



# VEGEEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 17 • Issue 3 • March 1, 2021



Think Spring!  
Nitrogen  
Requirements for  
Garlic

PAGE 1



Chlorpyrifos  
Banned in New  
York State: Uses  
in Vegetables Will  
be Cancelled on  
July 31, 2021

PAGE 4



AZS Rinse  
Conveyor User  
Guide Now  
Available

PAGE 5



Reflecting on the  
2020 Preliminary  
Results of the  
Mesotunnel  
System in New  
York

PAGE 6

## Think Spring! Nitrogen Requirements for Garlic

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Although garlic is buried deep under the snow at the moment, spring can arrive quickly. Typically, nitrogen is applied in the spring as soon as garlic begins to grow, when it is 6 inch tall and has 4-5 leaves. Recent trials conducted by Cornell Cooperative Extension (Hoepting *et al.* 2017, 2018) yielded some interesting results with respect to nitrogen requirements in garlic.

In every single one of eight side-by-side comparisons, there were no differences in yield among 50 lb/A, 100 lb/A and 150 lb/A of spring-applied inorganic nitrogen in German hard neck garlic (Fig. 2 and 3). Trials encompassed two years of trials, three trial locations, three planting configurations, three types of inorganic nitrogen fertilizer, three fertilizer application techniques, and different seed sources and sizes. In the second year of study, 50 lb/A of spring-applied nitrogen significantly increased yield by 20% compared to 0 lb/A applied nitrogen. **These results suggest that garlic only needs 50 lb/A of nitrogen to be available in the spring when the crop begins to grow.**

The same study showed that **garlic has all the nitrogen it needs by end of May** when tissue analysis shows > 3.5% N (Fig. 1). Our results indicated that that **clove size**, as a measure of ability to supply nutrients to the developing seedling in the fall **was far more important than nitrogen availability during the following spring**. In our trial, increased rate of applied nitrogen in the spring could not make up for smaller seed size (Fig. 3).



Figure 1. Garlic has all the nitrogen it needs by the end of May, if tissue analysis shows >3.5% N.

Photo from CCE Cornell Vegetable Program

continued on [page 3](#)

## About VegEdge

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.



The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

We're interested in your comments. Contact us at:  
CCE Cornell Vegetable Program  
480 North Main Street, Canandaigua, NY 14224  
Email: [cce-cvp@cornell.edu](mailto:cce-cvp@cornell.edu)  
Web address: [cvp.cce.cornell.edu](http://cvp.cce.cornell.edu)

### Contributing Writers

Elizabeth Buck  
Robert Hadad  
Christy Hoepting  
Esther Kibbe, CCE Harvest NY  
Margie Lund  
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](http://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](mailto:aep63@cornell.edu). Total readership varies but averages 700 readers.

Information provided is general and educational in nature. Employees and staff of the Cornell Vegetable Program, Cornell Cooperative Extension, and Cornell University do not endorse or recommend any specific product or service.

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are possible. Some materials may no longer be available and some uses may no longer be legal. All pesticides distributed, sold or applied in NYS must be registered with the NYS Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide usage in NYS should be directed to the appropriate Cornell Cooperative Extension (CCE) specialist or your regional DEC office.

CCE and its employees assume no liability for the effectiveness or results of any chemicals for pesticide usage. No endorsement of products or companies is made or implied. READ THE LABEL BEFORE APPLYING ANY PESTICIDE.

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



# Contents

Think Spring! Nitrogen Requirements for Garlic.....	1
Chlorpyrifos Banned in NYS: Uses in Vegetables Will be Cancelled on 7/31/21..	4
Are You Paying Your Employees Well, Or Not? .....	5
AZS Rinse Conveyor User Guide Now Available .....	5
Reflecting on the 2020 Preliminary Results of the Mesotunnel System in NY.....	6
A Tool for Making More Informed Irrigation Decisions.....	8
Upcoming Events .....	10
Managing Soil Nitrogen in Winter High Tunnels Webinar .....	10
Labor Management on Small and Medium Sized Farms Webinar .....	10
Asparagus Production, Management, and Marketing Online Workshop.....	10
Assess & Prevent Food Safety Risks in Leafy Greens Production .....	10
2021 NYS Dry Bean Meeting .....	11
Cleaning and Sanitizing on Produce Farms and in Packing Facilities .....	11
Contact Us.....	12

*The next issue of VegEdge newsletter will be produced on April 1, 2021.*



# Applied Nitrogen in Spring (Apr 23):

50 lb/A

100 lb/A

150 lb/A



Figure 2. Visual appearance of 0, 50 and 100 lb/A of nitrogen (in form of urea) applied broadcast to the soil surface of garlic. Note, that total per acre rate was concentrated over the 2.5 foot wide bed in this trial. *Photos by Christy Hoepting, CCE Cornell Vegetable Program*

Applied Nitrogen in Spring (Apr 23)	Grown from Seed from <b>Large (&gt; 2")</b> Bulbs		Grown from Seed from <b>Medium (&lt; 2")</b> Bulbs	
	< 2" bulbs	> 2" bulbs	< 2" bulbs	> 2" bulbs
<b>0 lb/A</b>				
<b>50 lb/A</b>				
<b>100 lb/A</b>				
<b>150 lb/A</b>				

## FOR MORE INFORMATION

See [Effect of Spring-Applied Nitrogen Fertilizer on Garlic Yield, 2017-2018](#) on the CCE Cornell Vegetable Program website [CVP.CCE.CORNELL.EDU](http://CVP.CCE.CORNELL.EDU) under Garlic. ●

Figure 3. Effect of rate of spring-applied nitrogen and seed size on bulb size distribution of garlic at harvest. No differences in yield were detected between 50, 100 and 150 lb/A of applied nitrogen. Instead, the most important factor determining yield was seed size. *Photos by Christy Hoepting, CCE Cornell Vegetable Program*

# Chlorpyrifos Banned in New York State: Uses in Vegetables Will be Cancelled on July 31, 2021

Michael Helms, Extension Support Specialist, Pesticide Management Education Program (PMEP), Cornell University; edited by Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

An Executive directive was issued for the New York State Department of Environmental Conservation (NY DEC) to ban chlorpyrifos, an organophosphate pesticide, in December 2019 to safeguard public health and protect environmental resources, particularly pollinators. NY DEC recently issued a draft regulation that prohibits pesticides containing chlorpyrifos from being sold, distributed, possessed, and used in New York State after either December 31, 2020 or July 31, 2021.

## FIFTEEN CHLORPYRIFOS PRODUCTS REGISTERED UNTIL JULY 31, 2021, INCLUDING SOME FOR USE IN VEGETABLES

Registrations for 29 chlorpyrifos products were canceled as of December 31, 2020. These cancelled registrations affected products used in agriculture, turf management, and indoor bait stations. However, 15 chlorpyrifos products approved for application to apple tree trunks for control of borers remain registered until July 31, 2021, to meet this critical need for the 2021 growing season (Table 1). Since these products are still registered, they can be used according to label directions, including on any crop listed on their labels. Fortunately, this includes uses for control of maggots in cabbage (and other brassicas) and in onions. The DEC has posted lists of canceled and currently registered chlorpyrifos products on their website for reference. It is also recommended that you consult the [DEC's product registration database \(NYSPAD\)](#) to confirm that any chlorpyrifos product you may have on hand is currently registered.

## UNREGISTERED CHLORPYRIFOS PRODUCTS MUST BE REMOVED FROM NEW YORK STATE

If a pesticide is no longer registered in New York State, sales, use, or distribution within the state is prohibited and the product must be removed from the state or disposed of properly. If you have unregistered chlorpyrifos product on hand, you can contact pesticide distributors and manufacturers to see if they have disposal options available. Disposal of unregistered product might also be possible at a [CleanSweepNY](#) event when they are made available. Keep in mind that open containers of unregistered pesticides are considered to be in use and need to be disposed of immediately.

**Table 1. Chlorpyrifos-containing pesticide products to be cancelled on July 31, 2021**

These remaining 15 chlorpyrifos pesticide products that allow for applications to apple tree trunks remain registered for sale, use, and distribution in the state to fulfill the Executive directive to meet this critical need during the 2021 growing season. Although these pesticides remain registered to accommodate this specific use pattern, **they can be applied for all labeled uses until they are cancelled (including for maggot control in cabbage and onion).**

EPA Registration No.	Product Name
19713-520	Drexel Chlorpyrifos 4E-AG Insecticide
19713-671	Drexel Lambdafos Insecticide
279-3581	Bolton Insecticide
34704-1077	Warhawk Clearform
34704-857	Warhawk
62719-220	Lorsban-4E
62719-220	Hatchet Insecticide
62719-220-1381	Agrisolutions Yuma 4E
62719-220-5905	Whirlwind
62719-301-10163	Lorsban 75WG
62719-591	Lorsban Advanced
62719-615	Cobalt Advanced
66222-19	Chlorpyrifos 4E AG
66222-19	Quali-Pro Chlorpyrifos 4E
66222-233	Vulcan

## PUBLIC COMMENT AND HEARING

The proposed regulation was published in the [State Register](#) on January 27, 2021 and is available for **public review and comment through April 5, 2021. A public hearing on the draft regulation is scheduled for March 30, 2021 at 6 PM via webinar.** Written comments can be submitted by email to [chlorpyrifosregs@dec.ny.gov](mailto:chlorpyrifosregs@dec.ny.gov) (include "Comments on Proposed Part 326" in the subject line of the email) or mailed to NY DEC. Persons wishing to comment on the proposed rule will have the opportunity to make a statement at the public comment hearing webinar. Any person wishing to provide a public statement must register in advance of the hearing. Any person who wishes only to observe the webinar online must also register. Any person may listen to the hearing by phone without pre-registration. Details on submitting comments and how to register for the public hearing are available through the [DEC's website](#).

## FOR MORE INFORMATION

Specific details on the chlorpyrifos phase-out are available at the DEC's website. Questions on the chlorpyrifos cancellation process can be directed to the DEC's Pesticide Product Registration Section at 518-402-8768 or [ppr@dec.ny.gov](mailto:ppr@dec.ny.gov). Information on the chlorpyrifos prohibition regulation can be directed to the DEC's Pesticide Enforcement and Compliance Assurance Section at 518-402-8727 or [pestcomp@dec.ny.gov](mailto:pestcomp@dec.ny.gov). ●



## Are You Paying Your Employees Well, Or Not?

Richard Stup, Cornell Agricultural Workforce Development Program, <https://agworkforce.cals.cornell.edu/>

While pay is not the most important factor in retaining and motivating employees, it does matter. If the compensation you offer is not enough when compared to other employers, then you'll struggle to attract employees and you'll always have a revolving door of employees leaving for better opportunities. On the other hand, it's good to know about what others are paying so that you can keep your costs in line. This year, we'll be able to focus on some key positions within industries: herdspersons, crop managers, crew leaders, etc.

Participating in the [2020 Farm Employee Compensation Benchmark](#) will give you the information you need to compare your compensation to other farm businesses and make better compensation plans. The process is easy and only takes about 10 minutes per employee to enter:

1. Select one or more employees who worked for you in 2020.
2. Gather your data about the regular and overtime hours they worked and how much pay they earned in 2020. Most farms will have this readily available in payroll records.
3. Gather your data about the non-wage benefits they received and how much the employer paid for them. Include items such as the employer-paid portion of insurances and retirement, value of any paid time off, estimated market value of any provided housing, and other items such as provided food or clothing.
4. Enter the data you collected along with other simple, descriptive information about the employee's position in the [2020 Farm Employee Compensation Benchmark](#).
5. Repeat steps 1-4 to enter data about another employee.

Farms with more complex workforces should enter multiple employees. Choose a few representative frontline employees plus any middle managers or even more senior managers in the business. We will collect information from a large number of farms of all types in New York and other states, and we will be able to separate the data by farm type (dairy, fruit, vegetable, greenhouse, etc.) in order to provide more specific and customized reports.

There is no cost to participate and farms who provide at least one usable employee entry will receive a report of the results and an invitation to attend a webinar discussion of the findings. All information that you enter will be kept confidential. Only aggregate data, with no way to identify farms or individuals, will be published or shared.

Please participate in the [2020 Farm Employee Compensation Benchmark](#) today! ●

## AZS Rinse Conveyor User Guide Now Available

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

Attention farms with AZS rinse conveyors or maybe thinking of getting one! University of Vermont (UVM) has created a current user guide. The AZS rinse conveyor are hand built in PA with the intention of being more effective at washing many vegetable crops than a brush washer and from a food safety standpoint, somewhat easier to clean.

When purchasing a unit, there is little in the way of an instruction manual. Through discussions with the builders and farmers who own and operate them, UVM Ag Engineering has come up with information to help growers figure out the ins and outs of using them. For those unfamiliar with the machine, check out this article from UVM, [Innovation in Small Scale Vegetable Washing Equipment](#)

To access the [AZS Rinse Conveyor User Guide](#), go to UVM Extension Ag Engineering blog site: <https://blog.uvm.edu/cwcallah/>



AZS Rinse Conveyor is a stainless-steel produce rinsing machine to aid in the washing of fruits and vegetables. The unit is unique because of the attention paid to the ease of cleaning and sanitizing the equipment after use. Photo by Robert Hadad, CCE Cornell Vegetable Program ●

# Reflecting on the 2020 Preliminary Results of the Mesotunnel System in New York

Kellie Damann and Sarah Pethybridge, Cornell AgriTech, Geneva

Finding new methods and developing innovative systems for growers is a top priority for many agricultural researchers. We want to find ways to help growers produce the best quality produce and stress less about crop protection. That is why the EVADE lab at Cornell AgriTech was excited to test out the mesotunnel system in 2020 and understand the benefits for organic cucurbit growers in NY. If you have been following the last few articles, then you are familiar with some of the benefits this system can provide growers. In this article we would like to share the preliminary results from the season, so you can see first-hand the impacts this could have on your cucurbit crop. Due to COVID-19 restrictions our trials had to be adjusted but we were still able to gain some valuable insight on the potential for this system.

## ABOUT THE TRIAL

The trial was located on certified organic land at Cornell AgriTech, Geneva. The information collected was focused on determining the impact of the mesotunnel on the insect pests and diseases of cucurbits. This included Cucumber Beetles and Squash Bugs along with the diseases they vector: Bacterial Wilt and Cucurbit Yellow Vine Disease (CYVD), respectively. We also monitored the incidence and severity of two commonly encountered fungal diseases, powdery mildew and downy mildew. Along with this we observed the behavior of pollinators within and outside the mesotunnel. At the end of the season, we collected yield data which compared the numbers of marketable fruit to unmarketable fruit and noted the factors that contributed to the unmarketable category. Two crops were included in the study: muskmelon (var. Athena) and acorn squash (var. Honey Bear). Each crop was grown in a single three-row plot either within the mesotunnel or uncovered.



Figure 1. Mesotunnel trial on the Cornell AgriTech Gates West certified organic research farm. The front is the acorn squash crop (mesotunnel and uncovered). Behind is the muskmelon crop with the same treatments. *Photo by Kellie Damann, Cornell AgriTech*

## SO, WHAT HAPPENED?

Findings indicated that the mesotunnel system prevented insect pests from getting into the tunnel and causing damage. There was also a noticeable decrease in the incidence of plants affected by bacterial wilt and CYVD.

### Squash

In the squash plots, cucumber beetles and squash bugs were present in the uncovered plot, but only a few cucumber beetles sneaked into the tunnel. This was late enough in the season, so no damage resulted. The squash bug infestation led to 41% of the plants in the uncovered plot to be affected by CYVD. None of the plants in the mesotunnel had symptoms of CYVD. Although the netting was highly effective at preventing most of the insect pests from entering, towards the end of the season there was a large spike of aphids that formed within the tunnel. Fortunately, most of the fruit on the vines were at or near maturity so it did not impact the yield. Over the next few seasons, we are planning on observing if this is a trend and determining the best methods to control aphid populations. The uncovered squash plot had a slightly higher marketable yield than the covered. This variety produced a large amount of vegetative growth which could explain the slight reduction in yield due to the restricted space for

*continued on page 7*



continued from page 6

fruit development to occur. This upcoming season we are testing a different variety to see how well it compares in this system.

### Muskmelon

In the muskmelon plots, cucumber beetle populations increased significantly from the middle of July through to the end of August. The influx in cucumber beetles led to 65% of the muskmelon plants in the uncovered plot showing symptoms of bacterial wilt leading to plant death. On the other hand, only 29% of the plants in the tunnel showed symptoms of bacterial wilt. Symptoms of bacterial wilt were not observed until mid-August within the tunnel, so these plants already had produced fruit which were close to maturity.

At harvest, some significant differences appeared between the mesotunnel and uncovered plots. Eighty-eight fruit were harvested from the mesotunnel while only 65 from the uncovered plot. Of the total number harvested, 70 fruit were deemed marketable in the mesotunnel plot, while only 24 were marketable in the uncovered plot. In the uncovered plot most of the damage was due to insect damage, cracking, soft spots, and poor netting. In the tunnels unmarketable fruit was mainly due to overripe fruits that had soft spots. Fruit within the mesotunnel also ripened about a week earlier than in the uncovered plot.



Figure 2. Both pictures are from within the mesotunnel showing misshapen and not mature fruit due to the growth under the main stem. Photos by Kellie Damann, Cornell AgriTech



Figure 3. Left: Melon grown in the uncovered plot with significant damage to the skin; Right: Melon grown within the mesotunnel. Photo by Kellie Damann, Cornell AgriTech

### LOOKING FORWARD TO 2021

Trials in 2020 therefore showed significant promise at excluding pest insects and were especially effective in muskmelon. This year we will be conducting larger replicated trials to gain an even better understanding on how this system works in organic cucurbit production. We will also be including a trial to investigate weed suppression options for their compatibility in a mesotunnel system.

This research is funded through the USDA-NIFA Organic Research and Extension Initiative led by Iowa State University. Sarah Pethybridge and Kellie Damann (Cornell AgriTech, Geneva) are the New York collaborators on this project. More details on the New York research can be found by contacting Sarah ([sjp277@cornell.edu](mailto:sjp277@cornell.edu)); (315)744-5359 [cell] or Kellie ([kcd48@cornell.edu](mailto:kcd48@cornell.edu)); (585)233-6779 [cell].

Please visit our project's website and follow us on Twitter to stay up to date on all the latest mesotunnel news.

The Current Cucurbit Project: <https://www.cucurbit.plantpath.iastate.edu/>

Twitter: @TCucurbit

YouTube: [The Current Cucurbit](#)

Join our mailing list: [cucurbit-news@iastate.edu](mailto:cucurbit-news@iastate.edu)

EVADE Lab Website (NY): <https://blogs.cornell.edu/pethybridgelab/>

Twitter (NY): @Cornell\_EVADE ●

# A Tool for Making More Informed Irrigation Decisions: The Climate Smart Farming Water Deficit Calculator

Elizabeth Buck, Cornell Cooperative Extension, Cornell Vegetable Program

It's no secret that we're running into more frequent and intense drought-related issues throughout NY's vegetable producing regions. Dry conditions around planting disrupts uniform seed emergence, diminishes final stand, inhibits herbicide activity, and delays weed germination. Of course, all four of these conditions compound upon each other to favor weed dominance and leave you stuck in a game of catch up in an uneven, economically hamstrung planting. Yes, there's an integrated weed management concept worked into this irrigation article...surprise!

None of that information is exactly earth shattering, right? You're all good farmers, you know that irrigation is important. But the reality is, most of the farms I visit just don't have access to enough irrigation water, infrastructure, and labor to comfortably keep up with watering crops during droughts. And of those three limitations, the water source is often the largest challenge, the hardest and most costly to change.

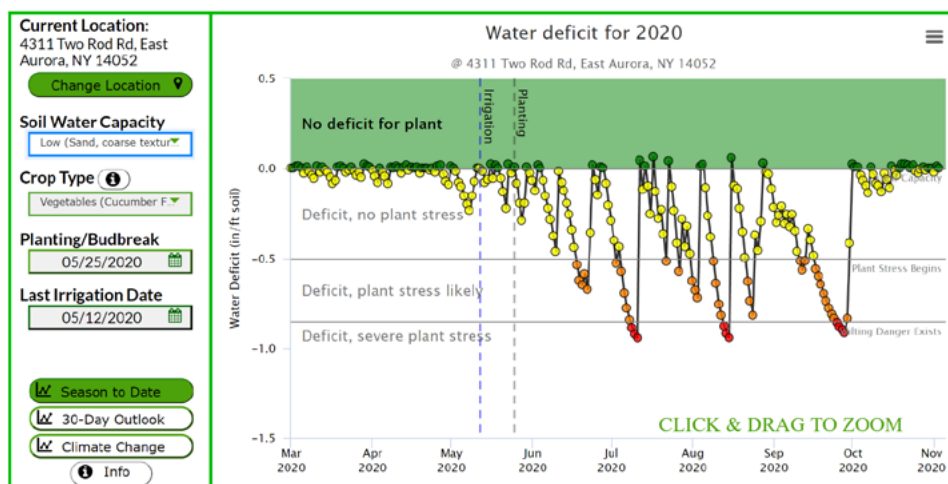
We have a long history of getting by with surface water, with having enough flow in streams and frequent enough rain to carry crops through most of the growing season or at least to reliably refill farm ponds during the growing season. But things are changing and it is common now for segments of WNY to experience several weeks of abnormally dry or drought conditions during the summer. Too often ponds aren't recharging, streams are flowing low, and the rain comes too fast to soak in. You all know irrigation is important during this period. The tricky part is figuring out how best to allocate the water you do have.

The [Cornell Climate Smart Farming Water Deficit Calculator](#) is a user-friendly tool that can help you better select which crops to water first by understanding the pattern

of past and predicted water depletion in your field, and it only takes 3-5 minutes. The model then uses your description of general soil type to determine how much water your soil can hold, how quickly water moves into and drains out of your soil, and the water deficit at which plants begin experiencing physiological (non-wilting) stress or severe (wilting) stress. Weather station observations combined with high-resolution radar allow the tool to detect rainfall and appropriately increase the amount of water available in the root zone at that location. Growers can also add the date of their last irrigation.

Most importantly, the CSF Water Deficit Calculator takes the different evapotranspiration rates of different types of crops into account. Evapotranspiration is the combined loss of soil water to the air from regular evaporation and from plant transpiration and determines how fast your soil loses water. Evapotranspiration varies greatly based on crop height and total size, leaf characteristics, temperature, humidity, wind speed, amount of sunshine, and crop drought status. The tool allows you to pick from 10 different crop type groupings (developed to model 24 different vegetables & 4 field crops) so you can have an accurate representation of water draw-down.

To use the tool set your location, your broad soil type (sand, loam/silt, or clay), your crop grouping, your planting date. The tool will populate with the observed soil water availability from March 1st to today's date of the current year, or you can look at past years.



A screenshot of the CSF Water Deficit Calculator set to show the observed soil water availability and plant stress for a sandy field of cucumbers located in East Aurora, NY planted on May 25, 2020. Note the dashed vertical gray planting date line and vertical dashed blue line for date of last irrigation.

I am using 2020 data in this illustration (above). The inches of water deficit are tracked on the vertical axis and the date along the horizontal axis. The planting date will show up as a dashed, vertical gray line. Every time it rains the tool calculates if the rainfall was enough to bring the soil completely or only partially back to full water status.

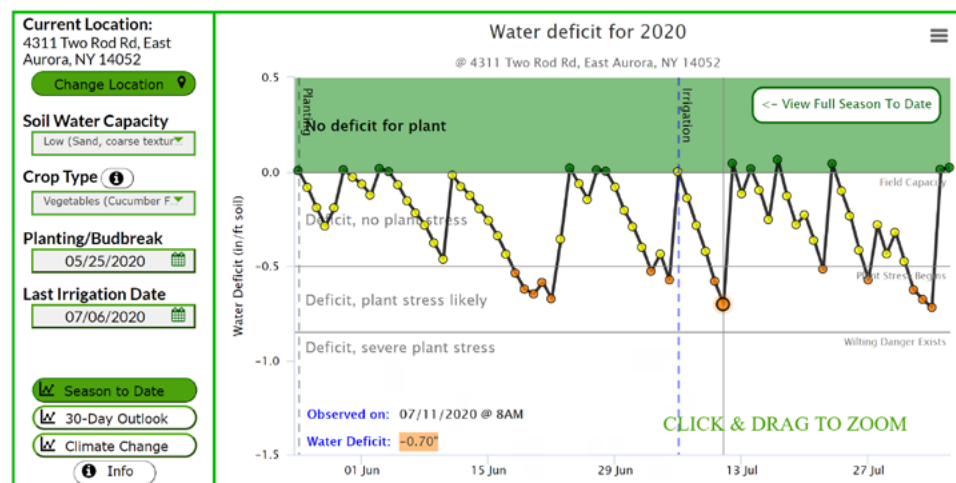
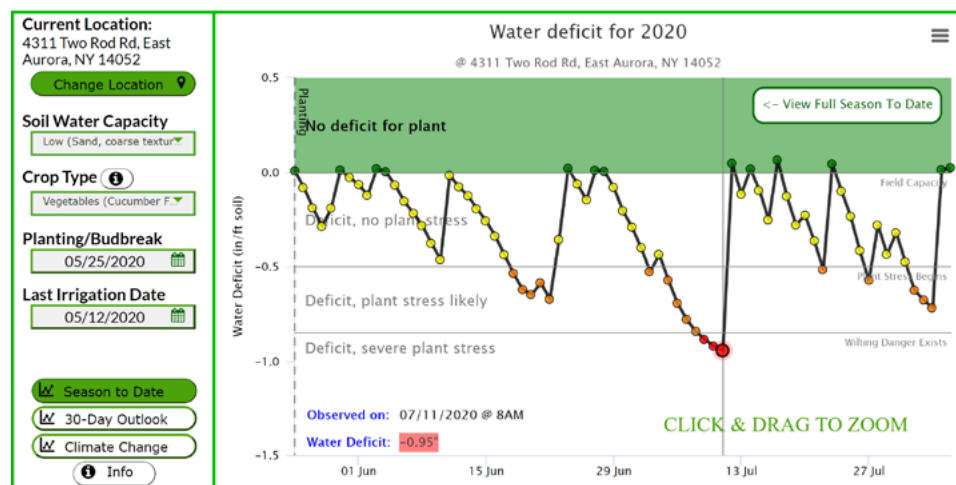
The water deficit of the field is plotted out in a graph. There are set lines running horizontally across the chart marking separate stress zones. The inches of water deficit that define the top and bottom of each stress zone are a function of the type of soil you have, and are well-accepted values backed by soil science. Green dots represent days when the field is fully or over saturated. Yellow dots represent days when the field is below full water capacity and above the point when plants begin to experience physiological drought stress. The yellow zone is the normal, productive growing condition for crops. Orange dots fall in the physiological stress zone and represent undesirable conditions that may not be entirely obvious upon a casual observation of the field. Red dots indicate severe water deficit, wilting and severe plant stress.

*continued on page 9*



You want to irrigate your field in the orange zone to minimize plant stress. Under water limited scenarios, you want to irrigate your field frequently and heavily enough to prevent it from entering the red zone. If you enter an irrigation date, a dashed vertical blue line will appear.

The tool currently assumes that an irrigation will restore the soil water availability to 100%, which is also called field capacity. The developers know that in real life it sometimes isn't possible to bring the soil back up to full water status, especially when you're limited by the capacity of your irrigation source. The current goal is to add a new feature to the next update that will allow growers to input the amount of their last irrigation to further increase the accuracy of the tool. Case studies have shown that the current version of the CSF Water Deficit Calculator is still a useful irrigation management tool.



The CSF Water Deficit Calculator chart for a cucurbit field on sandy soils in East Aurora in 2020 showing the difference in soil water deficit on July 11th as a result of no irrigation (top) or irrigation (bottom) occurring on July 6th. The irrigated field has 4 fewer days of stress and experienced no severe drought stress between July 7th and 12th.

You can highlight a section of the field season to zoom in on a specific cropping window. As you mouse over the graph you will highlight different dates. In the bottom left, the date and the water deficit for that date appears color coded to the stress zone your crops experienced. The two panels above show the water deficit on July 11th. The top panel is the situation without irrigation, and the bottom panel shows the impact of a complete irrigation on July 6th, when the crop was in the upper portion of the orange, physiological stress zone. The unirrigated field experienced 3 orange and 3 red stress days between 7/6 and 7/11/2020, while the irrigated field experienced only two orange days. You can see that the water deficit in the irrigated field (bottom) was only -0.7" on 7/11 while the unirrigated field (top) was -0.95". While that may seem like a small difference, that quarter inch makes a huge difference in crop stress.

During the field season, the tool offers a prediction of upcoming soil water deficit (drought) conditions using the short-term forecast, current water status, and longer-range weather modelling. That feature is only available during the field season, but you can watch tutorials on that feature at: <http://climatesmartfarming.org/videos/> ●

## LOOKING FOR MORE INFORMATION ABOUT MANAGING DROUGHT STRESS IN VEGETABLE CROPS?

The [recording of the February 26th Irrigation Scheduling Workshop\\*](#) includes discussion on:

- exactly how dry conditions impact crops
- when during crop development drought causes the most damage
- in-depth explanations of what data the CSF Water Deficit tool uses and how it works
- A case-study of the impact of irrigation on processing snap beans in 2020 as revealed by the CSF tool



\* Video recording will be posted by Wednesday, March 3, 2021.

## Upcoming Events

View CCE Cornell Vegetable Program events at [CVP.CCE.CORNELL.EDU](http://CVP.CCE.CORNELL.EDU)

### Managing Soil Nitrogen in Winter High Tunnels Webinar

March 5, 2021 (Friday) | 12:00 - 1:30pm

Virtual Conversation via Zoom

Cornell Cooperative Extension is exploring practices that high tunnel growers can adopt to better manage soil fertility and improve soil health. Grab your lunch and join us for a virtual conversation to hear project updates and research results:

1. **Including winter cover crops in high tunnel tomato rotations** as a way to scavenge leftover nitrogen and/or fix nitrogen. In turn, this could lead to less fertilizer use and result in higher crop health, yield, quality, and profitability. As part of this work, we are investigating suitable cover crop species, seeding dates, and seeding rates.
2. **Optimizing winter nitrogen management for spinach production.** High tunnel spinach can survive Northern NY winters without supplemental heat, but the nitrogen needs of this leafy crop during the short days of winter are not well understood. Given that organic fertilizers require warm soils to mineralize the nitrogen into a form plants readily use, farmers apply high levels of nitrogen to ensure crop growth. By establishing appropriate nitrogen rates and sources, this project could increase profitability by reducing inputs while also improving soil sustainability.

Register at: <https://cornell.zoom.us/join/join/join/register/tJlqce2sqTouGtGBriflStiypE1wZUaysJ3> Questions can be directed to Caitlin Tucker at [cv275@cornell.edu](mailto:cv275@cornell.edu).

### Labor Management on Small and Medium Sized Farms Webinar

March 9-11, 2021 (Tuesday - Thursday) | 2:00 - 3:00pm ET

Online Training via Zoom

Labor is a critical issue for farmers seeking to scale-up production to supply emerging markets for their products and to meet business and family income goals. But in an environment of diminishing labor, escalating wages and narrow profit margins, finding, managing, training and retaining productive farm crews are proving to be a fluid puzzle with many moving parts.

This three-part, interactive seminar series will present highlights from recent research and extension projects focusing on labor management and decision-making on small and mid-sized produce and livestock farms across the US. Each session will also have time for questions and discussion, providing multiple opportunities to connect and share with other attendees. There is no fee to participate, but space is limited and advance registration is required. Go to: <https://www.uvm.edu/aglabor/dashboard/events> for details and registration. The webinars are hosted and organized by Univ Vermont, NC A&T Univ., and Ohio State Univ. funded through NIFA-USDA.

### Asparagus Production, Management, and Marketing Online Workshop

March 17, 2021 (Wednesday) | 10:00am - 12:00 noon ET

Online Workshop via Zoom

There will be a Zoom workshop on Asparagus Production, Management, and Marketing sponsored by Penn State Univ. Cooperative Extension. The program will feature Carl Cantaluppi, retired Area Extension Agent, NCSU Cooperative Extension. Cantaluppi, an expert on commercial asparagus production will discuss, variety selection, pre-plant soil preparation, best management practices, pest management, harvest techniques, and postharvest handling. This event is free and open to all that are interested. [Register online](https://extension.psu.edu/asparagus-production-management-and-marketing) at: <https://extension.psu.edu/asparagus-production-management-and-marketing>

### Assess & Prevent Food Safety Risks in Leafy Greens Production

March 18, 2021 (Thursday) | 6:30 - 9:00pm ET

Online Training via Zoom

E. coli outbreaks in lettuce grown in the Southwest have made headlines numerous times over the last several growing seasons. In many instances, these outbreaks have led to recalls from coast to coast. Ultimately, the health and financial impacts of these outbreaks have resulted in more attention being paid by buyers and regulators on the leafy greens industry. What do the problems in the Southwest have to do with growers in NY? As leafy greens are a highly susceptible crop to contamination, precautionary lessons can be learned. This training will provide an overview of possible sources of contamination related to soil amendments, wildlife, water, post-harvest handling, transportation and more. This training will emphasize specific risks that leafy greens growers may experience, identify tangible corrective actions that can be taken, and provide participants the opportunity to work through example scenarios as a group.

Leafy greens growers, with the exclusion of those growing sprouts and microgreens, who sell through any of the following market channels: farmers market, CSA, produce auction, or wholesale, will find this workshop informative in offering real world examples and solutions to all aspects of growing, harvesting and storage of leafy greens grown in NYS.

*continued on next page*



A basic knowledge of food safety is recommended, but not required, for participation in this remote training opportunity. The cost to attend this virtual training is \$10/farm and payment is required at the time of registration. The zoom link will be sent the morning of March 18th to the email used in the registration. Registration is required by March 16th. **Register online at [https://reg.cce.cornell.edu/leafygreensfoodsafetyrisks\\_203](https://reg.cce.cornell.edu/leafygreensfoodsafetyrisks_203)**

This event is hosted by CCE Cornell Vegetable Program, Cornell Cooperative Extension of Broome County, and Cornell Cooperative Extension of Yates County. Any questions can be directly to Laura Biasillo at [lw257@cornell.edu](mailto:lw257@cornell.edu).

## 2021 NYS Dry Bean Meeting

March 19, 2021 (Friday) | 9:00am - 12:30pm  
Online Meeting via Zoom

Join us for the 2021 Dry Bean Meeting, with presentations covering the latest research in NY dry beans. Topic areas include market updates, white mold management, Western bean cutworm and soybean cyst nematode management, herbicide resistance management, dry bean variety testing, and incorporating NY dry beans into schools.

This event will be held virtually via Zoom, and 2 DEC credits will be available. Price: \$15 for CVP Enrollees, \$20 for Non-enrollees. For more information and to register online by credit card, please access the [2021 NYS Dry Bean Meeting](#) at CVP.CCE.CORNELL.EDU. Since this year's meeting is a virtual event, if you are interested in DEC credits, a copy of your DEC pesticide license needs to be submitted by March 17. In order to receive DEC credits for this meeting, please be sure to follow all instructions on the registration page. We look forward to seeing you there!

## Cleaning and Sanitizing on Produce Farms and in Packing Facilities

April 1, 2021 (Thursday) | 8:30am - 12:00 noon  
Online Workshop via Zoom

This program will be focusing on putting farm food safety into daily production practices.

- A brief review of microbial risks in produce farms and packing facilities
- Conducting a Sanitation Operational Assessment
- Presentations focused on the:
  - Basics of wet and dry cleaning and sanitizing
  - Value and importance of sanitation SOPs
- A hands-on exercise writing a sanitation SOP

The course is subsidized by several state and federal grants and is being offered at a reduced cost of \$10 per participant. We will provide several resources related to the topics reviewed during the workshop.

Sponsored by the Institute for Food Safety at Cornell University and the Produce Safety Alliance. Registration is limited to 15 participants. To register or for more information, contact Robert Hadad: [rgh26@cornell.edu](mailto:rgh26@cornell.edu) or call 585-739-4065

## VEGEdge SPONSORS



American Takii, Inc.  
831-443-4901 | [www.takii.com](http://www.takii.com)  
Creating Tomorrow Today



Vegetable Seeds for Professionals  
315-789-4155  
[www.bejoseeds.com](http://www.bejoseeds.com)



[www.cecrocker.com](http://www.cecrocker.com)  
Stafford, NY (585) 345-4141  
Pavilion, NY (585) 584-3036



Contact Judy Collier  
(302) 542-4665

Leading the way in Biopesticide options for fruit, vegetables and more



Pest control products for fruit, vegetable and field crops.  
Alex Deckey, 845-745-9246



Growmark FS - Filling Your Crop Needs  
Elba Muck 716-474-0500 | Caledonia 585-538-6836  
Knowlesville 585-798-3350 | Batavia 716-253-0259

GROWMARK



Call 800-544-7938 for sales or visit [www.harrisseed.com](http://www.harrisseed.com)  
A Grower Friendly Company



People...Products...Knowledge...

Medina, NY... (585) 798-6215  
Geneva, NY... (315) 789-4450  
Genoa, NY... (315) 497-2713



SEEDWAY Vegetable Seeds  
800-952-7333 | [www.seedway.com](http://www.seedway.com)  
We are focused on quality seed and service!



Blake Myers, 585.303.3252  
Randy DeMay, 585.747.3379  
[www.stokeseeds.com](http://www.stokeseeds.com)

# 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 highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell University and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

## Contact Us

### VEGETABLE SPECIALISTS

**Elizabeth Buck** | 585-406-3419 cell | [emb273@cornell.edu](mailto:emb273@cornell.edu)  
fresh market vegetables, weed management, soil health

**Robert Hadad** | 585-739-4065 cell | [rgh26@cornell.edu](mailto:rgh26@cornell.edu)  
farm food safety, organic, business & marketing, fresh market vegetables

**Christy Hoepting** | 585-721-6953 cell | [cah59@cornell.edu](mailto:cah59@cornell.edu)  
onions, cabbage, broccoli, garlic, pesticide management

**Julie Kikkert, Team Leader** | 585-313-8160 cell | [jrk2@cornell.edu](mailto:jrk2@cornell.edu)  
processing crops (table beets, carrots, peas, snap beans, sweet corn)

**Margie Lund** | 607-377-9109 cell | [mel296@cornell.edu](mailto:mel296@cornell.edu)  
potatoes, dry beans, and post-harvest handling and storage

**Judson Reid** | 585-313-8912 cell | [jer11@cornell.edu](mailto:jer11@cornell.edu)  
greenhouses/high tunnels, small farming operations, fresh market vegs

### PROGRAM ASSISTANTS

Sarah Caldwell | [sv483@cornell.edu](mailto:sv483@cornell.edu)

Angela Ochterski | [aep63@cornell.edu](mailto:aep63@cornell.edu)

Caitlin Tucker | 573-544-4783, [cv275@cornell.edu](mailto:cv275@cornell.edu)

Emma van der Heide | [ev247@cornell.edu](mailto:ev247@cornell.edu)

### ADMINISTRATION

Peter Landre | [ptl2@cornell.edu](mailto:ptl2@cornell.edu)

Steve Reiners | [sr43@cornell.edu](mailto:sr43@cornell.edu)

**Cornell Cooperative Extension  
Cornell Vegetable Program**

For more information about our program, email [cce-cvp@cornell.edu](mailto:cce-cvp@cornell.edu) or visit [CVP.CCE.CORNELL.EDU](http://CVP.CCE.CORNELL.EDU)



*Cornell Cooperative Extension is an employer and educator recognized for valuing AA/EEO, Protected Veterans, and Individuals with Disabilities and provides equal program and employment opportunities.*