Alternaria leaf spot will rot the heads of broccoli and cauliflower as well as Brussels sprouts. Learn how to manage this disease.

Bacterial bulb rot is a very serious disease of onion. Learn how cultural practices during harvest effect the incidence of bacterial bulb rot in storage.

Vegetable growers can get the best soil-health value out of a winter grain cover crop by planting early and terminating early. Plant now!

Spotted lanternfly was confirmed in NY. This invasive pest poses a risk to NYS agriculture, ornamental and timber industries, as well as all NYS residents quality of life.

Volume 14 | Issue 22 | September 12, 2018

Beet harvesting in Genesee County. *Photo: Julie Kikkert*

Cornell Cooperative Extension
Cornell Vegetable Program

Alternaria Leaf Spot on Brassicas

Judson Reid, CCE Cornell Vegetable Program

It appears that 2018 will be noted for abnormally high levels of Alternaria Leaf Spot on brassicas such as cauliflower, broccoli and Brussels sprouts. The disease is caused by the fungal pathogen *Alternaria brassicicola* producing brown or black leaf spots that enlarge in concentric circles and have a bull's eye appearance. The tissue within these lesions may fall away leaving holes. The disease will rot the heads of both broccoli and cauliflower as well as Brussels sprouts.

Alternaria leaf spot on Brussels sprouts (left) and broccoli (right). *Photos: Judson Reid, CVP*

continued on page 3

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

Web address: cvp.cce.cornell.edu

Contributing Writers
Elizabeth Buck
Robert Hadad
Christy Hoepting
Julie Kikkert
Judson Reid

Publishing Specialist/Distribution/Sponsors
Angela Ochterski

VegEdge is published 25 times per year, parallel to the production schedule of Western New York growers. Enrollees in the Cornell Vegetable Program receive a complimentary electronic subscription to the newsletter. Print copies are available for an additional fee. You must be enrolled in the Cornell Vegetable Program to subscribe to the newsletter. For information about enrolling in our program, visit cvp.cce.cornell.edu. Cornell Cooperative Extension staff, Cornell faculty, and other states' Extension personnel may request to receive a complimentary electronic subscription to VegEdge by emailing Angela Ochterski at aep63@cornell.edu. Total readership varies but averages 700 readers.

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.

Contents

The next issue of VegEdge newsletter will be produced on October 1, 2018.

Correction to Late Blight Fungicide Table

Elizabeth Buck, CCE Cornell Vegetable Program

Please note that there was an error in the fungicide table printed in the August 22, 2018 issue of VegEdge (Vol. 14, Iss. 20). Orondis Opti should be applied at **2.0 – 4.8 pints/acre**, or **0.78 – 1.86 fl oz / 1000 sq. feet**.

Reference chart of fungicides used for late blight control. When rotating fungicides, pick a product with a different color group. Products with two modes of action (excluding protectants) sport two colors. Note that all of the white ones are from different mode of action (FRAC) groups and can be rotated with each other.

Name	FRAC Group	Activity Type	REI (hr)	PHI (days)	Rate/A	Rate/1000 ft²	Early blight use?	Cucurbit downy mildew use?**
Orondis Opti A	U15+M5	Systemic + protectant	12	0	2.0-4.8 fl oz	.046 - .11 fl oz	Y***	Y
Cabrio	11	Translaminar	12	0	8-16 oz	.18 - .36 fl oz	Y	Y, R***
Quadris F or OLP	11	Translaminar	4	0	6.2 fl oz	0.14 fl oz	Y	Y, R
ProPhyt or OLP	33	Contact	4	0	4 pt	1.47 fl oz		Y
Ranman 400 SC	21	Contact	12	0	2.1-2.75 fl oz	.048 - .063 fl oz		Y
Champ or OLP	M1	Protectant	48	0	1.3 pt	.48 fl oz	Y	Y
Bravo Weather Stik or OLP	M5	Protectant	12	0	1.375-2.75 pt	.51 - 1 fl oz	Y	Y
Revus Top	40 + 3	Translaminar	12	1	5.5-7 fl oz	.13 - .16 fl oz	Y	Y, R
*Presidio	43	Systemic	12	2	3-4 fl oz	.068 - .092 oz		Y, R
Flint	11	Translaminar	12	3	2-4 oz	.046 - .092 oz	Y	Y, R
Tanos 50 DF	11 + 27	Translaminar	12	3	6-8 oz	.14 - .18 oz	Y	
Curzate 60 DF	27	Translaminar	12	3	3.2-5 oz	.073 - .115 oz		Y, R
Ariston	27 + M3	Translaminar + protectant	12	3	1.9-3.0 pt	.7 - 1.1 fl oz	Y	Y
Forum	40	Translaminar	12	4	6.0 fl oz	.138 fl oz		Y, R
Zampro	40 + 45	Systemic + Translaminar	12	4	14 fl oz	.32 fl oz		Y
*Previcur Flex	28	Systemic + protectant	12	5	0.7-1.5 pt	.26 - .55 fl oz	Y	Y, R
*Gavel 75 DF	22 + M3	Contact + protectant	48	5	1.5-2 lb	.55 - .73 oz	Y	Y
*Zing!	22 + M3	Contact + protectant	12	5	36 fl oz	.826 fl oz	Y	Y
ManKocide	M3 + M1	Protectant	48	5	1-3 lb	.37 - 1.1 oz	Y	Y
*Dithane DF Rainshield	M3	Protectant	24	5	1.5 lb	.55 oz	Y	Y
Ridomil Gold Bravo SC	4	Systemic + protectant	48	5	2.5 pt	.92 oz		Y, R
*Reason 500 SC	11	Translaminar	12	14	4.0- 8.2 fl oz	.09 - .18 fl oz	Y	Y, R

*Restricted use pesticide **Check label for rate and use instructions for downy mildew.
*** Y=Yes; R=Documented cases of fungicide resistance, control may be less than desired
Conversions for small area plantings: 1 fl oz = 2 tbsp or 6 tsp

Alternaria may be spread via seed, contaminated soil or wind dispersal. The fungus can also survive on cruciferous weeds. Spores may also be carried by equipment and workers. In one outbreak, used drip tape from a previous season is thought to be the source of infection. Flea beetles can also transmit the fungus to healthy plants.

Management?

- ✓ Disease free seed and/or hot water/fungicide treatment.
- ✓ Incorporate crop residue immediately after harvest to keep later plantings clean.
- ✓ Minimum two-year crop rotation away from brassicas.
- ✓ Don't reuse drip tape.
- ✓ A preventative fungicide program

Preventative sprays can include Bravo (7D PHI) and copper materials. More specific materials to rotate include Quadris (Group 11), Inspire Super (Groups 3+9) and Endura (Group 7). Do not rely on only one fungicide group to control this disease. Christy Hoepting is currently conducting a fungicide trial in a planting of pre-heading broccoli in Monroe County that shows infection on lower frame leaves. Based on past research she suggests the following:

To maximize best Alternaria fungicides, consider the following rotation:

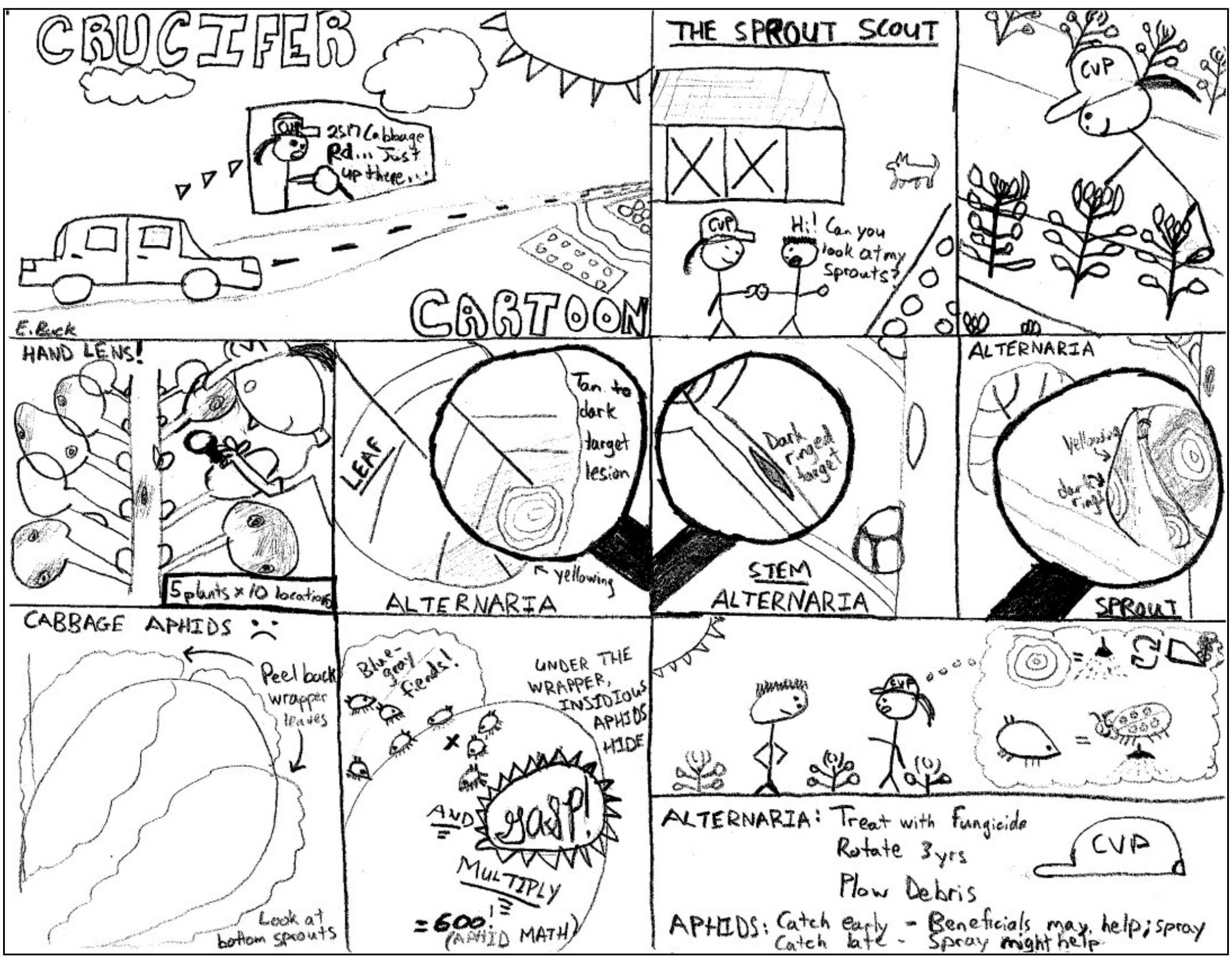
Week 1: Quadris or Cabrio

Week 2 & 3: Inspire Super or Endura

Week 4: Quadris or Cabrio

Week 5 & 6: Inspire Super or Endura

Alternaria leaf spot on cauliflower head. *Photo: J. Reid, CVP*



Artificial Curing Significantly Reduces Onion Bacterial Bulb Rot

Christy Hoepting, CCE Cornell Vegetable Program

Bacterial bulb rot is a very serious disease of onion. I am concerned that incidence of bacterial bulb rot may be "higher than usual" this year, because of hot temperatures, onions dying standing up and heavy rainfall events during lodging and curing. I recently came across several research papers out of New Zealand by P. J. Wright that investigated how cultural practices during harvest effect incidence of bacterial bulb rot in storage. In this article, I am sharing some of the results from one of his studies that caught my attention, especially regarding artificial curing.

Bulb rotting bacteria are common in the environment and survive in the soil and on infected plant material, and are often found on the healthy foliage of healthy onion plants in the field. Generally, infection of bulb rotting bacteria occurs through wounds, or when environmental conditions impair host resistance while favoring multiplication of the bacteria. Bulb rotting bacteria are thought to infect and spread in green leaf tissue, while infection and movement is halted in necrotic or dry tissue. In general, warm and wet conditions at plant maturity/lodging and during field curing increase bacterial bulb rot problems. Additionally, a recent study in New York (Hoepting, 2015) demonstrated that bacterial bulb rot doubled when the plants "died standing up" instead of lodging properly. With the 2018 growing season being so stressful for several reasons, many fields have greater than 20% plants that died standing up.

Trial Design

Peter J. Wright is a Plant Pathologist at the New Zealand Institute for Crop and Food Research Limited in Pukekohe, New Zealand. Figure 1 shows four data sets from this study, which compared three different curing treatments [1 – field curing for 10 days after lifting/undercutting under prevailing weather conditions; 2 – trt. #1 with artificial addition of water during curing (= blue bars); and 3 – forced air drying for 5 days after lifting/undercutting (= orange bars)] for two different maturities of onion at lifting [1 – 10% tops down (= green bars); and 2 – 90% tops down (= yellow bars)] in two different years.

For the "water added" treatment, onions were watered with sprinklers with enough water to wet the foliage without creating excessive soil moisture every day of the 10-day curing period. According to my interpretation of the methods, this amounted to a total of 1.6 inch of additional water during the 10-day curing period. For the forced air treatment, a draft of outside air was heated to 77°F (year 1) and 86°F (year 2) and forced through the onions at a rate of 14 m^3/min (= 494 ft^3/min) by a blower fan. The paper did not provide any information on why these temperatures were used or why they were different each year. Natural rainfall was different for each maturity treatment and for each year. I included these values in the chart, as well as the total amount of water from natural rainfall plus sprinkler irrigation for the "water added" treatments on the blue bars in the chart. For example, in year 1 the 10% tops down treatment received 2.4 inch natural rainfall during the 10 days of field curing, which resulted in a total of 4 inch (2.4 inch natural rainfall + 1.6 inch sprinkler) in the "water added" treatment. After curing, the onions were topped to leave a 1-inch neck and then stored in a ventilated shed at ambient temperature (range: 54-81°F) and humidity (70-85%). After about 3 months in this storage, the onions were evaluated for bacterial bulb rot.

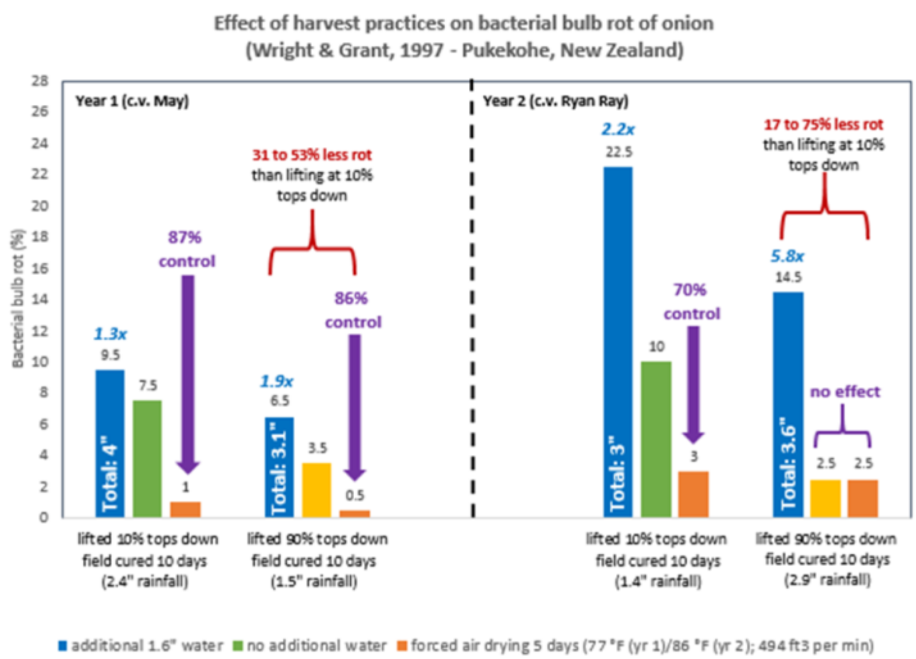


Figure 1. Selected research results from Wright 1997 on the effects of harvest practices on bacterial bulb rot of onion, presented by Hoepting. This New Zealand study compared three different curing treatments [1 – field curing for 10 days after lifting/undercutting under prevailing weather conditions; 2 – trt. #1 with artificial addition of water during curing (= blue bars); and 3 – forced air drying for 5 days after lifting/undercutting (= orange bars)] for two different maturities of onion at lifting [1 – 10% tops down (= green bars); and 2 – 90% tops down (= yellow bars)] in two different years. The rainfall in brackets indicates natural rainfall amount during field curing period. Total rainfall in blue bars includes artificial water treatment + natural rainfall during field curing period.

Key Findings

Not surprisingly, incidence of bulb rot varied by year. When each of the six treatments are compared between year 1 and year 2, higher incidence of bacterial bulb rot occurred in year two for four of the six treatments. Interestingly, when you compare rainfall during field curing period between years (green and yellow bars), higher incidence of rot occurred with less rainfall. For example, in year 1 lifting at 10% tops down exposed to 2.4 inch rainfall had 7.5% rot compared to in year 2 where 10% tops down was exposed to 1.4 inch rainfall had 10% bulb rot. Unfortunately, the paper did not provide any information on the prevailing weather conditions of the two growing seasons to ascertain what other factors other than rainfall during field curing could have impacted bulb rot.

Lifting/undercutting at 90% tops down resulted in less bacterial bulb rot compared to lifting at 10% tops down in five of the six side-by-side comparisons. For example, in year 1, the "10% tops down field curing" treatment had 7.5% bulb rot (green bar) compared to 3.5% in the "90% tops down field cured" treatment (yellow bar), which represents a 53% reduction in incidence of bulb rot. Curing dries the outer skins, roots and neck tissue of harvested onions, making them more resistant to disease-causing organisms. The paper explains that infection of onion bulbs by bulb rotting bacteria is facilitated by wounding that can occur during the cutting of necks at topping. Wounding of bulbs during topping is most likely to occur to bulbs that are not significantly dried and cured. These wounds expose healthy succulent neck tissue, creating ideal sites for entry of soft-rot bacteria. Wounding during topping does not normally occur when the foliage in the neck region of bulbs is fully dry. In this study, 10 days was likely not enough time to sufficiently dry down the tops when the onions were lifted at 10% tops down, so that the onions in these treatments were likely topped when there was still green tissue in the neck.

Adding 1.6 inch of water over 10-day field curing period resulted in 1.3 to 5.8-times more bacterial bulb rot in all four side-by-side comparisons. For example, in year 1 in the 90% tops down treatments, the "water added" treatment (3.1 inch total – blue bar) had 6.5% bulb rot, which was almost double (1.9-times) that of field curing under natural conditions (1.5" rainfall – yellow bar), which had 3.5% bulb rot. Although it was not the total amount of rainfall received during the curing period that affected bulb rot, since we did not see higher levels of bulb rot with higher levels of natural rainfall between year 1 and year 2, the daily wetting provided in the "water added" proved to be the more important factor. This demonstrates why cool and wet falls or fields that are harvested late (exposed to cooler temperatures and heavy dews) are more conducive to bulb rots, because the field-curing onions never get a chance to dry out for any length of time before they are re-wetted again. In large-scale muck onion production, onions are generally not lifted at 10% tops down, but as curing is slowed under less than ideal cooler and wetter conditions, higher incidence of bulbs may still have partially green neck tissue during mechanical harvesting when the onions are topped.

Artificial curing resulted in 70 to 86% control of bulb rot in three out of four side-by-side comparisons. For example, in year 1 in 90% tops down treatments, artificial curing immediately after topping resulted in 0.5% bulb rot, which was 86% less than field curing for 10 days (= 3.5% bulb rot, yellow bar). In the 10% tops down treatments, 7.5% bulb rot was reduced by 87% to 1% with artificial curing in year 1, and 10% bulb rot was reduced by 70% to 35 in year 2. These results are in line with the "Rot Race" article that I wrote in the August 8 issue of VegEdge, where the race becomes getting the neck tissue to dry down in order to stop the bacterial infection before it gets into the bulb. This New Zealand study indicates that artificial curing can work very well. The only time artificial curing did not have an effect was in year 2 in the 90% tops down treatments. In this case, field curing may have dried neck tissue sufficiently so that new bacterial infections were not introduced during topping.

Intriguing results, but more investigation required in New York. Whenever I find results that show 80% control of onion bacterial bulb rot, it gets my attention, because finding effective solutions to this problem has been excruciatingly difficult thus far. In the New Zealand study, the onions were topped after artificial curing. In New York muck onion production, onions would be topped during mechanical harvest before they are artificially cured. In this case, would artificial curing be as effective? In general, artificial curing is both cost- and capacity-prohibitive for the majority of the crop to be cured artificially. But, is there a "sweet spot" when it would make economic sense? What are optimum artificial curing conditions? What other cultural practices associated with harvest can we play closer attention to that may reduce bub rot? This is something in which I am very interested, as I would like to relaunch my "stop the rot" research efforts. Please let me know if you are interested in working with me on any such onion rot projects (cah59@cornell.edu; 585-721-6953).

For more information:
Results shared in this article were from:

Wright, P.J. 1997. Effects of cultural practices at harvest on onion bulb quality and incidence of rots in storage. New Zealand Journal of Crop and Horticultural Science. 25:4, 358-358.

Other manuscripts by Wright:

Wright, P.J., C.N. Hale and R.A. Fulerton. 1993. Effect of husbandry practices and water applications during field curing on the incidence of bacterial soft rot of onion in store. *New Zealand Journal of Crop and Horticultural Science*. 25:4, 358-358.

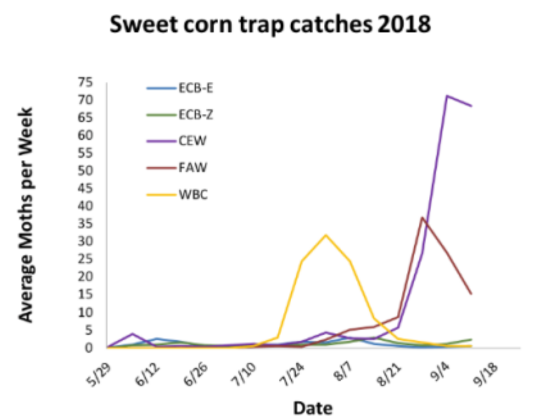
Wright, P.J. and C.M. Triggs. 2005. Effects of curing, moisture, leaf removal, and artificial inoculation with soft-rotting bacteria on the incidence of bacterial soft rot of onion (*Allium cepa*) bulbs in storage. *Australasian Plant Pathology*, 34: 355-359.

NY Sweet Corn Trap Network Report, 9/11/18

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

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

The graph below shows the average trap catch for each moth species. FAW numbers continue to drop and CEW began to decrease this week as well.



Average sweet corn trap catches for all reporting sites from 5.29.18 – 9.11.18.

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, Week of 9/4/18 - 9/11/18

Location	ECB-E	ECB-Z	CEW	FAW	WBC	DD to Date
Baldwinsville (Onondaga)	NA	NA	0	38	NA	2587
Batavia (Genesee)	NA	NA	NA	NA	NA	2560
Bellona (Yates)	1	1	7	1	1	2629
Eden (Erie)	NA	NA	NA	NA	NA	2488
Farmington (Ontario)	0	0	51	2	0	2439
Geneva (Ontario)	0	3	18	21	0	2529
Hamlin (Monroe)	NA	NA	NA	NA	NA	2461
Kennedy (Chautauqua)	0	0	1	33	1	2244
Pavilion	NA	NA	NA	NA	NA	2072
Penn Yan (Yates)	0	27	39	15	1	2598
Ransomville (Niagara)	0	0	323	57	2	2634
Seneca Castle (Ontario)	NA	NA	NA	NA	NA	2472
Williamson (Wayne)	NA	NA	NA	NA	NA	2354

ECB - European Corn Borer
CEW - Corn Earworm
FAW - Fall Armyworm
WBC - Western Bean Cutworm
NA - not available
DD - Degree Day (mod. base 50F) accumulation

Late Blight Risk Update

John Gibbons, CCE Cornell Vegetable Program

There have been no new reports of late blight in NY. In summary, late blight was found in **Allegany, Cattaraugus, Genesee, Onondaga, St. Lawrence, and Tioga counties in NY.** It was also detected in Pennsylvania, North Carolina, Michigan, Illinois, Florida, Washington, and Wisconsin. Most isolates were US-23. US-8 was found in Washington. A new late blight strain was discovered in several counties in NY: US-25 was found in Tioga, Saint Lawrence, and Onondaga counties. See the August 22 issue of VegEdge for more information on this new strain. Some samples are still being analyzed in Allegany and Genesee counties.

Scout fields that have not been vine killed or harvested twice a week. 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 30 BU's if the variety is susceptible. All tomato and potato growers, conventional and organic, should be applying a protectant fungicides and monitoring the DSS to determine spray intervals. The weather is very favorable for late blight development. This week all stations were at the trigger of 30 BU's or higher through the forecast period ending 9/14 except Baldwinsville. Monitor your fields closely. Keep the vines protected until they are dead after vine killing. Tomatoes should be protected until harvest.

Late Blight Risk Chart, 9/11/18

Location[1]	Blight Units[1] 9/05-9/11	Blight Units[2] 9/12-9/14	Location[1]	Blight Units[1] 9/05-9/11	Blight Units[2] 9/12-9/14
Albion	41	19	Lodi	NA	21
Baldwinsville	7	21	Lyndonville	14	21
Bergen	15	21	Medina	22	21
Buffalo	20	21	Niagara Falls	21	21
Ceres	40	21	Penn Yan	32	21
Elba	15	21	Rochester	26	21
Fairville	14	21	Sodus	23	21
Farmington	35	21	Versailles	27	21
Gainesville	NA	NA	Volney	23	19
Geneva	9	21	Wellsville	35	21
Kendall	16	21	Williamson	15	21
Knowlesville	14	21			

[1] Past week Simcast Blight Units (BU)
[2] Three day predicted Simcast Blight Units (BUs)

If you think you have late blight, contact your local CCE office or a CVP Specialist (CVP contact info provided on the back cover of VegEdge and online at https://cvp.cce.cornell.edu/specialists.php) so a sample can be obtained for positive identification and genotype identification. You can monitor late blight development at https://usablight.org/map.

Cultivation Field Demonstration

Robert Hadad, CCE Cornell Vegetable Program

On August 30, the CVP hosted Bryan Brown NYS IPM weed specialist put on a twilight meeting giving an overview of cultivation equipment design for small crop plant close-up cultivation. Bryan seeded out beets on July 30 and then cultivated at two different seedling heights using various close-row tools. The trial was to look at how small can crop plants be and still obtaining good weed management without too much damage to the crop.

Ideally, the field plot would be a stale seed bed or flamed prior to direct seeding. Beets were chosen as the crop to run the trial with a crop that is tough to keep down weeds. Various cultivation tool attachments were used to test combinations to determine the better weed management set-up. It needs to be noted that the seeding of the beets was done with a tractor guided with GPS. This gave very straight rows. Having straight rows makes using the Kult equipment more effective with less crop damage. Having the capability of steering the cultivation tools from the back allows for getting close to the crop row (though trying to watch two rows that may not be straight would be challenging). The beets were cultivated at the 2” and 4” stage. The tools were attached to Kult-Kress Argus unit.


Fingers


Spring harrows


Discs


Close-row sweep


Between row sweeps


View of between row sweeps with disc on left and fingers on right.


Beet rows cultivated on left and uncultivated on right.

Photos: Robert Hadad, CVP

The trial showed that at the two inch crop stage, there was significant damage to the beets from weed cultivation. The field plot had heavy weed pressure to start and the tools were rough with the beets.

At the 4 inch stage, however, the tools caused little damage while doing a decent job tackling the weeds up close to the beets. The combination of tools did better than single tools alone. Weeps with a row harrow and sweeps with the disc took out 40%+ of the weeds. The sweeps and fingers took out more than 60% as did the sweeps, fingers, and row harrow. The sweeps and fingers and disc combo took out more than 80%.

SARE Farmer Grant Applications Due by November 27

Northeast SARE’s Farmer Grant Program funds projects, conducted by commercial farmers exploring new production techniques, marketing practices and sustainable approaches of interest to the farming community in our region. These projects are often conducted through experiments, trials, surveys and on-farm demonstrations. Applications for the next round of Farmer Grant proposals will be accepted starting October 1 and will be due by 11:59 p.m. ET on Tuesday, November 27, 2018.

Learn more at: https://www.nesare.org/Grants/Get-a-Grant/Farmer-Grant

How to Maximize the Soil-Health Value of a Winter Grain Cover Crop

Thomas Björkman, Horticulture Section, Cornell University

Vegetable growers can get the best soil-health value out of a winter grain cover crop by planting early and terminating early. Plant now to have ground in good planting shape by late May.

An early-kill scenario is sometimes overlooked because spring biomass is valued. However, vegetable growers can make up for the lack of spring biomass production by increasing growth in the fall. Many vegetables have been harvested by mid-September, so vegetable growers have the opportunity plant the cover crop early. It is difficult or impossible to do so with field crops. The early-plant, early-terminate scenario gets less attention than it deserves as a result. The second half of September provides a lot of growing degree-days for the rye that helps it develop a valuable deep root system through the rest of the fall.

To make a good seedbed, or raised bed, for vegetables, the soil needs to flow well. Sustaining soil health means using the gentlest tillage that will produce conditions for the crop to thrive. Gentle tillage is possible by allowing the succulent cover-crop tissue time to decompose, and the decomposing roots to support soil aggregate formation.

To improve the soil by making better aggregates, it helps to have the roots decompose in undisturbed soil. Decomposing microbes do the work of stabilizing aggregates before those aggregates are broken by tillage. It takes some warmth for that process, so allowing a month between applying the herbicide and doing primary tillage is reasonable.

Small grain crowns can make the soil difficult to fit for planting. Beating them into submission undoes a lot of the soil health benefit of raising the cover crops. The crowns become more durable as they mature and the stems lignify. There is also less time for them to break down before a given planting date. The early kill followed by undisturbed decomposition makes residue that works up much better.

In the example pictured below, rye on the left was killed once it had finished greening up but before any stem extension. But the rye on the right was killed once the stems were about 10 inches long and starting to lignify.

Lush small grain ready to terminate.
Photo: T. Bjorkman, Cornell

Elongating stems and mature crowns are more difficult to incorporate.
Photo: T. Bjorkman, Cornell

The rye that was killed early decomposed nicely and required only little tillage to work up and bed nicely. The later killed rye had a bigger crown and more straw, and less time for them to decompose. That soil was lumpier, and did not make an even bed edge (arrow).

Beds formed on June 7 in a field where the rye cover crop was terminated at greenup (April 24) or after the stems had begun to elongate (May 4).
Photo: T. Bjorkman, Cornell

In this example, only the surface soil was tilled in order to make the beds. The area between the beds was untilled, relying on undisturbed root channels from the rye to aid percolation.

The early-plant, early-kill scenario works for rye, triticale and wheat. The critical steps are easier to execute on time even with weather vagaries, than alternative approaches. The operations are generally faster, cheaper and gentler as well.

These are the steps:

- Plant in mid-September to get abundant root growth in the fall
- Terminate just before stems elongate in April.
- Allow cover crop to decompose undisturbed until field is prepped.
- Do only as much tillage as is needed.

Fall Control of Perennial Weeds

Mark VanGessel, Extension Weed Specialist, University of Delaware; from University of Delaware Weekly Crop Update, August 31, 2018

Fall is often the best time and the most convenient time to treat most perennial weeds because it is the time that plants are best able to translocate the herbicide to the roots where it will do the most good. When considering fall weed control the emphasis should be on what the patch of weeds will look like next spring or summer not the amount of dead stems this fall. Also, it is important to consider that a fall application will not eradicate a stand of perennial weeds; the fall application will reduce the stand size or the plant vigor, but applications in consecutive years are likely needed. Fall application of glyphosate is the most flexible treatment for most perennial weeds such as bermudagrass, Canada thistle, common milkweed, common pokeweed, yellow nutsedge, horsenettle and johnsongrass. Rates of 1 to 1.25 lb acid per acre are consistently the most economical (or about 1.5X the normal use rate for annual weeds). Dicamba (Banvel) at 2 to 4 pints is also labeled for artichoke, bindweeds, dock, hemp dogbane, horsenettle, milkweeds, pokeweed or Canada thistle. Planting small grains must be delayed after dicamba application 20 days per pint of dicamba applied. Fall herbicide applications should be made to actively growing plants. It is best to allow weeds to recover after crop harvest, before you spray. Allow 10 to 14 days after treatment before disturbing the treated plants. If fall applications are delayed, remember weed species differ in their sensitivity to frost; some are easily killed by frost (i.e. horsenettle) others can withstand relatively heavy frosts. Check the weeds prior to application to be sure they are actively growing.

Patch of horsenettle growing in a carrot field.
Photo: J. Kikkert, CVP

Horsenettle growing in a field of carrots.
Photo: J. Kikkert, CVP

Horsenettle close up. *Photo: J. Kikkert, CVP*

[For more information on why fall herbicides better control perennial weeds, read General Management Strategies for Rhizomatous Perennial Weeds by Elizabeth Buck, VegEdge, 8/1/18, page 6. ed. A. Ochterski, CVP.]

TAKE THE

INTEGRATED

WEED MANAGEMENT

QUIZ

As troublesome herbicide resistant weeds continue to develop and spread across the United States, effective weed management strategies require the use of multiple effective techniques rather than relying on a singular method of weed control. Integrated weed management (IWM) is the practice of utilizing multiple weed management tactics to achieve weed suppression superior to what a single tactic could provide.

This brief, 20-question quiz is anonymous and will provide insight to the understanding and adoption of IWM practices across the United States.

Click here to take the survey:
https://www.surveymonkey.com/r/SD9RT6R

This IWM quiz was written by weed scientists from 14 universities and the USDA with funding from the USDA Agricultural Research Service. Find more information on integrated weed management at www.integratedweedmanagement.org.

Confirmed Findings of Spotted Lanternfly in Albany and Yates Counties

NYS Department of Environmental Conservation and Department of Agriculture and Markets, 9/11/18

The New York State Departments of Environmental Conservation (DEC) and Agriculture and Markets (DAM) today confirmed that spotted lanternfly (SLF), an invasive pest from Asia, has been found in Albany and Yates counties. A single adult insect was discovered in a vehicle in the Capital District. In addition, a single adult insect was reported on a private Keuka Lake property in Penn Yan, Yates County.

"DEC and our partners at the Department of Agriculture and Markets are closely tracking the spotted lanternfly, a destructive invasive pest, as part of our ongoing efforts to prevent its establishment and spread in New York. This pest has the potential to severely impact our state's agricultural and tourism industries," DEC Commissioner Basil Seggos said. "We are encouraging the public to send us information to bolster our efforts—they are our eyes on the ground."

Following both reported cases, DEC and DAM immediately began extensive surveys throughout the area. At this time, no additional insects have been found. DEC and DAM urge New Yorkers to report potential sightings to spottedlanternfly@dec.ny.gov.

State Agriculture Commissioner Richard A. Ball said, "It's critical that we monitor for and control this invasive species, which can weaken plants and have **a devastating impact on our farm crops and agricultural production, especially apples, grapes and hops.** Since our farmers are among those facing the greatest potential impact, we ask them to join us in helping to watch for the spotted lanternfly, and signs of infestation, and report any sightings immediately."

SLF is a destructive pest that feeds on more than 70 plant species including tree-of-heaven (*Ailanthus altissima*), maples, apple trees, grapevine, and hops. SLF feedings can stress plants, making them vulnerable to disease and attacks from other insects. SLF also excretes large amounts of sticky "honeydew," which attracts sooty molds that interfere with plant photosynthesis, negatively affecting the growth and fruit yield of plants. SLF also has the potential to significantly hinder quality of life due to the honeydew and the swarms of insects it attracts.

SLF was first discovered in Pennsylvania in 2014 and have since been found in New Jersey, Delaware and Virginia. Given the proximity to the Pennsylvania and New Jersey infestations, New York State is at high risk for infestation. While these insects can jump and fly short distances, they spread primarily through human activity. SLF lay their eggs on any number of surfaces such as vehicles, stone, rusty metal, outdoor furniture and firewood. Therefore, the insects can hitch rides on any outdoor item and be easily transported into and throughout New York.

Jennifer Grant, Ph.D., Director New York State IPM Program said, "Knowing that this pest was likely to arrive, we have been working with our State partner agencies to develop integrated strategies to get the word out and manage SLF in grapes, hops, apples and other susceptible crops. It's imperative that the public help slow the invasion and spread by reporting possible sightings and acting responsibly when traveling in quarantine areas."

Adult SLF are active from July to December. They are approximately one-inch long and half an inch wide at rest, with eye-catching wings. Adults begin laying eggs in October. Signs of an SLF infestation may include:

- Sap oozing or weeping from open wounds on tree trunks, which appear wet and give off fermented odors.
- One-inch-long egg masses that are brownish-gray, waxy and mud-like when new. Old egg masses are brown and scaly.
- Massive honeydew build-up under plants, sometimes with black sooty mold developing.

Adult spotted lanternfly
Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org

Anyone that suspects they have found SLF is encouraged to send a photo to spottedlanternfly@dec.ny.gov. Please note the location of where the insect was found, egg masses, and/or infestation signs. DEC and DAM also encourage the public to inspect outdoor items such as vehicles, furniture, and firewood for egg masses. Anyone that visits the Pennsylvania or New Jersey Quarantine Areas should thoroughly inspect their vehicle, luggage and gear for SLF and egg masses before leaving and scrape off all egg masses.

A Smartphone application is also available to help citizens and conservation professionals quickly and easily report new invasive species sightings directly to New York's invasive species database from their phones. For more info, visit http://www.nyimapinvasives.org/

DEC, DAM, NYS Office of Parks, Recreation and Historic Preservation and the US Department of Agriculture will continue to survey throughout the Capital District and the Finger Lakes focusing on travel corridors and high-risk areas. Extensive surveys will continue to be conducted in high-risk areas throughout the state as well as inspections of nursery stock, stone shipments, commercial transports, etc., from Pennsylvania. DEC and DAM will also continue its efforts to educate the public as well as industry personnel.

For more information on SLF, visit www.dec.ny.gov/animals/113303.html

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 9/04 - 9/10/18

Location**	Rainfall (inch)		Temp (°F)	
	Week	Month September	Max	Min
Albion	0.89	0.92	92	47
Baldwinsville	0.72	1.25	94	46
Bergen	1.50	1.53	92	45
Buffalo*	1.44	1.59	90	50
Burt	0.89	1.81	91	49
Ceres	2.55	3.23	89	48
Fairville	1.16	1.59	92	45
Farmington	1.23	1.23	92	46
Gainesville	1.94	1.99	86	44
Geneva	1.60	1.62	91	46
Lodi	1.64	1.99	92	49
Niagara Falls*	0.90	1.03	90	50
Ovid	1.45	1.71	91	49
Penn Yan*	1.59	1.59	91	48
Phelps	1.35	1.54	93	46
Portland	2.11	3.12	88	51
Rochester*	1.27	1.27	93	51
Silver Creek	NA	NA	88	51
Sodus	0.87	1.39	90	45
Versailles	1.91	3.21	89	48
Volney	NA	NA	90	45
Williamson	0.84	0.87	91	47

Accumulated Growing Degree Days (AGDD)
Base 50°F: April 1 - September 10, 2018

Location	2018	2017	2016
Albion	2584	2143	2556
Baldwinsville	2723	2269	2582
Bergen	2456	2021	2353
Buffalo	2663	2176	2612
Ceres	2268	1871	2073
Elba	2427	2045	1923
Fairville	2394	1965	2307
Farmington	2432	1990	2365
Gainesville	2063	2049	1957
Geneva	2489	2096	2436
Lodi	2670	2302	2662
Niagara Falls	2696	2389	2771
Ovid	2577	2224	2538
Penn Yan	2581	2230	2584
Phelps	2383	2152	2433
Portland	2556	2206	2448
Rochester	2743	2234	2645
Silver Creek	2462	2181	2414
Sodus	2371	2172	2281
Versailles	2472	2085	2327
Volney	2414	2002	NA
Williamson	2348	2038	2275

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

Cornell Cooperative Extension
Cornell Vegetable Program

480 North Main Street
Canandaigua, NY 14424

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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.

VEGETABLE SPECIALISTS

Elizabeth Buck | 585-406-3419 cell | emb273@cornell.edu
fresh market vegetables, weed management, and soil health

Robert Hadad | 585-739-4065 cell | rgh26@cornell.edu
food safety & quality, organic, business & marketing, and fresh market vegetables

Christy Hoepting | 585-721-6953 cell | 585-798-4265 x38 office | cah59@cornell.edu
onions, cabbage, potatoes and pesticide management

Julie Kikkert | 585-313-8160 cell | 585-394-3977 x404 office | jrk2@cornell.edu
processing crops (sweet corn, snap beans, lima beans, peas, beets, carrots) and dry beans

Judson Reid | 585-313-8912 cell | 315-536-5123 office | jer11@cornell.edu
greenhouse production, small farming operations, and fresh market vegetables

PRECISION AG SPECIALIST

Ali Nafchi | 585-313-6197 cell | anafchi@cornell.edu

PROGRAM ASSISTANTS

Amy Celentano | ac2642@cornell.edu

John Gibbons | 716-474-5238 cell | jpg10@cornell.edu

Angela Ochterski | 585-394-3977 x426 | aep63@cornell.edu

Caitlin Vore | cv275@cornell.edu

ADMINISTRATION

Peter Landre | ptl2@cornell.edu

Steve Reiners | sr43@cornell.edu

Cornell Cooperative Extension
Cornell Vegetable Program

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