Cucumbers grown in protected settings are particularly susceptible to spider mites. Learn what to look for and how to control them.

PAGE 1

Ode to the Leafhopper, a clever (and a bit quirky) little poem about this pest of vegetables, provides scouting and control information too. A must read!!

PAGE 3

Surchlor, a chlorine-based sanitizer type of product can be used on growing onions for control of bacterial decay. How well does it work?

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Many early vegetables have been harvested making it a great time to plant sudangrass cover crops to improve soil health and suppress weeds.

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VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 14 | Issue 14 | July 11, 2018

Photo: Judson Reid

Cornell Cooperative Extension
Cornell Vegetable Program

Spider Mites on Tunnel Cukes

Judson Reid, CCE Cornell Vegetable Program

Two Spotted Spider Mites (TSSM) are at high levels in some high tunnel and greenhouse crops right now, particularly cucumbers. Look for stippling or tiny white spots on the top side of foliage. The mites themselves, and their eggs are found on the underside of the leaf. These can be seen with or without the aid of a 10X hand lens. When not controlled, TSSM will destroy a crop.

TSSM overwinters in NYS in the soil or crop debris. Controlling weeds and reducing dust (with mulch) are the first preventative steps. We suggest miticides with broad labels, short PHI's and rotating modes of action. Control with miticides requires at least two applications spaced about a week apart, as most materials do not control eggs.

Two Spotted Spider Mites stippling on high tunnel tomatoes. *Photo: J. Reid, CCE 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:
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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 Parr 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 will be July 18, 2018.

Photo Caption Correction from Last Week

In last week's VegEdge in the cover article, **Spotting or Bronzing on Leaves May Be Ozone Injury**, on page 3, there was a copy/paste error in the photo caption. The corrected caption appears to the right.

My apologies!
~ Angela

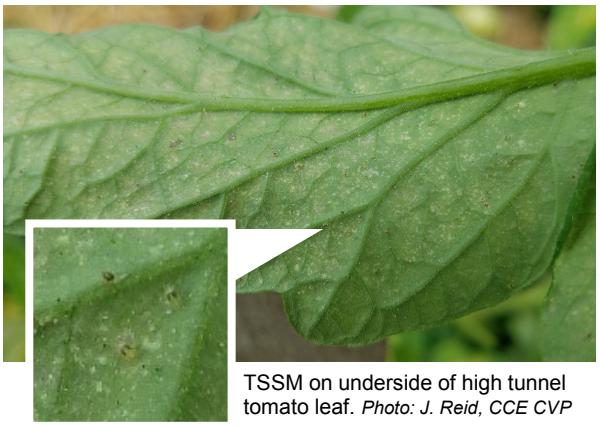
Ozone damage to potato leaves. *Photo: N. Gregory, Univ. of DE*

continued from cover – Spider Mites on Tunnel Cukes

Material	PHI (days)	Comments
Acramite (bifenazate)	3	Limited to one application per season
Portal XLO (fenpyroximate)	1-cucumber, beans, tomato 3-melon	Toxic to fish and aquatic life.
Capture EC (bifenthrin)	1-Sweet Corn, 3-Cucurbits, Eggplant-9, Pepper-7, Tomato-1	Toxic to fish and aquatic life.
Danitol 2.4 EC (fenpropathrin)	Tomato-3	Also labeled for Whitefly control when mixed with Belay insecticide

For certified organic control, we recommend biological control. Releases of predators must begin very early. *Phytoseiulus persimilis* can be effective, but requires high relative humidity to survive, so may require repeat releases. Other beneficials to control TSSM include *Feltiella acarisuga* and *Amblyseius californicus*. Biocontrol is suitable for both conventional and organic farmers. The spray options for organic control are limited to oils that encapsulate the mite when applied at high pressure to the underside of foliage.

Pruning of lower foliage and removing the leaves from the greenhouse is recommended for all growers. The foliage level can be kept just above the lowest hanging fruit. Removing these lower leaves will export some pests, including TSSM.



TSSM on underside of high tunnel tomato leaf. *Photo: J. Reid, CCE CVP*

Our experience is that cucumbers grown in protected settings are particularly susceptible to spider mites. Often this pest will lead to crop termination in late-July. A second crop can be planted but remember the mites will quickly repopulate the new plants.

Ode to the Leafhopper *by Elizabeth Buck, CCE Cornell Vegetable Program*

Roses are red
violets are blue
potato leafhopper
I do not like you.

A little green wedge
so cute you might seem
but to my sweet lil' crops
you are horribly mean.

My snaps and my dry beans,
and my potatoes – don't start!
To see crisped, curled leaf edges
it saddens my heart.

In my mind I imagine
an evil smile on your face
when you inject that toxin
into each leaf that you taste.

And why must you insist
on moving around
each time the alfalfa
is cut to the ground?

At least for the scouts
you create some small fun
whisking sweep nets about
while they walk in the sun.

Across the potato tops
five swings I must make
unless in snap or dry beans
where twenty swoops it takes.

For those who prefer
a more hands-on style
flip 50 leaves over
and count nymphs for a while.

Seed treatment fully protects
beans that emerge from the ground
in this case treat only
if little green nymphs are found.

Without Cruiser seed treatment
to keep the beans clean
Until bloom leaf hoppers
must seldom be seen.

In this case finding
one nymph per trifoliate leaf
or 100 adults per 20 sweeps
spells out probable future grief.

Now in the potato
the action threshold is less
15 nymphs on 50 leaves or
one adult per sweep is a mess.

An unfortunate nuisance
I believe it is true
natural enemies are often
insufficient to manage you.

So treat you I shall
if threshold you surpass
I promise to rotate
if the first control does not last.

Pyrethrin will work
to knock back the pest
a repeated application
is probably best.

Or I could choose
to go with some neem
azadirachtin is another
option that's green.

Systemic activity
will get the job done
though fungicide incompatibility
can happen with some.

Some of the insecticides used
have restrictions and such
Group 1A & B, 3A, and 4A
Read the label with this stuff.

Resistant varieties?
Some do exist
but only for potato
beans haven't the genetic gift.

Regarding aster leafhopper
your lettuce and carrot troubling friend
a few of the same products
their lives will end.

So in conclusion
I bid you adieu.
Potato leafhopper
I do not like you.

CROP INSIGHTS

DRY

Enough said.
– EB, RH, and JR

CUCURBITS (CUCUMBERS, MELONS, and OTHER VINES)
Cucurbit downy mildew is forecast to spread in Jersey and southeastern PA. *– EB*

ONIONS
The crop is hot and thirsty. Irrigation reels and pivots have been going non-stop as continuous even moisture supply is critical during onion bulbing. Leaf disease and onion thrips management are proving to be very exciting with populations of onion thrips and Botrytis leaf blight (BLB) exploding across the region. I understand that thrips like it hot, so that makes sense, but the BLB has got me confused. Optimum conditions for BLB are 59 to 65°F plus 12 hours of leaf wetness, especially from 9 am to noon. Infection is greatly reduced above 81°F. Nighttime temps drop this low, but 12 hours of leaf wetness seems like a stretch under the hot and windy conditions we've had. Most of the BLB lesions that I have seen are tiny (pin-head size) and very weak lacking distinct yellow centers (Fig. 1). Nonetheless, there can be a lot of them! The best fungicide for BLB is Bravo. The challenge is that Bravo reduces the efficacy of Movento, Agri-Mek and Radiant insecticides. With thrips pressure being high, most growers are not willing to compromise the efficacy of their insecticides (and I don't recommend it), so Bravo is not going into the tank mix. Scala 9 fl oz + Rovral 1 pt has provided "second-best" BLB control compared to Bravo in two on-farm Cornell fungicide trials and is a logical substitute for Bravo when insecticides are being applied, as in addition to BLB, it is also very good against Stemphylium leaf blight (SLB). Speaking of which, based on epidemiological studies conducted by Frank Hay, Cornell last year, we are fully expecting SLB to ramp up during the second half of July, so growers need to consider starting their SLB fungicide programs – see last week's VegEdge for many details on SLB. See June 27 issue of VegEdge for details on BLB fungicides. Many growers are anxiously waiting to see if their second application of Movento will knock down a stronger than usual thrips population. Growers who get the knockdown and the opportunity to take a week off from insecticide spray (yes, this is possible and already happened this year) should use Bravo during that week if their BLB has increased. In most fields, thrips control is number one priority, before BLB control. Between BLB and SLB, I favor SLB control, because in fungicide trials, I have seen treatments with good BLB control with premature leaf dieback because the treatment was weak on SLB. Alternatively, I have seen treatments with excellent SLB control green to the tip despite being riddled with BLB. SLB appears to be the more aggressive of the two diseases. When SLB results in excessive leaf dieback, onion plants may die prematurely standing up, which appears to be more favorable for bulb rot.

As onions bulb, incidence of bacterial diseases typically increases, as we are seeing (Fig. 2). Use of sodium hypochlorite (similar to "pool chorine") under the tradename Surchlor, which is labeled on onion to reduce bacterial disease was used last year. See article, page 6, on it's efficacy and new labeling stating that it should no longer be used in a tank mix.

Mark your calendars for the upcoming event – Wednesday, August 22, 2018 for Oswego Onion Growers Twilight Meeting, featuring fungicide trial tour. More details to follow. *– CH*

Figure 1. Despite hot and windy conditions, BLB has increased across the region. Classic "model" lesions have a distinct yellow necrotic center that is surrounded by a silvery halo about 2 mm (yellow arrow). This year under less than adequate periods of leaf wetness, the lesions are tiny (1-2 mm) and lack silvery halo (leaf on right).
Photo: C. Hoepting, CVP

Figure 2. During onion bulbing incidence of bacterial bulb decay increases. Middle-aged leaf/leaves of infected plants begin to melt down and eventually the whole plant collapses.
Photo: C. Hoepting, CVP

WNY Sweet Corn Trap Network Report, 7/10/18

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

Thirty-two of 38 sites reported this week. European corn borer (ECB)-E was caught at 8 sites and ECB-Z was caught at 6 sites. A new site for this year, New Paltz, had the highest trap catches for both E and Z this week with 14 and 22 respectively. Corn earworm was caught at 10 sites with 8 sites high enough to be on a 4, 5, or 6 day spray schedule (see table below). The first fall armyworm (FAW) were caught this week at 7 sites. Western bean cutworm (WBC) is also increases with 11 sites reporting catches.

When scouting sweet corn for FAW look for egg masses on the leaves. Egg masses consist of 50-150 eggs and can be distinguished from ECB by the fine hairs covering the egg mass. Feeding damage is also very different from ECB. FAW will cause ragged feeding damage on leaves with large amounts of frass below the feeding site. The larva has a distinct inverted 'Y' on the front of the head. To help with identification of the different larvae please see the Sweet Corn Larval Pest Identification fact sheet.

Fall armyworm egg mass.

Fall armyworm damage.

Fall armyworm larva. Inverted 'Y' on head.

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.

WBC flight has started. Emergence is forecast to be at 25% when 1319 degree days (base 50°F) have accumulated beginning on May 1st (see table below). The degree day accumulation (May 1st, base 50°F) for sweet corn trap network sites ranges from 545-12962.8 with an average of 1100. Peak flight in NY usually occurs during the first week of August.

Degree-day accumulations in relation to percent moth emergence (beginning May 1, base 50°F)	
Accumulated Degree-days	**% Moth Emergence**
1319	25%
1422	50%
1536	75%

Percent WBC moth emergence based on degree day accumulation, data from University of Nebraska

WNY Pheromone Trap Catches: July 10, 2018

Location	ECB-E	ECB-Z	CEW	FAW	WBC	DD to Date
Baldwinsville (Onondaga)	0	0	0	0	0	1159
Batavia (Genesee)	0	0	0	0	0	1154
Bellona (Yates)	0	0	0	1	0	1196
Eden (Erie)	0	0	0	1	3	1141
Farmington (Ontario)	0	0	0	0	0	1092
Geneva (Ontario)	2	2	0	0	0	1149
Hamlin (Monroe)	0	0	0	1	0	1038
Kennedy (Chautauqua)	0	0	0	1	0	1042
Pavilion	0	0	0	0	1	924
Penn Yan (Yates)	0	1	0	0	1	1190
Ransomville (Niagara)	0	0	0	0	0	1177
Seneca Castle (Ontario)	0	0	1	0	0	1089
Williamson (Wayne)	NA	NA	NA	NA	NA	1018

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 late blight confirmations this past week. We will continue to watch the national occurrence map to track late blight movement.

Scout field 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 only places to surpass the 30 BU threshold this week are Ceres and Wellsville, where significant rain has occurred in the last week on several days.

Late Blight Risk Chart, 7/10/18

Location[1]	Blight Units[1] 7/04-7/10	Blight Units[2] 7/11-7/14	Location[1]	Blight Units[1] 7/04-7/10	Blight Units[2] 7/11-7/14
Albion	28	0	Lodi	0	5
Baldwinsville	8	10	Lyndonville	1	8
Bergen	0	5	Medina	7	0
Buffalo	1	0	Niagara Falls	0	0
Burt	0	0	Penn Yan	13	5
Ceres	34	14	Rochester	18	5
Fairville	11	6	Sodus	0	5
Farmington	15	10	Versailles	13	5
Gainesville	5	11	Volney	3	10
Geneva	0	5	Wellsville	25	14
Kendall	5	0	Williamson	12	6
Knowlesville	0	0			

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

New Recommendations for Using Surchlor (a.i. sodium hypochlorite, as in "pool chlorine") for Bacterial Diseases of Bulb Onion

Christy Hoepting, CCE Cornell Vegetable Program

In 2017, for the first time ever, thanks to the efforts of Cornell Plant Pathologist, Dr. Steven Beer, a chlorine -based sanitizer type of product was labeled for use on growing onions for control of bacterial decay in onion. The active ingredient of this chlorine-based sanitizer is sodium hypochlorite and the tradename is Surchlor, which is made by Surpass Chemical Company. The product is available as a Special Local Needs (SLN) label and the original labeling stated that Surchlor was to be added to the spray tank mixture along with other pesticides.

How well does "chlorine" work for control of bacterial rot in onion? Results of 33 on-farm comparisons

In 2016 (through experimental use permits) 14 on-farm side-by-side demonstrations were set up across the state in the major muck onion growing regions to compare untreated (= no sodium hypochlorite) and treated (sodium hypochlorite added to spray tank mix) for incidence of bacterial bulb decay after harvest (Table 1a). Similarly, in 2017, an additional 19 on-farm side-by-side demonstrations were completed (Table 1b). Onion variety, number of sodium hypochloride applications per growing season, timing to onion crop, irrigation/rainfall, and certainly tank mix combinations varied greatly among the 33 demonstrations. As did incidence of bacterial bulb decay after harvest. **The main objective of this study was to get this active ingredient out on as many farms as possible, while fully expecting that there would be a lot of variability in these factors, to see if generally, it was or was not effective.**

In 2016, bacterial bulb decay ranged from 0 to 23%: Out of 14 comparisons, lower levels of bacterial bulb decay occurred in the sodium hypochlorite treatments in 8 (=57%) cases, no differences occurred in 5 (=36%) cases, while bacterial disease was higher in 1 case (= 7%) (Table 1a). In 2017, bacterial bulb decay ranged from 0 to 52%: Out of 19 comparisons, lower levels of bacterial bulb decay occurred in the sodium hypochlorite treatments in 9 (= 47%), no differences occurred in 6 (=32%), while bacterial disease was higher in the untreated 4 cases (= 21%) (Table 1b). The reduction in bacterial bulb decay with sodium hypochlorite was significant only in 2 out of the 9 cases (= 22%); 27% rot was reduced to 15.8%, and 11% rot was reduced to 4.9% (= 41% and 55% control). **Overall, lower incidence of bacterial bulb decay with sodium hypochlorite was observed only 51% of the time.**

Table 1. Effect of **sodium/potassium hypochlorite in 2016 (a)** and **Surchlor in 2017 (b)** on incidence of bacterial bulb decay in side-by-side on-farm grower demonstrations. Onion growers applied these active ingredients/product at a rate of 120 ppm chlorine in addition to their regular tank mixes. Tank mixes, number of applications, variety, irrigation/rainfall, etc. varied among all growers.

a) 2016

Field No.	Incidence of Bacterial Bulb Decay at Harvest	
	Treated with Chlorine	No Chlorine
1	1.9	2.7
2	0.7	2.6
3	4.7	8.3
4	18.2	18.0
5	14.3	16
6	2.0	4.0
7	2.5	2.7
8	0.7	2.0
9	15.5	8
10	0	4
11	5.5	23
12	9	10
13	7.5	10.2
14	9.3	9.2

b) 2017

Field No.	Incidence of Bacterial Bulb Decay at Harvest	
	Treated with Chlorine	No Chlorine
1	1.0	1.0
2	0.5	1.0
3	0.0	0.0
4	0.5	1.5
5	0.9	1.4
6	19.4	10.0
7	4.9	11.0
8	8.9	6.0
9	4.3	5.2
10	2.0	2.5
11	15.8	27.0
12	3.9	2.0
13	1.5	2.4
14	33.5	37.2
15	52.5	56.5
16	4.0	7.4
17	45.6	34.4
18	33.7	36.1
19	36.3	35.4

Green shading: treatment with lowest level of bulb rot per side-by-side comparison.

Blue shading: no differences in bulb rot between treatments.

Pink border: significant differences among treatments

Can efficacy of chlorine be improved? Avoid tank mixing it!

According the grower spray records provided in 2017, collectively, Surchlor had been tank mixed with 6 insecticides, 12 fungicides, 1 herbicide and 14 adjuvants or other materials. It was hypothesized that some of these may have affected the anti-bacterial activity of sodium hypochlorite. **Laboratory tests conducted by the Beer lab last winter indicated that 15 out of the 19 products tested (=79%) reduced the anti-bacterial activity of sodium hypochorite, presumably reducing its effectiveness** (Table 2). More info on this study may be found on the CVP website (https://cvp.cce.cornell.edu/submission.php?id=590&crumb=crops|crops|onions|crop*20).

New label for Surchlor – Do not apply as part of a tank mix

On the basis of the lab test results from the Beer lab and Surpass Chemical's suggestions, EPA and NYSDEC revised the registration and required label for Surchlor. **The revision provides for separate sprays of Surchlor, rather than mixes with oth-**

continued on next page

er materials that likely would inactivate the anti-bacterial activity of sodium hypochlorite. The new label is on the NYSPAD website (http://www.dec.ny.gov/nyspad/products) and the CVP website. Surchlor is EPA Reg. No. SLN NY-170004. The main label is EPA Reg. No. 9359-02.

How does Surchlor work alone?
In a robust on-farm small-plot research trial conducted in 2017, where incidence of bacterial bulb decay averaged 11%, there were no significant differences among treatments (Fig. 1). The grower cooperator treated the trial area with his standard fungicide and insecticide program, while the trial treatments were applied separately (no tank mixes with fungicide, insecticides or adjuvants). Each treatment was applied for 7 consecutive weeks starting prior to bulbing and finishing at 50% lodging. **None of the treatments had lower incidence of bacterial bulb decay than the untreated:** 30 ppm, 60 ppm and 120 ppm sodium hypochlorite applied weekly, bi-weekly, front-loaded or end-loaded; Kocide 2000 copper bactericide, Tanos fungicide, biological Serifel or Uptake adjuvant containing chlorine.

Table 2. Laboratory results for compatibility of sodium hypochlorite with selected products used to spray onions (Beer *et al.*, 2018).

Materials that interfered with anti-bacterial activity of sodium hypochlorite:		
STRONGLY	**SOMEWHAT**	**DID NOT**
Inspire Super fungicide	**Agri-Mek** insecticide	**Movento** insecticide
Induce adjuvant	**Choice Weather Master** adjuvant	**Initiate** (a.i chlorothanonil) fungicide
Lannate insecticide	**Goal 2XL** herbicide	**Quadris Top** fungicide
Luna Tranquility fungicide	**Lamcap M** (= Warrior) insecticide	**Tilt** fungicide
Manganese foliar nutrient	**Merivon** fungicide	
Roper (a.i. mancozeb) fungicide	**Radiant** insecticide	
Scala fungicide	**Rovral** fungicide	
Viathon fungicide		

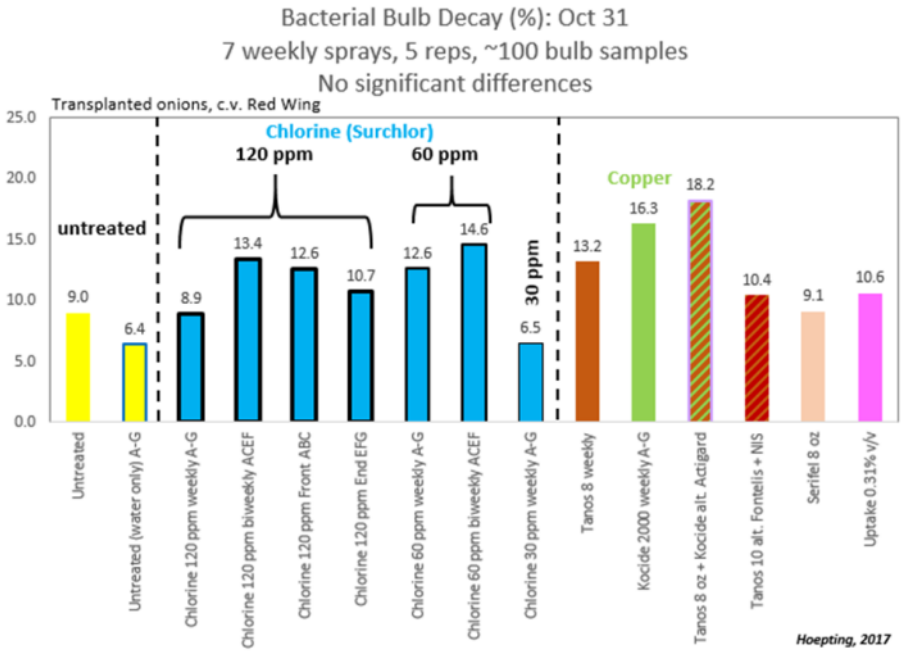


Figure 1. Efficacy of sodium hypochlorite (= Surchlor), Kocide bactericide, Uptake adjuvant (a.i. didecyldimethylammonium chloride), Tanos fungicide and biological fungicide Serifel for control of bacterial bulb decay in transplanted red onion (c.v. Red Wing), Elba muck (Hoepting, 2017). Spray dates: A – Jul 3; B – Jul 15; C – Jul 23; D – Jul 28; E – Aug 4: F – Aug 11; G – Aug 19.

Upcoming Events

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

Respirator Fit Testing Clinic, DEC Region 8

July 16-17, 2018 | by appointment only (1 hr each)
Fulkerson Winery, 5576 State Route 14, Dundee, NY 14837

The New York Center for Agricultural Medicine and Health (NYCAMH) is providing respirator fit testing clinics in DEC Region 8, Finger Lakes (**Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne, Yates**). During the clinics NYCAMH will provide medical evaluations; respirator fit tests; and WPS complaint trainings on how to properly inspect, put on, take off, fit, seal check, use, clean, maintain, and store respirators. Clinic appointments are 1 hour long, and groups of 4 workers can be seen at a time. Medical evaluations, fit tests, and trainings are available in both English and Spanish.

You must schedule an appointment to attend. You may contact NYCAMH between June 18 and July 13 to schedule your appointment. Call 607-547-6023 or 800-343-7527, Mon-Fri 8:00 AM - 4:30 PM and ask to speak with the farm respirator clinic scheduler. When calling to schedule an appointment, please have the following information available: total number of people attending from your farm, name of each person being scheduled, language spoken by each attendee, and make and model of each respirator to be tested. If a worker wears more than one respirator style, including filtering facepieces, they must be fit tested for each one.

Ontario Produce Auction Growers Meeting

July 17, 2018 | 6:00 PM - 8:00 PM
Jonathan Sensenig farm, 5299 Crowe Rd, Stanley, NY 14561

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 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.

New York Soil Health Summit

July 18, 2018 | 9:30 AM - 6:00 PM
Empire State Plaza Conference Center, downtown Albany, NY

This event, organized by the New York Soil Health project, is for farmers, researchers, agriculture service providers, government agencies, non-profits and policy-makers interested in advancing soil health efforts across the state. Topics include local experts/grower panel, research and policies relevant to soil health, and Soil Health Roadmap breakout sessions.

Registration, summit agenda, and other details are available at: summit.newyorksoilhealth.org For more information, contact David Wolfe (dww5@cornell.edu) or Aaron Ristow (ajr229@cornell.edu). *New York Soil Health is funded through New York State Department of Agriculture & Markets.*

Genesee Valley Produce Auction Growers Meeting

July 20, 2018 | 1:00 PM - 3:00 PM
Mahlon Girod farm, 7918 Tucker Hill Rd, Houghton, NY 14744

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 hands-on demonstration of weed, insect and disease identification in vegetables including management options such as inter-row cover crops, grafting and where appropriate, spray options will be used to educate growers. Judson Reid, Senior Extension Associate with the Cornell Vegetable Program along with CCE staff will instruct participants and facilitate peer-based learning.

Orleans County Produce Auction Growers Meeting

July 23, 2018 | 6:30 PM - 8:30 PM
Johnson Creek Farm, 12625 Roosevelt Hwy, Lyndonville, NY 14098

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 hands-on demonstration of weed, insect and disease identification in vegetables including management options such as inter-row cover crops, grafting and where appropriate, spray options will be used to educate growers. Judson Reid, Senior Extension Associate with the Cornell Vegetable Program along with CCE staff will instruct participants and facilitate peer-based learning.

July is the Time to Plant Sudangrass Cover Crops

Thomas Björkman, Section of Horticulture, Cornell AgriTech, Geneva; ed. E. Buck, CCE Cornell Vegetable Program

In July, many early vegetables have been harvested, providing an opportunity to plant a cover crop that will improve the soil and suppress weeds. This time of year, the soil is warm enough to establish sudangrass and sorghum-sudangrass and to take advantage of their prodigious growth in the heat, and take advantage of the abundant light and heat units.

Sudangrass is relatively inexpensive to use, and is a great source of organic matter. That organic matter can be produced above or below ground, depending on how one manages it. Sudangrass is one of the best cover crops for supplying active carbon to the soil, the component of organic matter that contributes most to feeding beneficial soil microbes. To produce a lot of biomass above ground, plant as early in July as possible, because the plants will only grow well until sometime in early September.

Sudangrass adds a lot of active carbon both because it makes a lot of dry matter and because it makes the right kind. Much of it is in fibrous roots and partially lignified stems. The lignification makes the organic matter degrade at a rate that provides active carbon for several seasons. Most varieties are developed for forage, where a more tender biomass is preferred so that it is easy to digest. For cover crops, don't select BMR varieties that have been developed to be low in indigestible fiber, and let the crop mature beyond the forage stage in the fall.

Deciding how much fertilizer to invest in a cover crop is challenging. Sudangrass needs a significant amount of nitrogen to produce the biomass that is the reason for using it. It is clearly worthwhile to provide enough to avoid stunting, but the economics don't justify using the amounts needed for a profitable grain or forage crop (100 to 200 lb N/ac). Nitrogen fertility in crops that are harvested immature, like green vegetables, is usually managed so that it is abundant until harvest. Between the residual soil nitrogen, and nitrogen in the crop residue, there can be enough for a sudangrass cover crop without additional fertilizer. However, if the field has been fallow over winter, or sudangrass is following a crop that is harvested as mature plants, then there will not be enough nitrogen to support the needed growth.

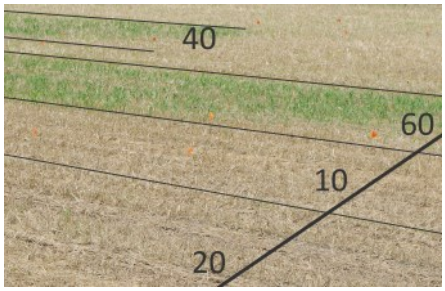
If there is little carryover nitrogen, at the Cornell Agritech research farm in Geneva, we have found 60 lb/ac after winter cereal harvest supports about 4 tons per acre of sudangrass biomass. On upland soil, Vermont extension specialist Vern Grubinger recommends about 50 lb/ac. On sandy soils, another 25 to 50 lb/ac after the first mowing improves tillering and growth.

To suppress weeds, the cover crop needs to get off to a fast start, and produce a stand that has no gaps for weeds to grow. With sudangrass, that is achieved with a high seeding rate so that gaps close quickly. Using about 50% more seed than when planting for biomass is appropriate. A small amount of nitrogen supports rapid initial growth to compete with the weeds, but not as much as needed for high biomass production. Placing the seeds just shallow enough to cover well and get moisture will result in the fastest emergence.

Some weeds will get a start with the sudangrass, and can get enough light to grow well at first because the sudangrass has vertical leaves that don't shade as well as the other summer cover, horizontal-leaved buckwheat. That is where step two comes in. Once the sudangrass is a foot and a half or two feet tall, cut it down to about half a foot to make a mulch layer that suppresses small weeds and cuts the leaves and growing point off broadleaf weeds. The mowing needs to produce a uniform mulch layer, which typically requires a flail chopper. Rotary mowers (aka BushHog) tend to windrow the mulch too much. Using a tractor with narrow tires, or using a front- or side-mounted mower reduces the amount of cover crop that is laid down rather than mowed.

The seeding rate depends both on the desired plant population and on the seed size. Both vary considerably. Since the crop will tiller after the first mowing, the actual population matters most for suppressing weeds before mowing. Narrow rows (7 inches) allow a lower seeding rate than wide rows because there is more shade and more allelopathic suppression of weeds. In that situation, plant about 500,000 seeds per acre. Piper sudangrass has very small seeds (about 40,000 per pound), which makes it less expensive to use. Sorghum-sudangrass hybrids may run as large as 16,000 per pound. Check the seed size on the bag and adjust your planter accordingly.

Sudangrass and sorghum-sudangrass are a handy tool for the summer soil health toolbox. They take attention to get right, but the benefits are worth the attention.



If the field is depleted in N, such as after wheat harvest, then additional nitrogen is needed to get adequate sudangrass growth. 60 pounds of N per acre produced nearly twice the biomass of 40 lb/ac.
Figure: T. Björkman, Cornell

A weed-suppressing stand requires having no gaps for the weeds to establish. Sudangrass, with its vertical leaves, leaves gaps between the rows for about three weeks.
Photo: T. Björkman, Cornell

Innovation in Small-Scale Vegetable Washing Equipment: The AZS Rinse Conveyor

Andrew Chamberlin, Agricultural Engineering Technician, UVM Extension

What's new in Ag tech? Well, one thing that we've recently discovered is a rinse conveyor. Specifically designed for the small-scale farm who wants to graduate from hand washing to something a little more automated that can really crank up the pounds of washed vegetables for market. This machine is made by AZS, an equipment manufacturing company in Ephrata, PA. It is available in full stainless steel, with adjustable water pressure and belt speed, available for under $7,000.

The rinse conveyor is a versatile machine and can wash everything from greens to root crops. I watched it effectively clean sweet potatoes and carrots, but this machine is capable of washing loose spinach and even bunched vegetables or your harvest bins.

The AZS Rinse Conveyor. *Photo: A. Chamberlin, UVM*

A few examples of crops that can be washed on it include carrots, parsnips, kale, spinach, sweet potatoes, winter radish, turnips, beets, and Jerusalem artichoke.

Here is how it works:

1. Products get loaded in a single layer onto the stainless conveyor belt and enter the washer.
2. LOW Pressure, HIGH Volume pre-soaking rinse – much like a shower, soaking everything on the line, loosening dried-on debris
3. Next a HIGH Pressure, LOW Volume spray. There are spraybars both above and below the products to blast the grime from both sides. The angle of the nozzles can be adjusted changing how fast the spray bars spin. The pressure can also be adjusted depending on your crop's needs. A sweet potato can take a lot more pressure than spinach leaves.
4. Finally, the product passes through a final rinse from some stationary nozzles mounted above. The product then gets to the end of the line and dumps on or in whatever you wish, commonly a sorting table.

Loading the front end of the line. *Photo: A. Chamberlin, UVM*

This machine is easy to clean and sanitize with smooth stainless finish and minimal nooks and crannies. There is one brush at the end of the line to roll the cleaned vegetables gently off the line. I suspect this brush and the belt will remain pretty clean due to the fact that the belt is constantly being sprayed with water and the brush only touches cleaned crops.

With smooth surfaces and easy access this piece of equipment looks like a good improvement in the eye of food safety and wash line equipment. The basin that collects the wash water does get recirculated. The wash water passes through a series of screens and baffles to settle out the sediment and debris before it goes back through the pump that supplies the pre-soaking, high volume/low-pressure step. As with any post-harvest ag water, this would need to be monitored and treated in accordance with SOP's. The high pressure and the final rinse steps are supplied with fresh incoming water.

Vendor Info: AZS Brusher Equipment, 821 Crooked Ln, Ephrata, PA 17522, Phone: (717) 733-2584

An inside look at the spinning bar and stainless steel conveyor. *Photo: A. Chamberlin, UVM*

Hinged and lifted via pneumatic cylinders to make cleaning access easy! *Photo: A. Chamberlin, UVM*

Get Your Farm

FSMA READY

with a

Confidential On-Farm Readiness Review

All On-Farm Readiness Review visits are voluntary & confidential. Findings are shared only with the farm owner/grower who requested the review.

Contact the New York State OFRR team: (518) 457-3846 or steve.schirmer@agriculture.ny.gov

In preparation for the launch of the Food Safety Modernization Act (FSMA) Produce Safety Rule, the New York State Department of Agriculture and Markets together with food safety specialists from Cornell University, are offering confidential On-Farm Readiness Reviews (OFRR). A visit from the OFRR team will focus on working with you, the grower, to review your operation and offer suggestions for possible enhancements and/or modifications for successful operation within the Produce Safety Rule.

Benefits of Participating in a Review:

- Enhance your knowledge of the Produce Safety Rule
- Receive important recommendations to help you make a smoother transition into FSMA compliance
- Become better prepared for your farm's official FSMA inspection

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 7/03 - 7/09/18

Location**	Rainfall (inch)		Temp (°F)	
	Week	Month July	Max	Min
Albion	0.02	0.02	96	51
Baldwinsville	0.49	0.91	101	50
Bergen	0.00	0.00	95	48
Buffalo*	0.01	0.14	91	55
Burt	0.11	0.11	93	52
Ceres	1.68	2.12	88	46
Fairville	0.42	0.42	92	48
Farmington	0.05	0.05	93	48
Gainesville	0.18	0.26	92	48
Geneva	1.15	1.15	90	52
Lodi	0.66	0.73	91	50
Niagara Falls*	0.15	0.15	97	57
Ovid	0.46	0.48	92	49
Penn Yan*	0.25	0.26	90	50
Phelps	0.05	0.05	94	48
Portland	0.18	0.31	87	58
Rochester*	0.48	0.48	93	54
Silver Creek	0.34	0.34	87	56
Sodus	NA	NA	NA	NA
Versailles	0.05	0.05	91	52
Volney	0.01	0.56	93	46
Williamson	0.70	0.74	89	50

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - July 09, 2018

Location	2018	2017	2016
Albion	1163	1010	1040
Baldwinsville	1223	1080	1065
Bergen	1094	978	931
Buffalo	1230	1047	1065
Burt	1032	949	NA
Ceres	1039	912	795
Fairville	1054	962	907
Farmington	1092	962	949
Gainesville	924	927	745
Geneva	1133	1019	992
Lodi	1241	1148	1091
Niagara Falls	1318	1147	1135
Ovid	1177	1087	1045
Penn Yan	1190	1094	1063
Phelps	1012	1023	971
Portland	1171	1106	986
Rochester	1254	1092	1072
Silver Creek	1069	1046	942
Sodus	1050	1004	880
Versailles	1141	1053	926
Volney	1054	946	NA
Williamson	1018	1002	893

* Airport stations

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

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Cornell Vegetable Program

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VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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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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Cornell Cooperative Extension
Cornell Vegetable Program

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