	18.2	42.0	11.1	7.8*	
Program:							
Kocide 3000 1.5 lb weekly + Lifegard WG 4.5 oz/100 gal bi-weekly	Copper hydroxide (46.1%) <i>Bacillus mycoides</i> isolate J	22.3	18.6	37.7	4.7**	6.9*	
p-value (α = 0.05), Fisher's P	rotected LSD test.	0.6057	0.6325	0.8676	0.1484	0.8383	

1 Foliar symptoms of bacterial disease: Single Leaf: Only a single inner leaf collapsed, bacterial infection did not appear to have spread to the neck or bulb. Multiple inner leaves: 2-4 inner leaves were collapsed, bacterial infection appeared to also be in the neck.

\*Numerically 50% of less than the untreated.

\*\*Numerically, 33% or less than the untreated.

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Figure 1. Foliar symptoms of bacterial diseases of onion, affecting a single leaf. Look for the collapse of a middle-aged leaf, not the outer-most leaf or the inner-most leaf, but a leaf in-between. The collapsed leaf can appear white (left), light yellow or brownish in color (middle), or be "greasy"/watersoaked in appearance (right). Often, this leaf dries up and sloughs off before bacterial infection enters in the neck or the bulb. Photos: Christy Hoepting, CCE CVP

Figure 2. Foliar symptoms of bacterial diseases of onion, affecting multiple inner leaves, which can be yellowish-brown (left) or white (middle) in color. At this stage, the bacterial infection has usually already moved into the neck and is on its way to infecting the bulb (right). There is a much better correlation between incidence of foliar symptoms affecting multiple leaves and bulb rot then there is between single leaf infections and bulb rot. Photos: Christy Hoepting, CCE Cornell Vegetable Program

#### More Information on Onion Bulb Rot Check out the Stop the Rot project website: <u>https://alliumnet.com/stop-the-rot/</u>

## **Update on FSMA Ag Water Regulations**

#### Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

In the June 8, 2022 issue of VegEdge (page 3), we reported on the proposed rule changes being made by FDA on agricultural water – the preharvest usage of water such as irrigation. The new focus will be on water quality through assessing the source and application method.

FDA has posted proposed compliance dates for farms to meet the proposed ag water regulations. It is believed that the proposed rules will go into effect sometime in late fall 2022. The FDA will open a comment period to hear from farmers and others on the proposed compliance dates for preharvest ag water regulations. **Comments should be submitted to docket** <u>FDA-2021-N-0471 on Regulations.gov</u> **until September 19, 2022.** 

The supplemental rulemaking proposes to establish the following compliance dates for the pre-harvest agricultural water requirements for covered produce other than sprouts:

- 2 years and 9 months after the effective date of a final rule for very small businesses;
- 1 year and 9 months after the effective date of a final rule for small businesses; and
- 9 months after the effective date of a final rule for all other businesses.

So, if you are a large farm, you will have 9 months after the publication of the final ag water rule to be in compliance. The medium size farms a year after that, and the smaller farms that fall under the rule will have 2 years after the large farm deadline. As soon as we hear specific dates, we will update you.

NOTE: Just to be clear, **this is for production water**. Harvest and post-harvest water for wash/pack, cleaning, and sanitizing still needs to be from a source with no detectable generic *E. coli* per 100 ml sample – in other words, drinking water level.

The new proposed ag water regulations put more of the burden on the farmer. If you would like assistance in figuring out your ag water assessments before you are forced to do it, the Cornell Vegetable Program team is here to help. Contact Robert Hadad for assistance at rgh26@cornell.edu, 585-739-4065.

## **Minimizing Injury from Copper Fungicides**

Margaret Tuttle McGrath, Plant Pathology & Plant-Microbe Biology Section, SIPS, Cornell University—Long Island Horticultural Research & Extension Center, Riverhead, NY

Several crops are sensitive to copper, notably crucifers, lettuce and strawberry. Phytotoxicity injury occurs when ionic copper moves into plant tissue and reaches a level the plant species cannot tolerate. Amount of copper uptake depends partly on availability of copper on treated leaf tissue. Several factors affect this.

- Spray solution pH is important because low pH increases copper solubility and thus availability of copper ions. Some copper
  formulations are neutral. Alternatively, when the pH is low a buffering agent can be used or hydrated lime can be added at
  the ratio of 1 part copper to 2 parts lime to reduce potential damage. Smaller particles have greater surface area and thus
  greater potential to release more copper ions.
- Application rate and frequency affect amount of copper on leaves.
- Type of copper is another important factor. Copper hydroxide (active ingredient in many copper fungicides) is a small particle and has a rapid release of copper ions while copper oxychloride is larger particle with a slower, more prolonged release of copper ions (Badge SC contains both ingredients). Copper sulfate also releases slowly (AI in Cuprofix Ultra 40). There are some newer formulations of highly micronized and chelated coppers that may be more prone to uptake of the copper ion by the plant and thus have a higher potential for crop injury.
- Water is necessary to solubilize copper ions, thus injury is more likely when leaves are wet, which could explain why phytotoxicity is more common in fall when long, heavy dew periods are common. Rain, irrigation and fog are also important.
- Young plant tissue generally is most sensitive. Leaves and fruit are predisposed to injury by high temperatures.

Newer copper formulations generally are less likely to cause phytotoxicity than old products because they are purer with less heavy metals, which can also cause phytotoxicity, and they consist of very small and uniform particles. Products with low metallic content have less potential for injury. Metallic copper equivalent (percentage) is listed on copper fungicide labels below the active ingredient. For dry formulations, divide MCE by 100 then multiply by the rate per acre to determine the MCE per acre that is applied. Labels for liquid formulations include information on the amount of MCE in lb per gallon. Use this figure to determine the MCE per acre that is applied with liquid coppers.

## Mobile App Helps Growers Manage Crop Diseases and Pests

Cornell University News, 6/7/22; edited by A. Ochterski, CCE Cornell Vegetable Program

A new mobile app, called Sampling, aims to help growers improve disease and pest management practices while saving time, effort and resources. Developed by postdoctoral associate Daniel Heck, the app combines sequential sampling plans with action plans that recommend an intervention if the damages of a disease cost more than the cost of control. We recently asked Heck to share information about the app's development and benefits.



What problems can this app help growers potentially solve? We want to assist growers in making decisions about when a management practice, such as applying fungicides and pesticides, is needed. Sequential sampling plans for agriculture pests were developed to save time in scouting and assessing for diseases and insects. However, merging these plans with the action thresholds for integrated pest management practices has created a more powerful tool for decision-making.

For example, using the new app, the grower will apply a fungicide only if the disease has crossed the action threshold; we define the action threshold as the limit when the cost of control is equal to the damages caused by the disease. The additional benefits include reducing pesticide applications, reducing the cost of crop production, reducing the load of pesticides in the food and environment, and reducing the selection pressure of plant pathogens and insect pests resistant to chemicals.

**How many diseases can this app be used for sampling?** This is the first version of the app, so for now, we have implemented the sequential sampling plans for the Cercospora leaf spot disease. We developed the app to serve as a repository for sampling plans for multiple diseases and insect pests. We plan to add sampling plans for Stemphylium leaf blight of onions and a few more diseases and insect pests this year.

**How do you use the app?** The Sampling app allows users to select a disease or pest from a prepopulated list and specify the objective of sampling: estimation or classification. Later, the precision of sampling or the action threshold can be selected. Users can navigate on the map to select a field to be inspected. When sampling begins, users can choose a random sampling unit to start scouting for diseases and enter the number of diseased individuals at each sampling unit assessed. The app will then inform the user when to stop sampling for the goals selected and return the final incidence and threshold achieved.

**Download the Sampling App on your mobile device.** Sampling is available as a free download from the Apple Store (https://apple.co/3pUiYKy), by searching for "Sampling by Cornell". It is compatible with iOS 14.0 or greater on iPhones or iPad.

## **CR** P Insights

#### Observations from the Field and Research-Based Recommendations

#### GENERAL

Aphids and two spotted spider mites (TSSM) are having fun. Too bad they're throwing their little party in your crops. Which ones? Oh, take your pick. Overuse of pyrethroids can aggravate these pest populations by knocking out beneficials. Both pests are best treated with specialized aphid/TSSM materials. Beneficials can manage a small population and are an excellent choice for tunnels, but they cannot get ahead of a rocking outbreak. Give the good guys a chance and knock the TSSM/ aphid populations back before starting a biocontrol tactic. – EB

#### BEETS

There's an app for that! Check out the story on page 5 about the newly developed app called Sampling which was first developed for sequential sampling of Cercospora leaf spot (CLS) in table beets. A direct result of our scouting and forecasting work over the past few years. I'm just starting to use it in the field and would love your feedback if you try it. We also have a printed scouting sheet that was developed last year if you would prefer a copy of that. The key to disease control is to identify the correct pathogen, monitor its presence (scout), know the forecasted risk for infection, and apply fungicides if the crop has a long way to harvest. The risk for CLS has been low to moderate across the region this week. Elba, Lyndonville, Medina, and Sodus weather stations all reached at least one day of moderate risk in the last three days. – JK

#### CARROTS

Some aster yellows has been observed. Keep up insecticide application for aster leafhoppers which spread this disease. For more information, see the June 16, 2021 issue of VegEdge https://rvpadmin.cce.cornell.edu/pdf/veg\_edge/pdf216\_pdf. pdf. Mid-August is when conditions start to become favorable for leaf diseases. Make sure you have a plan for fungicide applications as needed. Please see the 2022 Cornell Vegetable Guidelines for available products. We do not have any recent research trials on some of the newer products, but are thinking that it is time to plan fungicide trials for the future. Please send me your suggestions or bring them to the December Processing Advisory Meetings (TBA) – JK

#### **COLE CROPS**

Swede midge, swede midge flying out in the field. The eggs they laid a few weeks ago are now ruining some yields. - EB

Just starting to see some white mold in cabbages. Keep an eye out. Early signs are a wet, purplish water soaking. The actual white mold doesn't erupt until the disease is well progressed and, trust me, you don't want to grab hold of them when they reach that point. Fields with a history should be scouted and the weather conditions should be watched for favorable infection windows.

Dude, cabbage aphids suck...the juices outta your plants. Take the advice of your high school pep squad and "Be Aggressive! Be Be Aggressive!" when tackling these little buggers. – EB

#### **DRY BEANS**

A new generation of Mexican bean beetle (MBB) are laying eggs and small larvae are emerging in dry beans this week. Keep an eye on fields where beetle numbers have been high earlier in the season, if left uncontrolled MBB can quickly defoliate bean fields. Management is recommended when there is >15% defoliation during bloom and pod-fill stages. – ML

#### Western Bean Cutworm Report

Moth numbers appear to be hitting peak flight this week at most locations, cumulative numbers are lower this year compared to last. Churchville, Pavilion, and Wyoming traps have hit peak in the past few weeks. Scouting should begin within the next 7-10 days regardless of cumulative moth catch, especially where WBC numbers have been high in past years.

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. A spray is recommended if dry bean pod damage is found. Western bean cutworm (WBC) adult numbers by date for each dry bean trap location. Traps were set on 6/27/22.

Dry Bean Location	7/5/22	7/12/22	7/19/22	7/26/22	8/2/22	Cumulative WBC
Alexander (Genesee Co.)	0	1	11	18	23	53
Avoca Hill (Steuben Co.)	0	1	10	31	53	95
Avoca Valley (Steuben Co.)	0	2	4	19	28	53
Caledonia (Livingston Co.)	1	3	8	25	36	73
Churchville (Monroe Co.)	0	3	30	36	31	100
LeRoy (Genesee Co.)	0	2	67	92	95	256
Pavilion (Genesee Co.)	0	1	5	4	3	13
Penfield (Monroe Co.)	3	2	26	94	120	245
Penn Yan 1 (Yates Co.)	1	2	6	19	29	57
Penn Yan 2 (Yates Co.)	0	0	12	7	31	50
Wayland (Steuben Co.)	1	1	4	34	90	130
Wyoming (Wyoming Co.)	0	3	24	13	13	53

#### EGGPLANTS

The usual suspects – verticillium, TSSM, aphids. One of these things is not like the others. How so? Vert is essentially untreatable. So might as well make up for it by keeping the other two in check. Most eggplant crops will show some vert symptoms (yellowing on one half of a leaf or one side of the plant) and can push through it given favorable (not soggy) conditions. So yeah, I guess we can thank the drought for something at least? – EB

#### **LETTUCE AND GREENS**

Tarnished Plant Bugs (TPB) have been discovered in high numbers while scouting pumpkin fields. We are listing them here in the greens section as their damage is more significant in these crops (plus the pumpkin portion is already full). Tarnished plant bugs are 1/4 inch long, brown or yellow with darker markings. They are particularly common in fields with annual broadleaf weeds such as Ragweed or Pigweed. Their feeding damage on lettuce or other greens is most visible where a main vein has been been punctured, with a resulting oval shaped, black discoloration. Swiss Chard is a common victim, where TPB targets the colored stem. On eggplant, TPB will target the flower, reducing fruit set. Before we even think about using sprays to control TPB, weeds must be addressed. Even if it is too late to eliminate weeds (for example the first week of August), controlling them by mowing or line trimming can reduce TPB who seem attracted to the seed heads (bonus benefit of reducing weed seed bank and increasing ventilation). TPB overwinters in New York and completes multiple life cycles per growing season, all above ground. Younger stages can be effectively targeted with insecticides since they don't have wings. There are not many materials listed for TPB, and very few of non-restricted use. Warrior II (group 3A, 1 D PHI) and Baythroid XL (group 3A, 0 D PHI) are both restricted use, labeled materials and also both pyrethroids. This means they aren't the best rotational materials, and as noted elsewhere in this newsletter, can lead to Spider Mite and Aphid outbreaks if used repeatedly. Sevin XLR Plus (group 1A, 14 D PHI) is non-restricted use, but must be applied early in the crop cycle given the long pre-harvest interval. For certified organic production Pyganic has TPB on the label list of target pests. We will also share that exclusion netting is an option for both conventional and organic growers. Newer materials such as Proteknet are durable and won't overheat the canopy area. These are valuable tools for crops like lettuce, kale, chard that don't require pollination, but very attractive to TPB and other flying insects. - JR

![](_page_6_Picture_5.jpeg)

A group of tarnished plant bugs congregate on a ragweed leaf. Photo: Judson Reid, CCE Cornell Vegetable Program

![](_page_6_Picture_7.jpeg)

Lightweight exclusion netting provides effective, organic control of Tarnished Plant Bugs on a Buffalo urban farm. *Photo: Judson Reid, CCE* 

#### ONIONS

The crop is looking really good and is sizing up nicely with healthy foliage. Many fields have 2 inch bulbs and tipburn has started. Onion thrips increased significantly over the past week in Elba as thrips are now on the move to greener foliage from fields that are being pulled and harvested. In Wayne County, onion thrips are also increasing and fields that have had a 2-3 week ride with the momentum of Movento will be getting their next insecticide spray. As of a week ago, onion thrips were still low in Oswego. Agri-Mek (30 day PHI) is suitable for when thrips pressure is 1.0 thrips per leaf or less and Minecto Pro 1-10 fl oz is suitable for 1-2 thrips per leaf. Radiant 10 fl oz and Exirel 20.5 fl oz should be able to handle 3-5 per leaf with Exirel being the more effective product. The maximum rate per crop for Radiant is 30 fl oz (= 3 x 10 fl oz apps) and 61.5 fl oz (= 3 x 20.5 fl oz) for Exirel. Rotate to insecticide classes every 2 weeks.

Disease pressure increased slightly over the past week with Stemphylium leaf blight increasing in severity from very minor to minor to moderate and is appearing primary (see last week's article on primary vs. secondary) in some fields. Due to SLB developing fungicide resistance to several FRAC groups, FRAC 3 + 3 + P07 such as Viathon 3 pt (FRAC 3 + P07) + Tilt 8 fl oz (FRAC 3) is the best option we have at the moment for control of SLB spores and target spots and preventing leaf dieback. Ideally, no more than 2-3 apps of this treatment per season for resistance management. Once the crop has reached 20% leaf dieback caused by SLB, disease progression cannot be stopped and risk of excessive leaf dieback (> 30% prior to lodging)

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and onions dying standing up increases. In my fungicide trials, I placed my first FRAC 3 + 3 + P07 ahead of disease, and the second will go on at 10% leaf dieback and the third at 50% lodging. I will skip the 10% leaf dieback timing if disease is minor at this timing and just use 2 apps instead of 3.

Foliar symptoms of bacterial disease are common now, although generally at low levels. Recent studies have shown that bactericides are generally ineffective for managing bacterial bulb rot in NY. Not all foliar symptoms of bacterial disease result in bulb rot – see cover article of this issue of VegEdge. – CH

#### PEAS

I was recently asked about <u>powdery mildew</u> on peas. I wasn't familiar with it because I mostly work on processing peas and they generally have good resistance in the varieties we are using. However, in discussions with Dr. Margaret "Meg" McGrath, Plant Pathologist from Cornell's Long Island Horticultural Research & Extension Center, it turns out that peas do get powdery mildew. **Sugar snap peas are especially susceptible to powdery mildew!** Photos and additional information are available at Powdery Mildew on Peas, https://blogs.cornell.edu/livegpath/gallery/peas/powdery-mildew-on-peas/. The best management is resistant varieties—read <u>Disease-Resistant Pea Varieties</u> for more information on CALS Vegetables website, https:// www.vegetables.cornell.edu/. Plan ahead for next year with resistant varieties! – JK

#### PEPPERS

Sunscald and blossom end rot fruit will hang on the plant and often color up prematurely. The plant will continue to invest in these unmarketable fruit. Best take them off, allow the plants to invest their energy into something that'll help cover their expenses. – EB

#### POTATOES

Second generation Colorado potato beetle adults have been emerging and laying eggs. Monitor fields where beetle pressure has been high earlier in the season and past years. Insecticidal control should be considered at the following thresholds: small larvae: 200/50 vines, large larvae: 75/50 vines, adults: 25/50 vines. Flea beetles have also been popping up in some potato fields this week.

Simcast forecasting indicates that Ceres, Fulton, Medina, Rochester, and Versailles have reached the 30 blight units (BU) needed to trigger a spray for late blight this week, while many other locations will surpass 30 BUs 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. 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. Late blight has been found in Ontario, Canada in tomato in the past few weeks. On a national level, no new late blight outbreaks have been reported, only two outbreaks in FL earlier this season. – ML

#### **SNAP BEANS**

Cornell Specialty Crops Weed Scientist, Lynn Sosnoskie is testing lambsquarters for suspected resistance to bentazon (Basagran). If you have any fields with suspect lambsquarters, please contact Julie Kikkert at 585-313-8160 and I will pass the information along to Lynn.

More days of hot temperatures stressing beans this week. Our area continues to be dry overall, with most of the area classified as D0 Abnormally Dry and a swath through Erie, Genesee, Wyoming and Livingston classified as D1 Moderate Drought <a href="https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?NY">https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?NY</a> Despite the weather stress, some plantings have done well if they caught enough moisture at the right time. Other fields are being irrigated as infrastructure allows. – JK

#### **SQUASH AND PUMPKINS**

This time of the season the pumpkins and winter squash should be vining out and fruit should be setting. What we have been seeing in far too many plantings are vines wilting down. There are several causes for this wilt. Late Blight Risk Chart, 8/3/22

Location	Blight Units 7/27-8/21	Blight Units 8/3-8/5 <sup>2</sup>
Albion	10	22
Arkport	16	28
Baldwinsville	11	16
Bergen	10	16
Brant	23	34
Buffalo	21	34
Burt	-	-
Ceres	30	41
Dansville	23	36
Elba	16	29
Fairville	12	23
Farmington	17	28
Fulton	33	44
Geneva	0	6
Hammondsport	0	10
Knowlesville	16	28
Lyndonville	26	38
Medina	41	53
Niagara Falls	29	45
Penn Yan	11	23
Rochester	33	46
Sodus	23	35
Versailles	37	49
Wellsville	25	43
Williamson	0	7

Calculated using a May 26 crop emergence date, last fungicide application July 27, 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)

• **Squash vine borer** – Eggs laid on stem crown hatch and quickly burrow into the stem. Feeding internally, eventually their size and damage done reduces the ability of the vines to access water/nutrients from the roots.

continued on page 9

- **Bacterial wilt** spread by earlier feeding by cucumber beetles can affect pumpkins and winter squash though we commonly see damage in cucumber and melons.
- Insufficient available water has been responsible for many of the problems seen this season. When the plants were smaller, not enough rain or irrigation restricted the development of a large root system. Now that the vines are large and fruit loads are beginning to develop, wilting occurs during the heat of the day and prolonged dry conditions. The plants just don't have the root capacity to support the size of the vines and nutritional needs of the plant/fruit.

![](_page_8_Picture_3.jpeg)

![](_page_8_Picture_4.jpeg)

![](_page_8_Picture_5.jpeg)

**Signs of bacterial wilt.** The vines exhibit wilted leaves but leaf stems can remain upright while the leaf tissue browns out between the main leaf veins. The tissue continues to breakdown, leaving the stems standing and the leaf midveins which resembles a claw. Early management of cucumber beetles is the only solution to prevent this midsummer wilt from showing up. *Photo: Robert Hadad, CCE CVP* 

![](_page_8_Figure_7.jpeg)

**Insufficient water led to a poorly developed root system.** This is a very small set of roots relative to the size of the plant which is quite long and vining. An insufficient root system is reducing the plant's ability to survive and produce large fruit. With the extreme weather conditions that seem to be the norm, it is too risky not to have a proper irrigation system set up to provide water several times a week. Irrigation should start when the plants are small to help build out the root system and during periods of little rain, irrigation should be run several times a week *Photo: Robert Hadad, CCE CVP* 

#### **SWEET CORN**

*From Mike Stanyard, CCE NWNY Dairy, Livestock, and Field Crops Team Crop Alert 7/28/22:* "We have been getting plenty of questions about the status of <u>Tar Spot</u> in our area. Remember, it was identified late last year in two fields in Erie County. This week we met with Gary Bergstrom and the grower in Erie County at those exact field locations where it was found. The first was in soybean this year and the other was corn again. We searched corn plants in and around those fields and found no sign of tar spot ...... yet. It has been dry there like most of the state. The inoculum is probably present but the weather conditions just are not conducive for the disease. **However, we should be continuing to scout!** In fact, other leaf diseases like gray leaf spot and Northern corn leaf blight have not shown themselves yet. The <u>weekly track of tar spot across the U.S.</u> can be found on the Corn IMP PIPE website. There is not much tar spot activity around us yet. Nothing in Ohio or Ontario but it was identified in Lancaster, PA this week." – JK

#### TOMATOES

With the return of periodic rain showers, early blight is beginning to show in some plantings. Of much greater concern are the cases of bacterial canker that have turned up lately. Canker is serious and should be treated with intention and intensity. Cleaning an infection from a farm requires more effort than just applying copper +/- mancozeb. Key first step is isolating the affected field. Second step is ascertaining the likely source of the outbreak. Blossom end rot is unsurprising given the dry conditions to date – insufficient and inconsistent water availability both can causes blossom end rot. – EB

#### Organic Cucurbit Research at Cornell AgriTech August 9, 2022 (Tuesday) | 2:00 pm - 4:00 pm rain or shine Gates Farm West, 3352 Gates Rd, Geneva, NY 14456

This field day will showcase two experiments: 1) a full-season row cover (mesotunnels) for pest and disease exclusion, and 2) a comparison of mulches, cultivation, and rolled cover crops on weeds, pests, diseases, and yield (check out their website <u>Organic Squash Systems Trial - Cornell blogs</u>). Refreshments and snacks will be provided. This event is free to attend, but **please** <u>pre-register</u> at https://cornell.ca1.qualtrics.com/jfe/form/SV\_d5Sp70cxxiaCdJs. For more information, contact Bryan Brown at (315) 787-2432, <u>bjb342@cornell.edu</u>

#### Hemp Field Day August 11, 2022 (Thursday) Cornell AgriTech, 216 Jordan Hall, 630 W North St, Geneva, NY 14456

The Cornell Hemp Field Day will incorporate interactive workshop-style talks on several topics including hemp genetics and breeding, pest management, and grain and fiber production. It will also involve demonstrations of combine harvesting and baling. DEC credits are available. Digital ag applications and an introduction of the USDA hemp germplasm repository will also be included.

Sessions: Laws and regulations regarding adult-use *Cannabis* and cannabinoid hemp, performance of hemp fiber and grain varieties, high tunnel biocontrol, and more. Workshops will demonstrate pest management and disease management in hemp cultivated both outdoors and indoors in high tunnels. A hands-on demonstration of weed, insect and disease identification in hemp including management options will be used to educate growers.

![](_page_9_Picture_6.jpeg)

The annual Cornell Hemp Field day is August 11 in Geneva. Register online ASAP. *Photo: Judson Reid, CCE* 

Registration fee: \$25. (Lunch is included in the registration fee.) **Pre-registration is required.** Register online. For additional information about the field day, contact Gemma Osborne: gro2@cornell.edu.

#### **Genesee Region Vegetable Meeting**

August 17, 2022 (Wednesday) | 5:00 pm - 7:45 pm meet at 2889 Pratt Rd, Batavia, NY 14020

Join us for an evening packed with information! View the potato variety trial (26 varieties including some specialty varieties) and see a live laser scarecrow demo. We'll troubleshoot carrot production challenges. Learn about seed production as crop diversification. And experts will discuss managing bacterial diseases in tomatoes, and vine crops pests and disease management. 2.0 DEC (categories 1a, 10, 23) and 0.25 DEC (category 4 - seed treatment) recertification credits will be offered. **RSVP by noon on Tuesday, August 16** to Elizabeth Buck at 585-406-3419.

#### **Produce Industry Virtual Office Hours**

August 23, 2022 (Tuesday) | 12:00 pm - 1:00 pm | online - register to receive the link

Anyone in the food industry, from farm to fork, is invited to participate in this special session brought to you by the Produce Safety Alliance. The focus will be on three topics impacting fruit and vegetable growers: 1) the proposed changes to the FSMA Produce Safety Rule Agricultural Water requirements; 2) impacts to food safety as a result of soil amendment and fertilizer supplies; and 3) new traceability resources from the New York State Produce Traceability Blue Ribbon Task Force. Following a short presentation, a panel of experts from the Produce Safety Alliance will address your questions during a moderated Q & A. FREE to attend! Registration required.

#### **Chipping Potato Twilight Meeting**

August 25, 2022 (Thursday) | 5:00 pm - 6:30 pm, dinner to follow Mahany Farms, 10046 NY-36, Dansville, NY 14437

View the chipping potato variety trial and hear updates from Walter De Jong of Cornell! Mike Mager of Arctic Refrigeration will provide updates in potato storage. Brian Nault, Cornell, and Margie Lund, CCE, will talk about insecticidal rotations for Colorado potato beetle and other potato insect updates. 1.0 DEC (categories 1a, 10, 23) recertification credits are available. For more information, contact Margie Lund at 607-377-9109, mel296@cornell.edu.

## NY Sweet Corn Trap Report, 8/2/22

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

According to the Hanson model, about 70% of WBC flight has occurred at most sites. Check the <u>NEWA Western Bean Cutworm Flight</u> <u>Emergence Table</u> to see where the site closest to you is for WBC flight emergence. WBC are most attracted to pretassel corn. Make sure to scout all pretassel fields for egg masses and larvae. After the eggs hatch, larvae will first feed in the tassel before making their way to the ears where they will be protected form sprays.

![](_page_10_Picture_3.jpeg)

![](_page_10_Picture_4.jpeg)

![](_page_10_Picture_5.jpeg)

WBC egg mass. Eggs turn from white to tan to dark purple as they age.

WBC larvae just after hatching. *Photo: Tom Cowan* 

Later instar WBC larva, note the two dark bands behind the head capsule. *Photo: Frank Peairs, Colorado State University* 

Average Corn Earworm Catch			
Per Day	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 80F for the previous 2-3 days.

#### WNY Pheromone Trap Catches: August 2, 2022

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	1	2	NA	1	0	27	2862
Bellona (Yates)	0	0	0	0	62	165	2931
Collins (Erie)	0	0	NA	2	0	0	2728
Eden (Erie)	0	0	NA	35	24	13	2849
Farmington (Ontario)	0	0	NA	2	0	1	2930
Geneva (Ontario)	1	0	1	10	4	1	2900
Hamlin (Monroe)	1	0	NA	2	0	3	2808
Leroy (Genesee)	0	1	NA	2	0	13	2849
Lyndonville (Orleans)	2	0	NA	0	0	49	2782
Oswego (Oswego)	0	0	NA	0	0	90	2647
Panama (Chautauqua)	0	0	NA	5	0	13	2527
Penn Yan (Yates)	NA	0	0	6	0	5	2857
Portville (Cattaraugus)	25	0	NA	2	2	17	2537
Ransomville (Niagara)	0	0	NA	4	1	1	2874
Seneca Castle (Ontario)	0	0	0	0	1	3	2845
Williamson (Wayne)	0	0	NA	6	0	68	2648

ECB: European Corri Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm; DD: Degree Days; NA: not available; DD: Degree Day based on accumulation starting March 1 (base 38F) for WBC emergence

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## **Cornell Cooperative Extension** Cornell Vegetable Program

480 North Main Street Canandaigua, NY 14424

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![](_page_11_Picture_3.jpeg)

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

For more information about our program, email cce-cvp@cornell.edu or visit CVP.CCE.CORNELL.EDU

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