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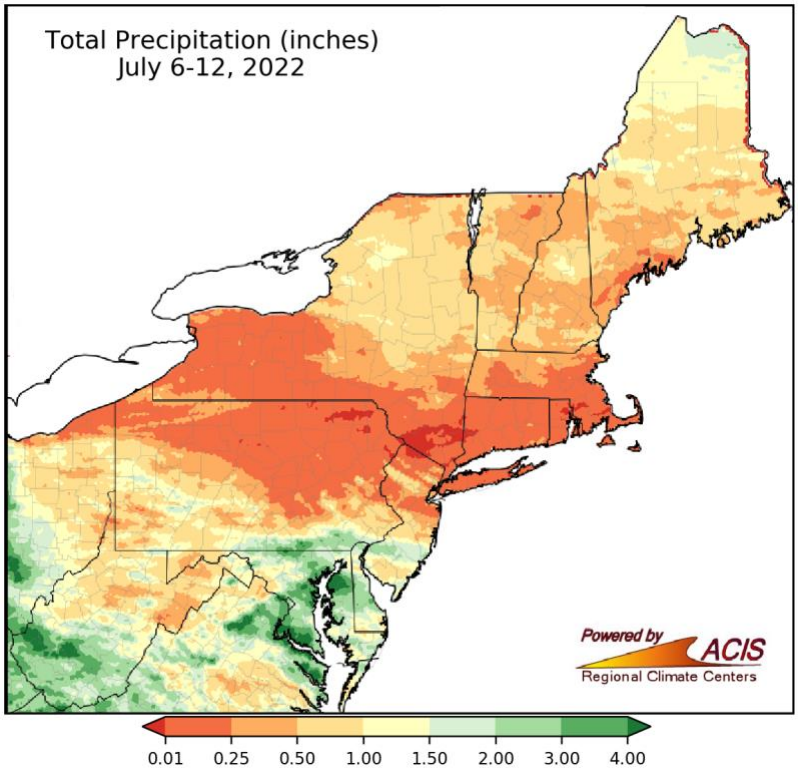
EXTENSION

Vegetable Pest Alert

July 15, 2022

Heat and moisture stress: Most of Connecticut has received <1/4th of an inch of rain in the last week. The field vegetables that are unirrigated are suffering moisture stress. High heat and moisture stress can cause pollination issues including blossom drop and fruit abortion in tomatoes, peppers, eggplants, and promote male flowers in cucurbits, poor tip fill in sweet corn. In the case of cucumbers, squash, and pumpkins, cool temperatures promote development of female flowers, and the ratio of male to female flowers is reduced. Generally high temperatures promote male flowers and delay female flower development. Typically for pumpkins, daytime temperatures of 90 ° F or above and nighttime of 70 °F or above lead to abortion of female flower buds.



Conservation tillage, particularly no-till or strip-till, used in conjunction with soil cover practices (like cover crops) can lead to a range of soil health benefits including greater drought resilience and improved agricultural productivity. Paper, plastic (white, white on black, or reflective), or straw mulches provide soil cooling effect. Plastic and straw mulches also conserve soil moisture. But black plastic mulch increases the soil temperature, especially when there is not enough soil moisture.

Please see the article below '**Tips for managing too little moisture'** by Elizabeth Buck from Cornell.

Cucurbit Downy Mildew

Downy Mildew on 'Adam Gherkin' cucumber was confirmed on July 11 in Fairfield Co, CT. DM can be devastating if not managed and is highly infectious (airborne). Management for this disease starts before it arrives at your farm. For management guidelines including what are the effective fungicides, see this: https://www.vegetables.cornell.edu/pest-management/disease-factsheets/downy-mildew-of-cucurbits/current-management-guidelines-based-on-research-results/

Downy mildew on cucumber (Photos: Fred Monahan)

Preventative materials effective against cucurbit DM:

- Chlorothalonil
- Mancozeb
- 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
- Previcur Flex

Presidio, Revus, and Forum are currently ***not*** recommended due to pathogen resistance.

Squash vine borers. The trap capture was 4 in a farm in Berlin, and 12 in a farm Norwich. They lay their eggs on the base of cucurbit plants (winter squash, pumpkins, zucchini are hosts, cucumber, watermelon, and butternut are not hosts). Once larvae have bored inside the stem, insecticide application will have little control. So, application should be applied with the first sight of adult activity. Threshold for spraying is 5 moths/trap for crowning cucurbits and 12 moths/trap for vining cucurbits. Treat base of stems thoroughly to target hatching larvae. Some selective materials used for other caterpillars in squash, such as spinosyns and Bacillus thuringiensis aizawi, have demonstrated efficacy in trials. See New England Vegetable Management Guide for spray options.

Corn earworm (CEW). Trap captures are continued to be low this week. It was 0.16/night in a farm in Berlin; 0.28/night in Norwich.
Table. Spray Intervals for Corn Earworm based on moth captures in Heliothis net traps.

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	no spray
0.2 -0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 – 7	5 days
1 - 13	7 – 91	4 days
Over 13	Over 91	3 days

European corn borers (ECB) are continuing to be trapped, but in low numbers. This week 1 ECB NY, and none of IA and hybrid ECB was captured in a farm in Berlin; 0 ECB NY, 1 ECB IA and 4 ECB Hybrid moths were captured in each trap set in Norwich. Corn with newly emerging tassels should be scouted weekly for the presence of ECB larvae by inspecting the tassels of 50 to 100 plants, in groups of 5 to 20 plants throughout the field. Treat if more than 15% of the plants have one or more larvae present. Use of selective products to control ECB will conserve natural enemies of aphids and ECB.

Continue to be on the lookout for the following pests:

- Cucurbit powdery mildew
- Leaf mold in high tunnel tomatoes
- Bacterial diseases of pumpkins
- Early blight on tomatoes
- Spider mites on eggplants
- Japanese, oriental, and Asiatic Garden beetles
- Tobacco/tomato hornworms
- Sap beetles
- Tomato Spotted Wilt Virus (TSWV)
- Verticillium wilt on eggplant
- Basil downy mildew
- Squash bugs
- Squash lady beetles
- Bacterial leaf spots on peppers
- Imported cabbageworm and diamond back moth in brassica
- Colorado potato beetle
- Potato leaf hopper
- Thrips and aphids on tomato, peppers
- Brassica flea beetle
- Striped and spotted cucumber beetles
- Fall armywor

Tips for Managing Too Little Water

Elizabeth Buck, Cornell Cooperative Extension, Cornell Vegetable Program, originally published in VEGEdge Newsletter by Cornell Cooperative Extension- Vegetable Program on July 13th, 2022. The introduction and figure revised by Shuresh Ghimire to fit for Connecticut.

The State of Connecticut's Interagency Drought Working Group declared all counties are experiencing Stage 2 Drought conditions yesterday (Thursday, July 14th). Stage 2 identifies an emerging drought event, potentially impacting water supplies, agriculture, or natural ecosystems. This situation is quickly demanding a question to be answered: How do I make the most impactful use of the water I do have?

Watering Efficiency

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

For drip, 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.

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.

Compaction, ground cracking, and prior root development play a role, too. Compacted ground keeps roots shallow and more dependent on supplemental water. Cracked ground can deposit water below the bulk of the root zone. Plants that were in spring wet spots, that suffered root rot or root feeding, and crops that have always been regularly irrigated to 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 partial-deficit condition.

Know Your Prioritization

What are your 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.

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 and 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.

Don't Get Too Far Behind

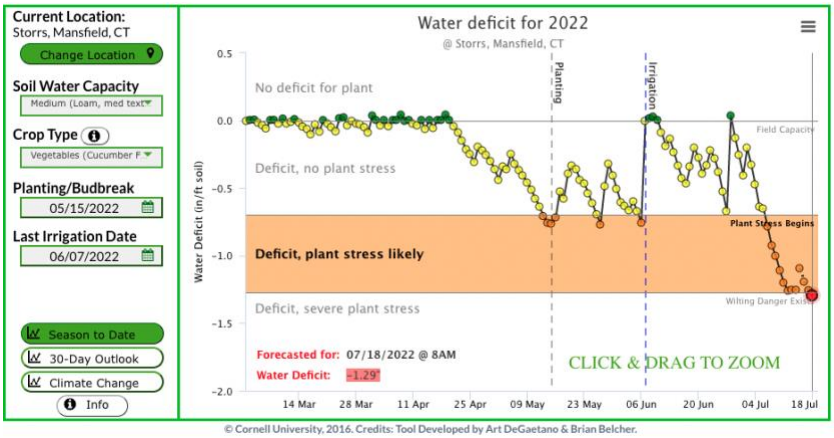
There are some soils and crops that are very difficult to catch up on water status. Fields that are cracked, crusted, or that have a heavy dust mulch can become difficult to move water into the root zone. Pay close attention to fields that are sandy, have shrinking clay components that make them prone to cracking, and those with poor soil structure. Crop type matters, too. Some crops can tolerate living in the somewhat stressful water deficit conditions. Other crops have a very hard time recovering to full water status once they become overly dry.

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. The little info button is very helpful for the crop groupings.

The CSF Water Deficit Calculator uses your soil texture, crop category, and high-resolution weather observations and forecasts 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 crop-specific 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.



The current CSF Water deficit calculator readout for a loamy field of cucumbers located in Storrs, CT 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 orange zone. The solid gray line is the forecasted water deficit. Today, July 15, the crop is at the very bottom of the stressful, pre-wilt orange zone. The crop should be irrigated today and as fully as possible. *From the Cornell Climate Smart Farming Water Deficit Calculator*

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, 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.

This report is prepared by Shuresh Ghimire, UConn Extension.

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