



UMass
Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



Volume 34, Number 13

July 14, 2022

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MA farms are spending a lot of time setting up and moving irrigation to fields like this one in Hampshire County.

CROP CONDITIONS

Water is still at the top of everyone’s minds. Most of the state got less than 0.5 inches between the “storms” on Tuesday and Wednesday nights, except for part of southwestern MA where 1.0-1.5 inches fell, after several weeks of dry weather. This week, the Massachusetts Energy and Environmental Affairs Secretary declared a Level 2 – Significant Drought in the Connecticut River Valley, Central, Northeast and Southeast Regions and a Level 1 – Mild Drought in the Western and Islands Regions. Drought conditions are expected to continue, although there are some patches of rain forecast for next week. The [Massachusetts Drought Management Task Force](#) website provides current drought status and other resources. Home gardeners should be aware of any local water use restrictions—you can find a list of towns that have implemented restrictions [here](#).

Folks are trying to stay positive and keep up with the constant demand of irrigating. These recent storms have brought pathogens from the south and west, along with longer periods of leaf wetness, all culminating in higher disease pressure. This week brings news of downy mildew hitting cucumber and cantaloupe – the earliest seasonal outbreak we’ve had in years – as well as some additional leaf spot diseases in cucurbits and tomatoes. However, in general, disease pressure remains relatively low. Peppers and eggplants are starting to come in from the field and field tomatoes should be coming in soon.

PEST ALERTS

Chenopods

A second generation of [leafminer](#) was observed this week on Swiss chard in Hampshire Co., MA. Leafminer is a pale maggot (fly larva) that burrows between layers of a leaf, leaving slender feeding tunnels that later expand and become large blotches. There is a spring generation that emerges and affects crops in May and early June before pupating. New adults emerge in mid-July. Crop rotation, row cover, and removing and destroying affected leaves can help reduce the size of this subsequent summer generation. For more management information, see the article in the [May 20, 2021 issue of Veg Notes](#).

Cucurbits

[Cucurbit downy mildew](#) (CDM) was reported on cucumber around the region this week, including in Hampshire and Hampden Cos., MA, southwestern CT, and southeastern NY. The recent rainstorms likely spread it further throughout southern New England. The strain of DM that affects cucumber also affects cantaloupe. At this time, cucurbit crops other than cucumber and cantaloupe are not at risk. Growers controlling CDM with fungicides should now add DM-targeted materials to cucumber and cantaloupe spray programs. Rotate between FRAC groups of targeted materials

CONTACT US:

Contact the UMass Extension Vegetable Program with your farm-related questions, any time of the year. We always do our best to respond to all inquiries. **Office phone:** (413) 577-3976 *We are currently working remotely but checking these messages daily, so please leave us a message!* **Email:** umassveg@umass.edu

Home Gardeners: Please contact the UMass GreenInfo Help Line with home gardening and homesteading questions, at greeninfo@umext.umass.edu.

and combine targeted materials with broad-spectrum, preventative materials to prevent resistance development. **Preventative materials effective against cucurbit DM include** chlorothalonil (e.g. Bravo), mancozeb, and copper (less effective than chlorothalonil or mancozeb but OMRI-listed options available and also effective against bacterial diseases). **Effective DM-targeted materials include:** Orondis, Omega. Ranman, Zampro, Zing! or Gavel, Ariston, Curzate, Tanos and Previcur Flex. Presidio, Revus, and Forum are currently **not** recommended due to pathogen resistance.

Table 1. Squash vine borer trap captures for week ending July 14

Whately	0
Leominster	32
Sharon	0
Southampton	7



Cucurbit downy mildew on the top (left) and underside (right) of a cucumber leaf. Photos: G. Higgins.

Alternaria leaf spot (*Alternaria cucumerina*) was found this week on cucumber in Middlesex County, MA and butternut squash in northern CT. *A. cucumerina* is most common on melons and watermelons, although it can affect most cucurbit crops. The main symptoms are yellow-brown lesions with a yellowish halo, that expand into large, brown necrotic areas. Lesions show the concentric rings that are characteristic of *Alternaria* infections. Severe infections cause defoliation, exposing the fruit to sunscald and reducing fruit quality. To prevent this disease, rotate with non-host crops for at least two years, remove or deep plow plant debris to speed decomposition, maximize the distance between cucurbit fields to limit spread, and avoid overhead irrigation, if possible. For labeled fungicides, see the appropriate [crop section of the New England Vegetable Management Guide](#).

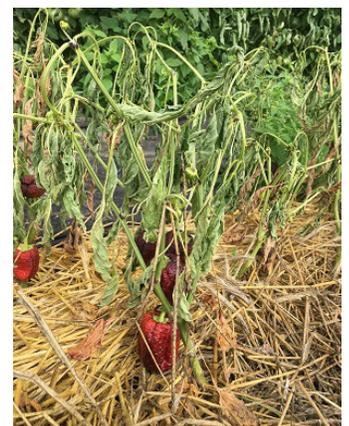


Alternaria leaf spot on cantaloupe. Photo: G. Holmes, Cal Poly San Luis Obispo, Bugwood.org

Squash bug adults and nymphs are continuing to feed, and adults will continue to mate and lay eggs throughout the summer. For more information about prevention and control, see the pest alert in the [June 16, 2022 issue of Veg Notes](#).

Nightshades

Phytophthora blight is developing in infested fields planted with susceptible crops throughout the region. *Phytophthora capsici* is a fungal-like organism that primarily affects cucurbit crops and peppers. In pepper, *P. capsici* causes a root and crown rot that turns the stem brown from the soil-line up. Foliage wilts and fruit remains attached to the upright stems but eventually become rotten by lesions. *P. capsici* can persist in the soil for many years as thick-walled resting spores called oospores. When soil becomes saturated, oospores germinate to produce infective, swimming zoospores that find susceptible hosts to infect. For this reason, *P. capsici* symptoms are most often seen when conditions are wet; during this dry season, we've seen it pop up in over-watered greenhouse peppers and in transplant trays set on the ground outside a greenhouse to



Phytophthora blight in pepper. Photo: S.B. Scheufele

harden off. Phytophthora blight is difficult to control, even using conventional fungicides, so taking measures to avoid introducing *P. capsici* into fields is essential. Use of fungicides should be combined with cultural practices including minimizing standing water, maximizing field drainage, and practicing a minimum 3-4-year crop rotation out of susceptible crops. See our [P. capsici fact sheet](#) and the [New England Vegetable Management Guide](#) for recommended materials. Meg McGrath of Cornell University also has detailed fungicide recommendations with up-to-date pathogen resistance information [available here](#).

Powdery mildew (*Oidium neolycopersici*) was reported in greenhouse tomatoes in ME and NY this week. Powdery mildew produces powdery white growth on the tops and bottoms of leaves. In the Northeast, powdery mildew overwinters in greenhouses or is blown up from the south. It is favored by low light and cool temperatures, and, unlike most fungal plant pathogens, it does not require water on the leaves to germinate and cause disease. Practices that improve air circulation and light penetration generally help to prevent and control this disease (e.g. controlling weeds, using proper plant spacing, pruning and staking plants, using fans in the greenhouse). Fungicides must be applied preventively to effectively control PM. Sulfur and horticultural oils are effective and there are OMRI-listed options for both. Other conventional materials include Switch (FRAC 9 + 12), Emblem (12), Luna Tranquility (7 + 9), Fontelis (7), K-Phite (33), Revus Top (3 + 40), Trionic (3), and Vivando (U8). Rotate between two or more FRAC groups to prevent resistance development, and check labels for maximum numbers of applications.

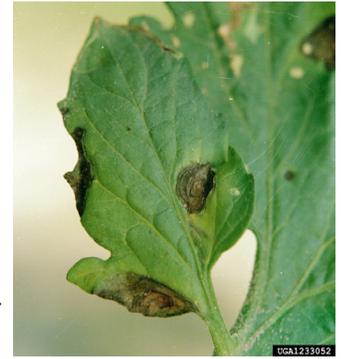


Tomato powdery mildew. Photo: G. Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

Early blight (*Alternaria solani*) was reported in high tunnel tomatoes in CT this week, and is likely popping up around the region now. Early blight is a common disease of tomatoes that develops every year and can be quite devastating if left unchecked. It develops much more slowly than late blight, which is a different disease; there are currently no reports of late blight north of southern Florida and MA tomatoes are not currently at risk for late blight development. Early blight lesions on leaves often develop concentric rings as they enlarge, giving them a bull's eye or target-spot appearance. Lesions are often surrounded by a yellow halo. Lesions begin in lower leaves

Location	GDD ¹ (base 50°F)	ECB NY	ECB IA	FAW	CEW	CEW Spray Interval
Western MA						
Deerfield	1186	0	0	0	0	no spray
Feeding Hills	1237	1	0	0	1	no spray
Granby	1196	3	0	0	3	6 days
Hatfield	1154	0	0	0	4	5 days
Whately	1223	0	0	0	0.5	no spray
Central MA						
Leominster	1155	2	0	0	2	6 days
North Grafton	1048	0	0	0	2	6 days
Sutton		0	0	0	0	no spray
Spencer	1112	0	0	0	0	no spray
Eastern MA						
Bolton	1148	1	0	-	1	no spray
Concord	1163	1	0	n/a	1	no spray
Haverhill*	1200	0	0	0	0	no spray
Ipswich*	1031	5	0	0	0	no spray
Littleton	-	2	0	0	4	5 days
Millis	-	0	0	1	0	no spray
Sharon	1174	1	0	-	4	5 days
Sherborn	1186	1	1	0	1	no spray
Seekonk	1313	0	0	9	0	no spray
Swansea		2	0	n/a	2	6 days
- no numbers reported for this trap						
N/A this site does not trap for this pest						
¹ GDDs are reported from the nearest weather station to the trapping site						
*Trap counts are from the previous week						

and the disease slowly progresses up the plant. Resistant varieties are available. Taking measures to increase plant vigor and maximize air circulation (controlling weeds, providing proper fertility, starting with disease-free seed/transplants) can help prevent disease development. Avoid working in crops when foliage is wet. There are many fungicides that are effective against early blight; see the [high tunnel](#) and [field tomato](#) disease control sections of the New England Vegetable Management Guide for labeled products. Copper is the most effective OMRI-listed material.



*Early blight on tomato.
Photo: Clemson Univ, USDA
Cooperative Extension Slide
Series, Bugwood.org*

Fusarium dry rot was diagnosed in potato in Essex County, MA this week. The affected crop had only 10% emergence. The main symptom is a light brown to black internal tuber rot, which is usually quite dry. The rot often starts at an injury, like a bruise or cut. Infected seed potatoes can rot just before or after planting, leading to poor stands and stunted plants. Progeny potatoes are often infected at harvest, when they are most likely to be injured. These small cuts and bruises provide an entry point for pathogens that have been dormant in the soil or tuber surface, causing potatoes to rot in storage. The main way to prevent dry rot is to minimize injury to potatoes (seed and crop). For more information on preventing and controlling dry rot, check out this [Cornell fact sheet](#).

Sweet Corn

Corn earworm trap counts remain low this week, warranting a 6-day spray schedule in some locations or no spray in other locations. If CEW trap captures close to you do not warrant a spray, scout corn for ECB and FAW larvae and treat if 12% of plants have at least 1 caterpillar.

European corn borer trap counts also remain low this week. We are still in the lull between the 1st generation and 2nd generation flights. 2nd generation flight begins at 1400 GDD, and we are currently at 1000-1200 GDD throughout the state.

Fall armyworm is continuing to be caught at just a few locations throughout the state.

Multiple Crops

Aphid populations (including [cabbage aphids](#) and [melon aphids](#)) are exploding in some places amidst the hot and dry conditions. Aphid infestations that begin in transplant greenhouses are often controlled by natural populations of beneficial insects (lacewings, lady beetles, syrphid fly larvae, parasitic wasps, etc.) when transplants are planted out into the field, but under the right conditions, populations can increase rapidly. If you're seeing a few aphids just on the undersides of lower leaves of a crop, you probably don't need to spray to control them. If they start infesting the growing tip of plants, consider applying an aphid-targeted material to conserve beneficials. Options include Movento, Admire Pro, Fulfill, Beleaf, Assail. Include a wetting agent per labels. Organic growers can use MPede or a horticultural oil (e.g. Suffoil X).

SOME HEAT-RELATED DISORDERS IN BRASSICAS

Brassica crops like cool temperatures and struggle in the heat. There are several heat-related disorders of brassicas that can be hard to avoid when growing these crops through the hottest part of the summer. For this reason, many growers focus brassica production on early summer and fall crops. If you can manage to grow high quality broccoli or cauliflower through the heat of the summer, it is often well worth it; prices for these crops often spike when supply is low, and having fields to harvest year-round will give you the opportunity to capture a good price. This article includes descriptions of a few heat-related disorders that you might see in your brassica crops and some strategies for avoiding them.

First some background information: Plants take up nutrients through their roots. Some nutrients, including calcium (Ca), are then passively transported throughout the plant through the plant's water-conducting vessels (xylem). Water is pulled up through the plant through transpiration—the process of water evaporating out of stomata in the plant's leaves. If water is not moving through a plant, either due to root injury, high heat or cloudy weather causing stomata to close, or dry soils, the plant's ability to take up and translocate nutrients is reduced. Even if soil nutrient levels are sufficient, heat or moisture stress can inhibit a plant's ability to take up those nutrients. This is how heat and moisture stress can lead to brassica disorders like head rot, brown beading, and tip burn, which are all caused by Ca deficiencies, or hollow stem, which is caused by boron (B) deficiency.

Head Rot and Brown Beading in Broccoli

Head rot and brown beading are both results of flower buds aborting due to Ca deficiency. Head rot results when bacteria invade aborted buds under wet conditions. Brown beading results from individual flower buds aborting under dry conditions. Excess nitrogen and extended periods of wet or dry conditions during warm temperatures give rise to rapid plant growth while Ca uptake is diminished due to poor transpiration rates in the plants.

Research done by Thomas Bjorkman at Cornell University, using the cultivar 'Galaxy', showed that the critical period for heat sensitivity in broccoli only lasts for roughly ten days. This 'window' of sensitivity corresponds to the time when the growing tip shifts from vegetative growth to flower bud initiation. This period of about 10 days begins just before a tiny crown is visible in the center of the plant. Temperatures above 35°C (95°F) for more than four days during that period causes uneven bud development, resulting in heads that are uneven and poorly shaped, leading to head rot and brown beading. Other references suggest that temperatures above 85°F can cause heat injury.

One way to avoid head rot and brown beading in broccoli is to grow several varieties that mature at slightly different times. This way, if your broccoli experiences high heat, you're likely to have some varieties that are not within their window of sensitivity during the heat wave, and you will not experience a total crop loss.

Tip burn

Tip burn is the result of Ca deficiency in brassica leaves. Margins of inner leaves turn brown, beginning at the hydathodes (structures in the leaf tip or margin that excrete excess water), and later desiccate to become thin and papery at the margin or over large portions of the leaf. The affected tissue may turn dark brown to black, occasionally being invaded by secondary bacteria that cause a watery soft rot. In cauliflower, internal leaves turn brown and fold over the developing curds. When secondary microorganisms attack these leaves, they become a mushy smear over the curd and make the head unmarketable. During the day, Ca moves with the transpiration stream to the outside leafy parts of the plant, which are actively transpiring on sunny days. On cool nights, transpiration is reduced and water movement generated by the roots is directed to the inner part of the plant and those tissues are supplied with Ca. However, on warm, dry nights, the outer leaves continue to transpire and Ca continues to be sent to the outer leaves. Once Ca is fixed by the outer leaves, it cannot be translocated to the interior of the plant, resulting in Ca deficiencies in the center of the plant.

Hollow Stem

Hollow stem occurs in both heading and root brassica crops and is often not noticeable until harvest. Broccoli, cabbage, cauliflower, turnip, and rutabaga are especially sensitive to hollow stem development. This disorder can be caused by boron (B) deficiency and can be exacerbated by heat, rapid growing conditions, and soil pH above 7. Chlorotic younger leaves or rosette die-back can be a sign of B deficiency and hollow stem. Excess moisture leaches B out of the soil and low moisture inhibits soluble B uptake and poor root development. Excess Ca, K, or Zn have also been shown to outcompete B in plant uptake. Other causes



Head rot (top) and brown beading (bottom) in broccoli.



*Internal tip burn in cabbage.
Photo: J. Howell*



*Boron deficiency in cauliflower.
Photo: J. Howell*

include excess nitrogen fertilizer, imbalance of nitrogen and boron, or rapid growth after head initiation. High P levels in soil have been shown to increase B uptake. There are cultivar differences in B sensitivity.

Management:

- Provide even and adequate soil moisture.
- Limit head rot in broccoli by using drip irrigation instead of overhead to limit the amount of water that sits on heads.
- Variety selection: Choose heat tolerant varieties and varieties resistant to tip burn and hollow stem. Varieties that grow less vigorously are less susceptible to tip burn. These characteristics are usually included in variety descriptions in seed catalogs.
- Nutrient management:
 - Avoid excess fertility. Excess nutrients, especially N, can promote rapid plant growth; tissues that cannot take up nutrients quickly enough will display deficiencies.
 - Maintain a phosphorous to potassium ratio of 1:1.
 - Avoid using urea, ammonium nitrate, or calcium ammonium nitrate fertilizer. Both ammonium and Ca are 2+ cations and ammonium will out-compete Ca for uptake in the plant. Calcium nitrate is more expensive but the N is all in nitrate anion form, which will not compete with Ca for uptake. Use greenhouse grade calcium nitrate if applying through drip to avoid clogging lines.
 - It is not necessary to apply supplemental Ca when soil levels are already sufficient
- Avoid sidedressing brassica crops after head development begins.
- If soil tests show that soil boron levels are below 3ppm, apply 3 lbs/A boron for broccoli and cauliflower or 2lbs/A for cabbage, prior to planting. The best method for applying this small amount of boron is as a fertilizer additive or as a diluted spray.
- Harvest crops when mature; do not try to hold crops in field if they are starting to show signs of these disorders.
- Avoid aggressive cultivation that could harm roots and limit water and nutrient uptake.

-- UMass Vegetable Program, updated 2022

JUDGING WHEN GARLIC IS READY TO HARVEST

--Written by Crystal Stewart-Coutens, Cornell Cooperative Extension, Eastern NY Commercial Horticulture Program, originally published in Cornell VegEdge Volume 18, Issue 13, July 6, 2022

Everyone knows the balancing act that is garlic harvesting—too early and the cloves are small and don't store well, too late and the head pops, making it unmarketable and more susceptible to diseases. So, as we near harvest, how should a grower decide if the garlic is ready? The best answer is to pull a few plants, cut through the head sideways (so you cut through all the cloves), and see how well developed the cloves are (Fig. 1). You can use the leaves as a guide to decide when to do this (lowest third or half of the leaves yellowing and dying is a good mark to start with), but looking at the cloves is the best way to know if the garlic is ready. Cloves should fill the wrappers—if they seem a little loose, the garlic has a little ways to go. A little of the very outer wrapper may have

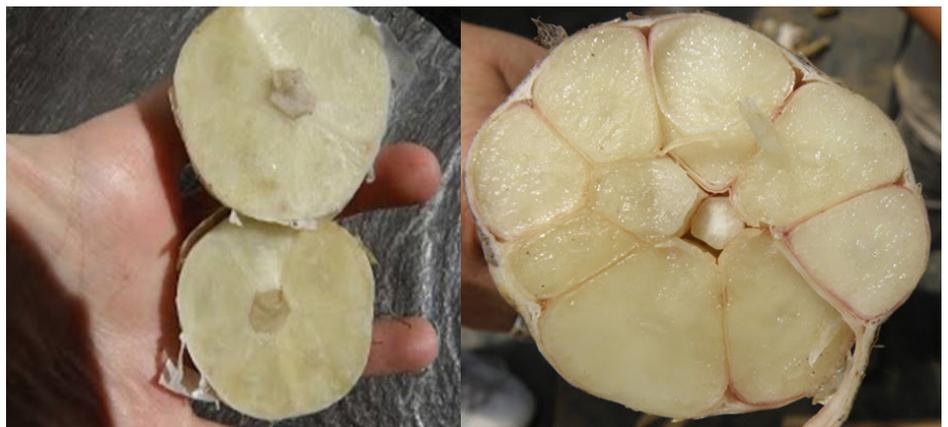


Figure 1. To judge the maturity of garlic, cut the bulb across the cloves; you want the bulb to be very firm in its skins and you want to see a small gap around the scape. The clove on the left is not quite ready, while the one on the right is ready to harvest. Photos by Crystal Stewart-Courtens, CCE ENY Commercial Horticulture Program

started to decay at this point. That is okay—it's a normal part of the maturation process. The key is to harvest before the bulbs pop, which can happen relatively quickly, especially if it is wet during harvest time. If you don't think you will be able to get out and harvest for a period of time, it's better to harvest bulbs a little too early than a little too late.

TIPS FOR MANAGING TOO LITTLE WATER

--Written by Elizabeth Buck, Fresh Market Vegetable Specialist, Cornell Cooperative Extension Vegetable Program. Originally published in Cornell Veg Edge Volume 18 Issue 14 on July 13, 2022.

As of today, [U.S. Drought Monitor](#) has designated all of Massachusetts except for western Berkshire County and Cape Cod as being in a moderate to severe drought. Similarly, on Tuesday, the Secretary of Energy and Environmental Affairs [declared a Significant Drought](#) in the same parts of the state. It's not hard to spot the corn rolling as you drive, particularly in the later plantings, and the ground cracks developing. Streams are running low and ponds are getting drawn down. The depletion of those surface water resources is quickly demanding a question be answered:

How do I make the most impactful use of the water I do have?

1. Water efficiently

Look for and fix leaks. Trickle tape is highly efficient. For overhead systems, watering at night reduces losses to heat and sun driven evaporation. Trade off: watering at night can increase disease risk. Rather windy conditions drive droplets off course and increase evaporation. If your crop can wait until night when the wind often drops, you'll increase your watering efficiency. But when it is that windy and dry, the crop often can't wait, especially big leafy things like pumpkins and winter squashes on plastic.

2. Know your soils

Do you have high or low organic matter? What's your field's innate ability to hold water? Higher OM fields will provide more water storage and improve the infiltration of any irrigation or rain.

Where are the high patches in a field, or the sandier, gravelly areas? The heavier ground? Can the irrigation be adjusted to deliver variable amounts of water to these zones? With a reel this will take manual monitoring and adjustment of the reel speed and could be a strategy if you have big soil differences along the length of a pass.

For trickle, do you have a single header watering several kinds of crops? Say you have a couple cuke rows and some cabbages or kale. The cole crops don't need as much water as the cukes and tolerate drought much better, so consider shutting off their header valves every other watering or part way through an irrigation.

Compaction, amount of ground cracking, and prior root development will play a role, too. Compacted ground keeps roots shallow and more dependent on supplemental water. Soils prone to cracking can drop a lot of the water you give below the bulk of the root zone. Plants that were in wet spots earlier and crops that have always been regularly irrigated to soils saturation or sufficiency tend to have shallower root systems. Crops with shallow feet are much more dependent on regular irrigation and show more stress when you shift to maintaining the soil water in a somewhat-of-a-deficit condition.

3. Know your prioritization

What are you most economically important crops? Which crops are in their most important stage for receiving water? Which crops are unlikely to be economic performers and could be sacrificed? If you're choosing between a bean field about/in flower, and a bean field with poor stand and past root rot, it is a better economic move to water the plants in the critical flowering stage to ensure that you realize your yield potential.

4. Know when it is time to quit watering a crop

Have a zucchini crop filled with powdery and a second planting coming into production? Or a cuke crop blasted with downy? Fresh market beans that you've already been through 2 or 3 times? Quit watering them and if they're diseased mow them off. On the upside, you'll save time & money by no longer needing to manage the diseases and pests and realize labor savings by forgoing an inefficient (small amount, lots of hunting) harvest.

Yes, it can be a gut-punch to sacrifice a planting or give up on something while there's still a bit of fruit coming. But think longer-term and think economically, not emotionally. Save your water for areas with better economic performers.

5. Don't get too far behind

There are some soils and crops that are very difficult to catch up on water status. Fields that are cracked, crusted, or that have a heavy dust mulch can become difficult to move water into the root zone. Some crops can tolerate living in the somewhat stressful, slight water deficit conditions. Other crops have a very hard time recovering to full water status once they become overly dry.

6. Use monitoring tools

I like the [Cornell Climate Smart Farming Water Deficit Calculator](#) for a monitoring tool. It's user-friendly, it only takes 3-5 minutes to set up a field, you can save many fields in the tool, and you can enter your irrigation events. Each setting has a little info button to help you quickly make the right choices. Very helpful for the crop groupings.

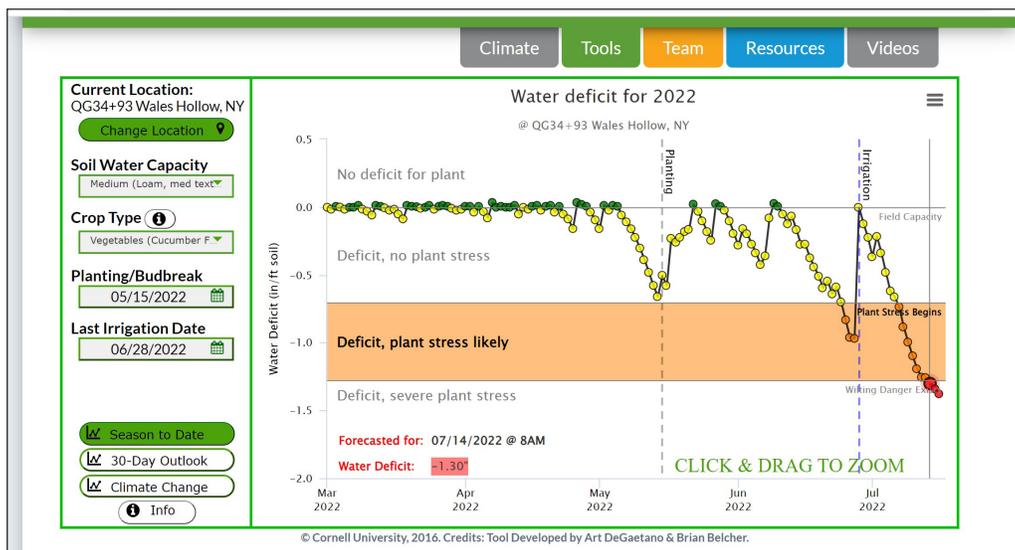
The CSF Water Deficit Calculator uses your soil texture, crop category, and high-resolution weather data as the base of the model. Importantly, it takes evapotranspiration into account, meaning it models more water loss from the soil on those hot, windy days. The tool then forecasts the amount of water stress your plant will experience and groups the water depletion into categories that I'll paraphrase as "green – full water", "yellow – sufficient", "orange – I'm stressed, but I'll live", and "red – water me yesterday" categories.

The goal is to water when you enter the orange zone and never let the crop get into the red zone. The orange zone may be insufficient for some crops at some stages. The orange zone would be too dry for corn during pollination, beans during flowering, or fruiting tomatoes that aren't used to infrequent or variable water availability.

If you know your most water-sensitive stages and crops, you can use the CSF Water Deficit Calculator to help you decide which field has to get water today and which one has some room to go before it gets into a troublesome zone. Of course, the nothing is better than going out and sticking your hand in the soil, but this tool can provide a good starting point.

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. If you enter an irrigation date, a dashed vertical blue line will appear. Right now, the

tool assumes you're irrigating back to field capacity. This is a flaw that you'll have to take into consideration. There are plans to add a new feature with 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 current [CSF Water Deficit Calculator](#) readout for a loamy field of cucumbers located in East Aurora (Wales), NY planted on May 15, 2022. The dashed vertical gray planting date line and vertical dashed blue line for date of last irrigation, which was well timed in the mid-orange zone. The solid gray line is the forecasted water deficit. Today, July 13, the crop is at the very bottom of the stressful, pre-wilt orange zone. Tomorrow severe stress is forecast to begin (red zone). The crop should be irrigated today, July 13, and as fully as possible.

NEWS

REACH OUT TO GET INVOLVED WITH DEVELOPING COMMUNICATION RESOURCES

Looking for volunteers! Do you have Spanish-speaking workers on your farm and want to improve communication? Lily Harris-Hendry is an undergraduate student working with UMass Extension this summer. She is looking to connect with Spanish-speaking agricultural workers to develop English-language resources.

If interested, please contact Lily at lharrishendr@umass.edu or 413-362-9955.

MASSDEP'S GAP III ENERGY GRANT PROGRAM EXPANDED TO INCLUDE NEW SECTORS

Nonprofit agricultural/food distribution and small food distribution and processing businesses, among other categories, may now apply for a [GAP III Energy Grant](#). Eligible projects include energy efficiency projects such as HVAC upgrades and clean energy projects such as solar photovoltaic and battery storage systems.

For more examples and for full eligibility and application information, [click here](#). The grant application deadline for non-profits and small businesses is Friday, July 29, 2022.

MA FARM ENERGY PROGRAM (MFEP) - ENERGY AUDITS

Remember, [MDAR's Farm Energy Program](#) has funds to help farms cover audits, energy efficient projects, and select renewable energy projects. We are still providing these services remotely.

You will need a technical assessment to file an energy grant application whether with MDAR or USDA. Start planning now. If you wait too long you may not be able to have one scheduled in time! MFEP pays 75% of the technical assessment, first come, first served. Our MFEP is providing tele-assessments during this trying time.

Contact MFEP now for more information through the Center for EcoTechnology (CET), our partner carrying out the MFEP: 413-727-3090, info@massfarmenergy.com, or visit www.massfarmenergy.com, submit a Request Form, and then you will be contacted.

EVENTS

SOIL HEALTH IN THE FIELD

Join UMass Extension for two hands-on soil health workshops at the South Deerfield Research Farm this summer!

Field Tests & Plant Indicators

When: Wednesday, July 27, 2022, 10am-12:30pm

Where: UMass Crop & Animal Research & Education Center, 89 River Rd., South Deerfield, MA 01373

Registration: Free! Space is limited. [Click here to register](#).

Have you ever heard a certain plant can indicate low calcium, high compaction, sweet soil, etc.? Join us to discover what elements of this traditional knowledge hold true, and when you would be better off getting a laboratory soil test. This is an in-field workshop lead by Dr. Sam Corcoran of UMass, in partnership with Caro Roszell and Julie Fine of American Farmland Trust. Participants will learn to use simple and accessible in-field tests to assess soil health on both row crop and hay fields. These tests are a fast and cost-effective tool that can be used by farmers, conservation agents, agriculture service providers, and researchers alike. In addition, we will investigate the validity of using "weeds" as soil fertility and soil health indicators.

If you would like to stay for a BYOL picnic (bring your own lunch) please bring a picnic blanket or a lawn chair, and feel welcome to enjoy the scenery and chat with soil-health minded friends and colleagues. *Coffee and donuts will be provided in the morning.*

Earthworm Sampling and Earthworm Indicators

When: Tuesday, August 30, 2022, 9:30am-1pm

Where: UMass Crop & Animal Research & Education Center, 89 River Rd., South Deerfield, MA 01373

Registration: Free! Space is limited. [Click here to register.](#)

Earthworms are a favorite field-indicator of soil health. While you might think all earthworms are created equal, earthworms are categorized based on behavior and location in the soil. Learning to identify the earthworms that we sample can enhance our interpretation of this soil health indicator and give us a better understanding of soil processes. This workshop is lead by entomologist Dr. Olga Kostromytska with UMass Extension and earthworm expert Dr. Annise Dobson of Yale University. This workshop is appropriate for complete beginners and experienced samplers alike. We will take samples in row crop, hayfield, and forest soils and practice identification using a key, hand lens, and dissecting microscopes. Earthworm types collected from each of the three fields will be compared, and we will discuss how we can use these findings to interpret the soil health. This is a translatable skillset valuable for agricultural service providers, farmers, and scientists.

If you would like to stay for a BYOL picnic (bring your own lunch) please feel welcome to do so. Bring a lawn chair or picnic blanket to sit outside, enjoy the scenery, and chat with soil health minded friends and colleagues. *Coffee and donuts provided in the morning.*

UConn GREENHOUSE BIOLOGICAL CONTROL CONFERENCE

When: Tuesday, August 16, 2022

Where: Jones Auditorium, Connecticut Agricultural Experiment Station, New Haven, CT

Registration: \$30. Pre-registration required. Registration includes a bagged lunch. [Click here to register.](#)

UConn Extension is sponsoring a Greenhouse Biological Control Conference. The speakers featured at this educational program include:

Ron Valentin, Anatis BioProtection, who will be speaking on **Update on Banker Plants**

Suzanne Wainwright Evans, Buglady Consulting, who will be speaking on **Releasing Natural Enemies, and Grower Case Studies: What's Working?**

Michael Brownbridge, Bioworks, who will be speaking on **Enhancing the Use of Biological Fungicides in a Biologically Based IPM Program**

Elwood Roberts, Plant Products/Biobest, who will be speaking on **Tips on How to Effectively Integrate Biological Controls and Chemical Controls**

Registration or refund questions? Contact Carla Caballero, carla.caballero@uconn.edu.

Program or payment questions? Contact Leanne Pundt, leanne.pundt@uconn.edu.

Disclaimer: Program format is subject to change based on the University of Connecticut and the State of Connecticut's COVID 19 guidelines and policies. If access to the venue or seating capacity changes, the program will be changed to a virtual format.

**This work is supported by the Crop Protection and Pest Management grant no. 2017-70006-27201 from the USDA National Institute of Food and Agriculture.*

UMASS RESEARCH FARM FIELD DAY

When: Tuesday, August 2, 2022, 4-6:30pm

Where: UMass Crop & Livestock Research & Education Farm, 89 River Rd., South Deerfield, MA

Registration: This event is free and open to all. Please pre-register so that we can get a head count for food! [CLICK HERE](#) to register.

Join UMass Extension for a field day at the South Deerfield Research Farm and hear about the research being conducted at the farm this summer. The farm tour and presentations will be followed by a light dinner and plenty of time for talking with fellow growers and agricultural service providers. There will be 1.5 pesticide credits available at this event. To receive credits, you must sign in at the beginning of the event and stay for the full duration.

Presentations will include:

- Basil downy mildew resistance
- Bio-and OMRI-listed fungicides to control diseases of vegetable crops
- Downy mildew-resistant cucumber varieties
- Developing a new spray additive to improve spray coverage and reduce pesticide use
- The UMass Student Farm
- Dual-use solar for vegetable farms
- Innovative summer forages in the Northeast: upright crabgrass, sudangrass, and pearl millet
- Stem cells in agriculture
- Food as medicine? Bumble bee foraging behavior in response to disease, and consequences for ‘medicinal’ plants
- Corn and sorghum intercropping to reduces greenhouse gas emissions and fertilizer loss
- Evaluating bumble bee preferences for medicinal and non-medicinal varieties of basil

TWILIGHT MEETING AT HARVEST FARM

When: Wednesday, August 24, 2022, 4-6pm

Where: Harvest Farm, 125 Long Plain Rd., South Deerfield, MA 01373

Harvest Farm in Whately/South Deerfield will host us for a twilight meeting covering several post-harvest topics, including the vacuum cooler Harvest Farm recently purchased with a MA Food Security Infrastructure Grant. More information coming soon!

SAVE THE DATE - POLLINATOR HABITAT WORKSHOP

When: Thursday, Sept. 22, late afternoon/early evening (exact time TBA)

Where: Just Roots Farm, 34 Glenbrook Dr, Greenfield, MA 01301

Come learn about the nuts and bolts of installing pollinator habitat on your farm, including where to find funding and who to contact for assistance. Includes a short presentation and a meet-and-greet with local service providers. Event is hosted in collaboration with CISA, NOFA, Greening Greenfield and Just Roots.

THANK YOU TO OUR 2022 SPONSORS!



Become a sponsor!

Vegetable Notes. Genevieve Higgins, Lisa McKeag, Susan Scheufele, Hannah Whitehead co-editors. All photos in this publication are credited to the UMass Extension Vegetable Program unless otherwise noted.

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