

infection in onion.

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Heat waves can be hard on tomatoes. Here are a few things you can do to help your plants



Downy mildew is now confirmed in NYS. Now is the time to use curative materials (tank mixed with



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Here are tips for harvest and postharvest handling for best onion quality.

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Cornell Cooperative Extension Cornell Vegetable Program

The Rot Race: Trying to Avoid Bacterial Bulb Rot in Onion at Harvest

Christy Hoepting, CCE Cornell Vegetable Program

Most of the bacterial diseases that cause bulb rot in onion infect the inner green leaf/leaves of an onion plant and then move down through the neck and into the corresponding scale. Sometimes this is referred to as "center rot" or "ring rot". It is uncertain exactly when onion plants become infected with bacterial disease, but leaf symptoms typically first start to appear after bulbing and gradually increase until harvest. However, some bacterial pathogens do cause leaf symptoms and finding rotten bulbs after harvest may be an unpleasant surprise. Most easily recognizable above-ground symptoms of bacterial disease infection are when one or two middle-aged leaves collapse with a bleached appearance (Fig. 1). Very early symptoms are subtle white lesions, but eventually, the whole plant will collapse (Fig. 2). Bacterial diseases are thought to infect and spread in green leaf tissue, while infection and movement is halted in necrotic or dry tissue. In general, hot temperatures and moist conditions favor bacterial diseases.



Figure 1. Onion plant infected with bacterial disease exhibits leaf collapse of the middle-aged leaves with a bleached appearance (left), which eventually moves through the neck tissue into the corresponding bulb scale, causing center or ring rot (right). *Photos: C. Hoepting*



VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension regional agriculture team, serving 13 counties in Western New York.

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

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The next issue of VegEdge will be August 15, 2018.

New York State Agricultural Experiment Station has Changed its Name to Cornell AgriTech

Dr. Jan Nyrop, Associate Dean, CALS & Director of Cornell AgriTech

Today the New York State Agricultural Experiment Station is embarking on an exciting journey under the new

name, **Cornell AgriTech.** Agriculture and food are multi-billion-dollar industries for the New York state economy, underscor-



ing the value of clarifying to our stakeholders our identity, purpose and collaboration potential. Cornell AgriTech's expertise, research, education and extension efforts contribute to the growth of agriculture and food industries in New York state.

The name Cornell AgriTech solidifies the vital connection we have with Cornell University, the Cornell College of Agriculture and Life Sciences and our purpose driven connection to food and agricultural science. Through our new name, we are committed to furthering over one hundred and thirty years of scientific discovery and innovation that deliver practical solutions for farmers and businesses.

New techniques and new technologies are critical to the advancement of food and agriculture industries and Cornell AgriTech is at the forefront of these innovations. Cornell AgriTech is reimaging the future of food and agriculture systems through interdisciplinary collaborations and by educating the best up-and-coming minds in our fields, so that they can lead the next wave of breakthroughs.

We are propelling our new name and identity to continue growing a healthier population, economy and environment for NY state and the world. I invite you to grow with us.



Figure 2. Visual rating scale for progression of bacterial disease of onion. 0 = no lesion, asymptomatic; 1 = Local lesion (half inch); 2 = Expanded lesion but less than $\frac{1}{4}$ leaf; 3 = $\frac{1}{2}$ of leaf chlorotic or bleached; 4 = Entire leaf is bleached and wilting; 5 = One entire leaf and a portion of another leaf are bleached and wilted; 6 = multiple fully symptomatic leaves; and 7 = \ge 50% of leaves bleached and collapsed. *Photos: Gugino and Pfeufer, Penn State.*

Therefore, wet summers and irrigated onions tend to have higher incidence of bacterial bulb rot than dry summers and non-irrigated onions, and onions grown on black plastic tend to have more bulb rot than onions grown on reflective silver plastic. Also, sweet onions tend to be more prone to bacterial bulb rot than all other types of onion.

As harvest approaches, spread of bacterial disease within infected onion plants are at various stages. Often, in a plant exhibiting leaf symptoms, the infection has not yet entered into the bulb. Or, the bacterial infection could have already made its way through the neck and into the bulb (Fig. 3). There is the temptation to pull onions on the early side (e.g. with less than 50% lodging and more than 50% green leaves), and save them from rot by essentially cutting off the bacterial infection when the onions are topped. There are a couple of problems with this. First, new bacterial infections may occur during this process when clippers may become contaminated from infected plants during topping and then infect the green neck tissue of healthy bulbs, especially when the neck is cut very close to the bulb. Or, new bacterial infections could be introduced when soil contaminated with bacteria comes in contact with fresh cut neck tissue. Second, early topping is at the expense of maximum yield, which increases 25 to 33% after lodging as the contents of the leaves are translocated into the bulbs (big tops = big bulbs). However, there is some merit to this strategy. In fact, research at Penn State suggests to harvest onions when majority of leaf symptoms range from 3 to 4 (= plants showing 1-2 collapsed leaves) (Fig. 2) in order to hit the "sweet spot" between reduced bulb rot and loss of yield potential from early harvest.

The race becomes getting the neck tissue to dry down in order to stop the bacterial infection before it gets into the bulb. The key to achieve this is by quick drying, which requires good air circulation while avoiding temperatures greater than 85°F – see article for harvest tips for best onion quality, page 6. If you are moving onions out of the field, perhaps you could leave 6-8 inches of neck when topping in order to decrease the amount of leaf tissue that needs to be dried down (we've had success with this technique in garlic) (Fig. 4).



Figure 4. If onions are moved out of the field for drying, to increase rate of drying and to avoid hauling all those extra leaves, perhaps onion plants could be topped at 6-8 inches (left). When topping, leaving 2-3 inch neck (middle) is safer than less neck (right), because it buys time for neck tissue to dry completely before bacterial infection enters into the bulb. Note, these onions should not have been topped while the neck tissue was still green. *Photo: C. Hoepting, CVP*



Figure 3. An onion plant exhibiting above-ground leaf symptoms of bacterial infection (slimy wet leaf at leaf axil indicated by blue arrow) (a) may have internal bacterial infection (yellow arrows) to varying degrees: infection higher up in neck tissue and not yet entered into bulb (b), infection just about to enter bulb from neck (c), or already entered bulb (d and e). *Photos: C. Hoepting, CVP*

Heat Stress on Tomatoes

Caitlin Vore and Judson Reid, CCE Cornell Vegetable Program

It's important to remember that heat waves can be very hard on tomatoes. Tomato pollination and fruit set are dependent upon temperature and humidity. Pollination typically occurs between the hours of 10:00 AM- 4:00 PM – in other words, in the heat of the day. When daytime temperatures rise above 85°F or nighttime temperatures rise above 75°F, pollen may become sterile, flowers will drop, and you'll being to see issues with ripening. Even if your plants are well watered, you may notice reduced plant size, leaf roll, or gaps in fruit set. At this point plants are simply trying to survive and can't spare additional resources to produce fruit.

Excess heat can also cause issues with fruit ripening. Some fruits may have sunscald- a blistered, watersoaked appearance from intense sunlight. Furthermore, at very high temperatures, plants are unable to produce red pigment and you may see some "yellow shouldering" on some fruits. If tem-



Yellow shoulder can increase under high temperatures. *Photo: J. Reid, CVP*

peratures exceed 110°F it is possible to kill foliage, including the growing points. Although the plant may survive, the dead foliage becomes prime tissue for Gray Mold infections.



Excessive heat has killed the growing point on this high tunnel tomato plant. Photo: J. Reid, CVP

Oftentimes with heat stress, you'll begin to notice some water stress symptoms as well. If you begin to notice a lot of blossom end rot, it's important to remember you may not have a calcium deficiency in the soil, but rather a calcium <u>uptake</u> issue due to infrequent or insufficient water. CVP research indicates that higher soil calcium levels do not contribute to higher plant tissue levels of calcium.



Blossom end rot on tomatoes. Photo: J. Reid

Even if you can't change the external thermostat, there are a few things you can do to help your plants through a heat wave.

- 1) Consistent watering, timed prior the onset of heat; midmorning.
- 2) Maintain good foliage with fertilization so fruits aren't exposed to direct sunlight.
- Pick fruit that's begun to ripen early and allow to continue ripening in a packing area to reduce stress on the plants.
- 4) Keep a close eye on pests and diseases. Plants can be more susceptible when already stressed, and diseases and pests can spread rapidly under higher humidity and warmer temperatures.
- 5) Consider shade cloth if growing indeterminate plants that are in the upper (hotter) reaches of a greenhouse.
- 6) Invest in a thermometer to more accurately monitor the temperature inside your tunnels.
- 7) Ventilation must be adequate for any greenhouse or tunnel. This means either roll-up sides equivalent to 1/3 of the growing square footage, and/or fans with sufficient CFM ratings to complete regular air exchanges to keep temperatures at outside levels.

As long as your plants are able to survive the heat wave, pollination, and fruit set will hopefully start back up again once the temperatures have dropped!

Downy Mildew Here, Now

Judson Reid, CCE Cornell Vegetable Program

Downy mildew is now confirmed in NYS. A cucumber planting in Tompkins County was reported with infection on 8/6. Further reports come from PA, NJ and MI. It is now time to use curative materials (tank mixed with protectants). See Table 1 (next page) for curative options. We strongly encourage rotation among FRAC groups (mode of action) for efficacy and to prevent resistance. Protectants include copper (M1), chlorothalonil (M5) and mancozeb (M3). This table is not a substitute for reading the label.

Table 1. Curative options for downy mildew

Material	FRAC Group	Rate per acre	REI	PHI	Seasonal limit
Ranman	21	2.75 fl oz (2.1-2.75)	12 h	0 d	6 sprays
Zampro 40 + 45 14 fl oz 12 h 0 d		3 sprays			
Forum	Forum 40 6 fl oz 12 h 0 d 5 sprays		5 sprays		
Revus 40 8 f		8 fl oz	12 h	0 d	4 sprays (32 fl oz)
Phostrol, etc.	33	2.5 – 5 pt	4 h	0 d	7 sprays
Presidio	43	4 fl oz (3 – 4)	12 h	2 d	4 sprays (12 fl oz)
Tanos	27 + 11	8 oz	12 h	3 d	4 sprays
Zing!	22 + M3	36 fl oz	12 h	0 d	8 sprays
Curzate	27	3.2 oz	12 h	3 d	9 sprays
Previcur Flex	28	1.2 pt	12 h	2 d	6 pints
Orondus Opti	U15	2-4.8 fl oz	4 h	0 d	no more than 1/3 of total foliar fungicide applications; 6 sprays (19.2 fl oz) 0

WNY Sweet Corn Trap Network Report, 8/7/18

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

Thirty-four of 38 sites reported this week. European corn borer (ECB)-E was caught at 13 sites and ECB-Z was caught at 9 sites. Corn earworm was caught at 20 sites with 11 sites high enough to be on a 4, 5, or 6 day spray schedule (see table below). Fall armyworm (FAW) was caught at 17 sites and Western bean cutworm (WBC) was caught at 27 sites.

Where CEW are being caught in high enough numbers to determine the spray schedule (see the chart below), those applications will be sufficient to take care of other worm pests that are present. Where CEW are not determining the spray schedule, scout to be sure other pests are not above threshold.

The average degree days for the trap sites is 1746 base 50

Average corn	earworm c	atch and	recommended	snrav	/ interval
Average com	carwonnic	attinanu	recommended	spia	millervar

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.

Late Blight Risk Update

John Gibbons, CCE Cornell Vegetable Program

See the table for the Blight Units (BU) accumulation from around the region. The trigger in the Decision Support System (DSS) forecast for applying a fungicide is <u>30 BU's</u> if the variety is susceptible. This week all stations, except Volney, reached the 30 BU's needed to trigger a spray by the end of the forecast period on 8/10. All tomato and potato growers, conventional and organic, should be applying a protectant fungicides and monitoring the DSS to determine spray intervals.

There have been no new late blight occurrences but the weather has become more favorable for late blight development. Just because late blight has not been reported, it does not mean that it is not present somewhere. Scout fields twice a week and monitor them closely. With the weather change to frequent rains in some areas, new finds will probably start trickling in. You can monitor late blight development at the following web address: <u>https://usablight.org/map</u>.

(starting May 1), so the majority of WBC moths should have emerged according to the Univ. of Nebraska model. It appears that WBC peaked last week and started to decline this week.

WNY Pheromone Trap Catches: August 7, 2018

Location	ECB-E	ECB-Z	CEW	FAW	WBC	DD to Date
Baldwinsville (Onondaga)	0	0	19	5	47	1806
Batavia (Genesee)	12	0	3	1	9	1797
Bellona (Yates)	1	1	8	4	31	1852
Eden (Erie)	0	0	2	0	16	1734
Farmington (Ontario)	0	0	1	2	4	1716
Geneva (Ontario)	1	2	3	1	2	1795
Hamlin (Monroe)	NA	NA	NA	NA	NA	1685
Kennedy (Chautauqua)	0	1	0	8	4	1563
Pavilion	0	0	10	70	58	1446
Penn Yan (Yates)	0	0	0	30	17	1827
Ransomville (Niagara)	NA	NA	NA	NA	29	1848
Seneca Castle (Ontario)	0	0	1	4	2	1737
Williamson (Wayne)	0	0	0	0	0	1633
ECB - European Corn Borer WBC - Western Bean Cutworm						

CEW - Corn Earworm NA -FAW - Fall Armyworm DD -

not available

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

Late Blight Risk Chart, 8/08/18

Location ¹	Blight Units ¹ 8/01-8/07	Blight Units ² 8/08-8/10	Location ¹	Blight Units ¹ 8/01-8/07	Blight Units ² 8/08-8/10
Albion	43	20	Lodi	NA	NA
Baldwinsville	33	21	Lyndonville	12	21
Bergen	17	20	Medina	23	20
Buffalo	25	18	Niagara Falls	31	21
Ceres	33	21	Penn Yan	38	18
Elba	17	21	Rochester	27	21
Fairville	22	21	Sodus	42	21
Farmington	40	21	Versailles	21	21
Gainesville	NA	NA	Volney	7	21
Geneva	12	21	Wellsville	40	21
Kendall	13	21	Williamson	29	19
Knowlesville	12	20			

¹ Past week Simcast Blight Units (BU)

² Three day predicted Simcast Blight Units (BUs)

Harvest and Post-Harvest Tips for Best Onion Quality

Christy Hoepting, CCE Cornell Vegetable Program

As a general rule of thumb, cool and wet growing seasons result in higher yields and bigger bulbs that tend to be of lesser quality mostly due to various bulb rot problems. Moderate seasons are favorable for onion growth, but ample rainfall and cooler temperatures also tend to favor leaf and bacterial diseases. Hot and dry growing seasons tend to result in smaller bulb size, but of very good quality. When onions are intended for storage, best management practices should be followed throughout harvest, curing and storage to ensure best bulb quality.

When are onions ready to pull?

- As onions mature, their dry matter content and pungency increase, with a resulting increase in storage potential. Storage-bound onions are ready for harvest when at least half the leaves are dead.
- If you wait until all the leaves are dead and dry, it's likely that the outer skins will be loose and easily sloughed off. This may not hurt the keeping quality, but the onions will not look as nice.
- Pulling too green will make it difficult to cure them well.
- Tug on the plant to see how easily the bulb comes out of the ground:
 - if it comes right out, go ahead and pull them;
 - if the roots are still holding on, this is an indication that the roots are still functioning and you can leave them in to size up a little bit longer.
 - After lodging, bulb size increases an additional 25 to 33%.
- Ideally, onions should not be pulled until at least 50% of the plants have lodged.

Pulling Onions

- Onions are pulled out of the ground either by hand or with equipment such as a potato digger or undercutter to cut the roots and lift the bulbs.
- If onions are dying standing up due to excessive leaf dieback caused by disease or other stress, and they are not lodging (Fig. 1), they should be pulled and note that it may take a bit longer for the necks to dry on these onions.



Figure 1. Left: Properly lodged onions, which may be pulled when half of the leaves are dead. Right: Onions dying standing up due to excessive leaf dieback. *Photos: C. Hoepting, CVP*

Harvest when weather is dry and not too hot!

- Conduct harvest practices when the weather is dry.
- Ideally, onions should not be handled when wet to prevent skin quality issues from Brown Stain, caused by *Botrytis cinerea*. When wet harvested onions are placed into boxes, it takes longer for them to cure properly, and the added moisture can stimulate disease development and rooting, which in turn will stimulate sprouting.
- Do not harvest onions when conditions reach 90°F and 90% relative humidity, because black mold could develop. Harvest dry onions during the cooler part of the day as long as they are not wet from dew or rain or wait until a cooler day.
- Avoid bruising during harvest procedures. Bruises provide direct entry points for diseases to get started.
 - Reduce drops to 6" and pad sharp surfaces.
 - On mechanical harvesters, minimize mechanical injury during harvesting by adjusting the chain speed to make sure the chain is always full. This will help reduce rolling and bumping of the bulbs.

Drying and curing

- For optimum storage quality, onions must be cured soon after harvest. Curing decreases the incidence of neck rot and bacterial diseases, reduces water loss during storage and is desirable for development of good scale color. **Optimum conditions are 68-86°F and 70% relative humidity for at least 12 to 24 h.**
- Onions can be left in the field to dry.
- Be aware that onions can get sunscald when the temperatures are in the 90s, especially if the relative humidity is high and onions are pulled on the green side.
 - A common technique used for field drying is to orient the pulled onions so that the leaves lay over top of the bulbs (Fig. 2).
 - Some growers move the pulled onions with the tops on into a greenhouse or high tunnel to dry. Temperatures should be held below 85 °F, which will probably require leaving everything wide open. Black shade curtain/cloth over the house can also help to moderate temperature. Ensure good air movement (Fig. 3).
- **Temperature** artificial curing can be done with outside air, which is heated to approximately 77°F or 3-5 °F above the ambient air temperature.
 - Higher temperatures, up to 90°F can be used if onions are of high quality with several layers of good skins. Higher temperatures are favorable for continued on pert page

development of bacterial diseases. Black mold is more likely to develop when temperatures exceed 82°F.

- A lower temperature, down to 68°F should be used if onions are poorly skinned, have been touched by frost or have bacterial diseases. Best skin color develops at 75-90°F.
- **Relative humidity (RH)** should not fall below 65% or exceed 80%. RH going into the boxes should ideally be 50% and less than 100% coming out.
- **Airflow** ideally should be no less than 3 cubic feet per minute per cubic foot of product. Be aware that when bulb size is down, air circulation through the boxes is reduced (onions pack tighter with smaller air spaces in between).

Topping

- Onions should only be topped when the neck is dry and has no more green tissue (e.g. the tissue does not slide when you roll the neck between your fingers) (Fig. 4).
- Bacterial diseases, Botrytis neck rot and black mold can enter into and move through green tissue into the bulbs. These diseases do not infect or move in dry tissue.
- Leave 2-3 inches of neck on the bulb (Fig. 4). This increases the distance from the cut surface to the bulb for fungal and bacterial pathogens to travel. If the neck dries down before the disease gets to the bulb, the bulb should be sound in storage.

Onion Storage

- To ensure maximum storage life, onions should be stored after curing (Fig. 5). The optimum temperature for long-term storage of onions is 32°F with 65-70% relative humidity.
- It is important to bring them down to this temperature slowly. Holding onions in a barn or garage so that they cool along with the average outdoor temperature in late summer and fall works quite well. If you are selling them within a couple of months, keeping them in an un-insulated barn is fine. An insulated storage room is needed for longer storage.



Figure 2. When harvesting onions on the green side, especially during high temperatures when there is bright sunlight...Don't leave the bulbs exposed to direct sunlight or they may get sunscald (left). Do orient the pulled onions so that the leaves cover the bulbs (right) to prevent sunscald. *Photo: C. Hoepting, CVP*

- Protect cured onions from direct sunlight; exposure to light after curing will induce greening of the outer scales.
- Damaged or rotten bulbs should be graded out before putting them into storage. Damaged bulbs give off moisture, which is favorable for development of diseases in storage. Rotten bulbs can ooze onto healthy bulbs and stain them.



Figure 3. Onions drying in a high tunnel covered with shade cloth. Onions were pulled and placed with their leaves intact on benches with a lot of air circulation. Ideally, temperatures should not exceed 85°F. *Photo: C. Hoepting, CVP*



Figure 4. Onions should only be topped when neck tissue is completely dry (back row). When onions are topped when neck tissue is green (front row), disease pathogens may enter and later infect the bulb. Disease pathogens do not infect or spread in dry neck tissue. *Photo: C. Hoepting, CVP*



Figure 5. Various small-scale onion stores. The optimum temperature for long-term storage of onions is 32°F with 65-70% relative humidity and regular air circulation. *Photo: Tiemo*



Start thinking about what cover crops you want to use this fall. It isn't too early - tillage radish planting starts now and runs through the end of the month. – *EB*

Cooler night temperatures have begun and dew is lasting longer keeping leaves wet. More **leaf diseases** are starting to show up and more expected. Vine crops, brassicas, and tomato need to be on a tighter protective spray schedule. -RH

Slugs are appearing in droves in a number of areas especially where there has been more rain. Peppers, tomatoes, brassicas and greens are being damaged. – *RH*

BEETS

Weather conditions have been favorable for leaf diseases. Two fact sheets (Cercospora leaf spot and Phoma leaf spot) are available online at http://evade.pppmb.cals.cornell.edu/factsheets. – JK

COLE CROPS

Spotted some alternaria on Tuesday in kale and Brussel sprouts. - EB

CUCURBITS (CUCUMBERS, MELONS, and OTHER VINE CROPS)

Downy Mildew is now confirmed in NYS. A cucumber planting in Tompkins County was reported with infection on 8/6. Further reports come from PA, NJ and MI. It is now time to use curative materials (tank mixed with protectants). See article, page 4. – *JR*

Squash bugs are hatching in unmanaged squash plantings. Winter squash and pumpkins need good leaf canopy to protect fruit from sun scald and also for the production of larger fruit. Squash bugs can greatly reduce the leaf canopies in short order. – *RH*

The weather conditions are also favoring aphid infestation. A problem can blow up fairly quickly within dense canopies of tomato or winter squash/pumpkins. Mow down weeds along the field edges and in alley ways to allow for better access with spray equipment. Better air movement will also help with drying of leaves to try to reduce disease issues. – *RH*

DRY BEANS

From M. Zuefle, NYS IPM: Western bean cutworm (WBC) moths have reached the 100 cumulative moths/trap threshold at 8 of the 10 dry bean sites that we are monitoring this year. The two sites that have not reached threshold also have not reported trap catches, so they could also be at threshold. Once numbers are received they will be updated on the sweet corn blog (http://blogs.cornell.edu/

scptnetwork/). The threshold indicates that nearby corn should be scouted for egg masses and larvae. Peak WBC emergence occurred for

several sites over the last two weeks (peak week indicated in yellow in table below). Dry bean pod scouting should begin 7-10 days after peak emergence, in those fields which have accumulated over 100-150 moths/ trap, near fields with high trap counts, or where WBC has been found in bean pods/seeds in recent years.

WBC eggs, laid shortly after moth emergence, take 5-7 days to hatch. Pod feeding typically begins 10 days after peak moth catch. Early feeding by small larvae is generally minor and does not go into the pod. Growers in areas of concern should scout bean pin pods and larger pods for damage/ feeding holes. Check 10 spots in a field, 5 plants per spot. WBC larvae hide in the soil during the day and won't be seen on beans. If you find larvae in the pods during the day they are most likely European corn borer.

LOCATION	7/17/18	7/24/18	7/31/18	8/7/18	TOTAL
ATTICA	32	105	154	57	354
AVOCA 1	2	37	NA	NA	39
AVOCA 2	30	101	NA	NA	133
S. CALEDONIA	6	30	59	35	130
CHILI	8	54	81	51	195
GENEVA	4	24	41	31	100
GROVELAND	5	76	110	161	352
RIGA	54	146	71	121	397
STAFFORD	8	83	80	70	242
WAYLAND	3	11	NA	NA	16

ONIONS

The crop received much needed rain this week as adequate moisture is most critical during bulbing. Nonetheless, it has been a hot growing season and irrigation cannot prevent heat units from wracking up. When the crop is done, it is done and many fields are finishing earlier than last year. However, last year did offer almost perfect conditions for growing onions and one of New York's best crops ever. As usual in a hot and dry year, size/ yield is expected to be down. Ideally, we like to see onions lodge when the leaves are healthy all the way to the tip (Fig. 1), but with the heat stress, tipburn is setting in and Stemphylium leaf blight (SLB) is settling in along the necrotic tips and out leaves that are dying back (Fig. 2). Unfortunately, root health has also really deteriorated over the past couple of weeks, especially in red varieties (Fig. 3), which is also contributing to tipburn and excessive leaf dieback. Similarly, incidence of Fusarium basal rot (Fig. 4) and Iris yellow spot virus has also increased.



Figure 1. The goal is always to keep onion foliage healthy so that plants still have mostly green tips when they lodge. This ensures maximum potential for largest bulb size. Healthy tops = big bulbs. So far, the early fields have been finishing like this.

It is okay and normal to have SLB, even 100% of plants may be infected in a field. We just do not want SLB to cause excessive leaf dieback and certainly not to the extent where plants die standing up. For best SLB resistance management, we are trying to not use more than 3 apps per FRAC 2, 3, 7 and 9. This is based on last year's finding that we lost boscalid (FRAC 7 in Endura and Pristine) and FRAC 9's (e.g. Scala) are on their way out. See SLB article in July 5th issue of VegEdge for more info on SLB fungicide resistance. Note, that this is more strict than label restrictions for resistance management. So far this year, successful fungicide programs have been implemented that have not exceeded more than 3 apps per FRAC in some fields. However, in fields that require longer spray programs, more

continued on next page

continued – CROP Insights



Fig. 2. During onion bulbing, tipburn sets in, creating necrotic tissue, which is readily invaded by Stemphylium leaf blight (tan/brown/black spots highlighted in yellow) at this time of year. *Photo: C. Hoepting*



Fig. 3. Poor root health is contributing to tipburn and excessive leaf dieback in onion. Pink root especially targets plants under stress. In this bulb, all but one root are dead. *Photo: C. Hoepting.*



Fig. 4. Excessive leaf dieback (top left) is an indication of Fusarium basal rot. When the plant is pulled, root growth is poor or gone and the basal plate shows signs of rot (top right). When the bulb is cut in half, the basal plates may exhibit a gray to brown discoloration (bottom). *Photos: C. Hoepting*

than 3 apps per FRAC will be needed to finish the season. If possible, rotate sub-classes of FRAC 7s. The FRAC 7s in Merivon and Luna Tranquility are different active ingredients that belong to different sub-classes within the FRAC 7 group and also from boscolid. This means that they have very slightly different modes of action. Theoretically, using two apps each of Merivon and Luna Tranquility is better for resistance management than using only three apps of either. Using more than three apps of FRAC 3s may also be of lower risk because absolutely no fungicide insensitivity has been detected in this FRAC group. Certainly, avoid more than three apps of FRAC 9 since 30% of SLB isolates were found to be insensitive to Scala. However, FRAC 9s (e.g. Scala) used in June for BLB control with Rovral were likely not exposed to much SLB at that time, so may not contribute much to SLB developing resistance then. Although all of this is theoretical, onion growers are doing their best to preserve the useful longevity of their most effective SLB fungicides.

Hope to see you at the following upcoming onion events:

Tuesday, August 14th – Extended Muck Donut Hour in Elba to feature tour of Cornell Onion thrips research trials with Brian Nault and Ashley Leach. Meet at the corner of Transit and Spoilbank in Elba Muck at 8:30 am. We will travel to trials after weekly onion scouting reports. All welcome.

Wednesday, August 22nd – Oswego Onion Growers Twilight Meeting. Featuring tour of fungicide trial for SLB and BLB (head to head comparisons of FRAC groups, alternatives to FRAC 3 and 7, reduced rates, programs), first look at 2018 onion thrips and onion maggot research trial results, and new seed treatment for onion smut control. Hosted by Joe Ferlito Farm, field side. Enter at 215 Dutch Ridge Road, Oswego, NY. Start gathering at 4:00 pm. Educational program from 4:30 pm to 6;30 pm. Free dinner at Vona's Restaurant (9 Willow Street, Oswego) at 7:00 pm. **RSVP for dinner reservations by Monday August 20th** to Kathy Stancampiano (<u>onionstan@aol.com</u> or call/text 315-591-3478) would be muck appreciated. 2.0 DEC and CCA credits will be available. – *CH*

PROCESSING CROPS

Sweet corn should be scouted for all four "worm" pests as all are active at this time (see trap report). Spider mites are being reported in the Northeast and Midwest on sweet corn and other crops in high populations in some fields. Gray leaf spot was reported on field corn in central New York this past week. Potato leaf hoppers (PLH) continue to be numerous. In conventional snap beans, Crusier seed treatment should protect the plants for roughly 30 days after planting. In general, Cruiser is working if you don't see the presence of PLH nymphs on the plants. Beans have an action threshold of one PLH nymph per trifoliate leaf or 100 adults per 20 sweeps. See the 2018 Cornell Guide-lines for product selection if a foliar application is needed. Soybean aphids are active in NY at this time, with some soybean fields over threshold levels. The concern is that the aphids can vector viruses in snap beans, although we've seen less virus issues in the past several years especially as more tolerant bean varieties are being grown. Snap beans coming into flower continue to be at risk for white mold, and a fungicide application at flowering may be warranted. – *JK*

SWEET CORN

Continuing to come across more cases of spidermites badly infesting sweet corn in areas where the weather has been very hot and dry. The rain received Tuesday will help knock them back. They can be treated with Agri-mek or Comite if you feel the population present in the husks is going to affect the marketability. -RH

TOMATO, PEPPER, EGGPLANT

When pepper plants tip over and expose the fruit, the peppers often develop sunscald. Consider picking the fruit green on colored varieties rather than losing the peppers that are now baking in the sun. Fruit on the shaded underside of the plant can be left to color up. This might be a good time to evaluate the benefit of staking. In some areas where the weather was quite dry peppers are missing a couple of fruit sets. -JR

The original very hungry caterpillar – tomato hornworm – quickly left behind this damage (photo). He has good company in his tomato eating endeavors – less voracious loopers are drilling into fruit after lightly sampling leaves.

Beginning to see some early blight taking off where protectant coverage had some gaps. - EB



Damage from tomato hornworms: frass, and chewed fruit. *Photo: E. Buck*



view all Cornell Vegetable Program upcoming events at CVP.CCE.CORNELL.EDU

Chautaugua Produce Auction Growers Meeting

August 14, 2018 | 6:30 PM Andy E. Yoder farm, 2051 Rt 62, Frewsburg, NY 14738



Urban Farm Twilight Meeting

August 22, 2018 | 6:00 PM - 8:00 PM GroundWork Market Garden, 1698 Genesee St, Buffalo, NY

The Cornell Vegetable Program and CCE Erie have been working together on an organic vegetable trial to monitor diseases. During this workshop, the audience will visit the on-farm research plots and explore the results collected from the trial. Participants will be guided by Judson Reid through a hands-on demonstration of how to scout for weeds, insects and diseases on urban farms. Participants will engage in peer-based learning. FREE to attend! Please RSVP to Megan Burley, Farm Business Management Educator, phone (716) 652-5400 x138 or email msb347@cornell.edu.

3rd Annual Vegetable Pest Management Field Day

August 23, 2018 | 4:00 PM - 7:00 PM

Cornell Lake Erie Research and Extension Lab, 6592 W Main Rd, Portland, NY 14769

Research trial results, cultural technique showcases, and effective varieties and treatments for organic and IPM production are the meeting focus. We will highlight current disease issues, their detection & spread based on this season's climate conditions, and management tools available to reduce yield impacts. Sessions will also be offered on pest identification and control options. Regional equipment dealers and industry representatives will be invited to display equipment and new technology. 2.25 DEC recertification credits will be available (categories 1a, 10 and 23). To see the full agenda, visit https://cvp.cce.cornell.edu/event.php?id=979 FREE to attend; preregistration requested! For more information, contact Elizabeth Buck at 585-406-3419.

Genesee Valley Produce Auction Growers Meeting

August 24, 2018 | 1:00 PM - 3:00 PM David Hostetler farm, 10228 Briar Hill Rd, Dalton, NY 14836

This course will demonstrate pest management in fresh market vegetables in both field and greenhouse (high tunnel) vegetables, primarily for those growing for wholesale auction. A crop walk will provide a hands-on demonstration of weed, insect and disease identification in vegetables including management options. FREE! Contact Judson Reid at 585-313-8912 for more info.

No-Till and Never-Till Soil Health Workshop

August 28, 2018 | 12:00 noon - 5:30 PM Branton Farm, 8538 Route 237, Stafford, NY 14143

The Western New York Soil Health Alliance will be holding a Soil Health Workshop on August 28, 2018 focusing on No-Till practices and benefits. Frank Gibbs, a certified Soil Scientist who formed a Wetland and Soil Consulting Service in 2012 after working for 36 years for USDA in Ohio will be digging underground to look at a section of field that has NEVER had any tillage and will compare it to an adjacent area with a history of tillage practices. James J Hoorman, a NRCS Soil Health Specialist for Ohio & Michigan, will be sharing information on the problem of slugs and voles in the higher residue farming practices. DEC and CCA credits will be offered. Pre-registration fee is \$15; \$25 at the door. Red Osier food truck will be onsite for purchase of roast beef sandwiches from 12:00-4:00 PM. For more information, visit http://www.wnysoilhealth.com and click on the Events tab.

Bejo Seeds Open House & Demonstration Trials 2018

August 28-29, 2018 | 10:00 AM - 6:00 PM

Bejo's Research & Demonstration Farm, 4188 Pre Emption Rd, Geneva, NY 14456

Experience the Home Market Garden and Organic variety exhibit. Experience our respect for the organic principles: health, sustainability and plant integrity. Taste the flavors and textures of Bejo varieties at our Food Sampling Concept Station. Explore the wide variety of quality vegetables at our Commercial Strip Trials. For questions, call Bejo Seeds (Geneva, NY) at 315-789-4155.









Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 7/31 - 8/06/18

	Rainfa	all (inch)	Temp (°F)		
Location**	Week	Month August	Мах	Min	
Albion	0.00	0.00	90	64	
Baldwinsville	1.53	1.53	90	65	
Bergen	0.28	0.27	91	57	
Buffalo*	0.04	0.04	86	63	
Burt	0.05	0.05	92	61	
Ceres	0.05	0.05	90	62	
Fairville	0.45	0.49	91	61	
Farmington	0.06	0.06	92	59	
Gainesville	0.00	0.00	85	58	
Geneva	0.22	0.22	89	64	
Lodi	NA	NA	92	63	
Niagara Falls*	0.00	0.00	90	64	
Ovid	0.13	0.13	91	63	
Penn Yan*	0.01	0.01	90	64	
Phelps	0.04	0.04	92	59	
Portland	0.10	0.10	85	66	
Rochester*	0.05	0.01	93	65	
Silver Creek	0.39	0.38	85	64	
Sodus	0.06	0.06	91	59	
Versailles	0.18	0.17	87	61	
Volney	0.91	0.88	91	63	
Williamson	0.09	0.03	90	61	

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - August 6, 2018

Location	2018	2017	2016
Albion	1836	1592	1726
Baldwinsville	1920	1706	1756
Bergen	1735	1535	1573
Buffalo	1907	1622	1760
Ceres	1597	1436	1370
Elba	1737	1530	1274
Fairville	1685	1512	1540
Farmington	1729	1503	1588
Gainesville	1450	1519	1287
Geneva	1771	1585	1638
Lodi	1910	1747	1812
Niagara Falls	1954	1786	1883
Ovid	1826	1680	1719
Penn Yan	1840	1691	1750
Phelps	1654	1595	1630
Portland	1808	1658	1640
Rochester	1957	1687	1787
Silver Creek	1703	1618	1592
Sodus	1671	1608	1496
Versailles	1747	1592	1549
Volney	1698	1499	NA
Williamson	1644	1542	1521

Airport stations Data from other station/airport sites is at: <u>http://newa.cornell.edu/</u> Weather Data, Daily Summary and Degree Days.





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Cornell Cooperative Extension Cornell Vegetable Program

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VegEdge is the award-winning 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 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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