



UMass  
Extension

# Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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## CROP CONDITIONS

Lots of fall crops are in storage already, with more coming out of the ground every day—potatoes, sweet potatoes, carrots, leeks, radishes, cabbage. Flowers were all zapped by last week’s frost and those with dahlias and gladiolas have been digging and cleaning tubers to save for planting next year. Folks have also been busy planting garlic for next year. This past year we saw several instances of witch’s brooming in garlic, a physiological disorder where several stalks develop from one garlic head, thought to be caused by mechanical and cold injury. In some areas of New England where there has been reliable snow cover through the winter, folks have historically been able to get away without mulching garlic, saving a lot of time and resources. In this age of unpredictable spring frosts and freezes, we are not recommending people take that chance anymore here in MA, and encourage folks to put down some kind of mulch to protect plants from cold injury. Use your best and biggest cloves for seed, avoiding any that look diseased, prematurely dried out, with damage to the base plate that could indicate bloat nematodes or bulb mites, and avoid using seed from fields with symptoms of disease, mites, or generally unthriftiness. Winter greens harvest has started inside tunnels across the state and everyone is gearing up for winter CSAs and markets and planning for strong Thanksgiving sales. Included in this issue are some printable resources to remind you about what temperature different crops can withstand in the field and what temperature they should be stored at. Check the events section for a growing list of educational offerings around the region!

## PEST ALERTS

**Damping off** is developing now in high tunnel spinach. Damping off is caused by several soil-borne fungal and oomycete pathogens that are ubiquitous in all soils but generally only cause disease in young, weakened, or slow-growing plants, or when soil is too wet. Damping off pathogens cause seedlings to rot, both before and after emerging from the soil. Damping off can occur in the field but is especially common in winter high tunnels, when temperatures are cooler and plants are growing slowly. When tunnels



*Harvesting our broccoli fungicide trial looking at reducing spray volumes for control of Alternaria - stay tuned for results!  
Photo: L. McKeag*

## 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 **Email:** [umassveg@umass.edu](mailto:umassveg@umass.edu)

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

are used continuously, without rest, damping off organisms proliferate while numbers of beneficial microbes decrease. Making time for cover cropping or incorporating green residues before planting is the best way to support beneficial microbes in soil to help them outcompete the pathogens. Other methods for controlling damping off could include using fungicide-treated seeds or fungicides applied to soil. Some other methods being trialed around the region include soil steaming, solarization, and anaerobic soil disinfection. All of these are labor-intensive and costly, but can be effective at suppressing disease, weeds, and insects. For more information on damping off, see the article in the [April 9, 2020 issue of Veg Notes](#).



*Left: Poor stand in high tunnel spinach, caused by damping off.*

*Right: Cladosporium leaf spot in spinach.*

*Photos: S. B. Scheufele, G. Higgins*

**Cladosporium leaf spot** was diagnosed in high tunnel spinach last week, on the variety ‘Patton’. This is a fungal disease that causes small tan spots on spinach leaves. The spots expand slowly and eventually develop fuzzy, olive-green sporulation. We most often see *Cladosporium* in winter high tunnel spinach. It can be seedborne, and so sometimes will develop on a single variety initially, before spreading to other varieties present. We are conducting a spinach variety trial this winter looking at differences in *Cladosporium* susceptibility, so keep an eye out for results in the spring!

**Ammonium toxicity** was diagnosed last month in brassica salad greens, in a tunnel that had been steamed. As more growers are experimenting with soil steaming for disease and weed control, ammonium toxicity is one possible side effect to keep in mind. Aboveground symptoms of ammonium toxicity are similar to those caused by root injury or damping off: dull, dark green or gray-green leaves, temporary leaf wilting, desiccation, and yellow V-shaped sections. As the symptoms progress, leaf margins may turn brown, and the plant may become severely stunted or die. We often see ammonium toxicity in spring greenhouses when temperatures are still low and cloudy stretches occur, since ammonifying bacteria are active in cool, wet soil while nitrifying bacteria need slightly warmer soil temperatures. However, soil steaming can also lead to ammonium toxicity, as it kills off more nitrifying bacteria than ammonifying bacteria, so ammonium can build up for ~20-40 days after steaming before nitrifiers start coming back. The best practice to mitigate ammonium toxicity is to warm up the soil; in high tunnels you can do this by keeping sides down and doors closed. Other than that, you just have to wait until the nitrifying bacteria build back up. Flushing soil with water can help remove some of the ammonium, but is often not practical.

## COLD INJURY IN VEGETABLE CROPS AND WHY IT HAPPENS

After our first frost last week, growers saw any remaining beans, sweet corn, nightshades, and cucurbits go down, while most root crops and brassicas are still standing tall. Crops vary in their tolerance of cold temperatures (Table 1). This article will discuss some of the effects that cold temperatures have on plants and some of the ways that cold tolerant plants adapt to withstand low temperatures.

When temperatures start to drop, one of the first changes in a plant is that cell membranes become more rigid and frag-

ile, and become damaged easily. Plant cell membranes contain saturated and unsaturated fatty acids in varying amounts depending on the plant species. Unsaturated fatty acids remain liquid at low temperatures—think of canola oil in the fridge. Saturated fatty acids are solid at low temperatures—like butter in the fridge. Cold-tolerant plants have more *unsaturated* fatty acids in their cell membranes, which results in their cell membranes remaining fluid and flexible as temperatures drop. Cold-sensitive plants have more *saturated* fatty acids in their cell membranes, so when temperatures drop, their rigid, fragile cell membranes are more likely to crack, leading to cell death.

Many plants also turn red or purple as fall progresses. This is due to the accumulation of red-colored pigments like

anthocyanins. These pigments act as antioxidants within the plants. As temperatures drop, processes like photosynthesis and respiration slow down, leading to the formation of molecules that can cause cell damage. Antioxidants, like the red-colored anthocyanins, help counteract those damaging molecules, but a plant can only produce so many of these pigments so quickly and eventually, as temperatures drop, cells become damaged.

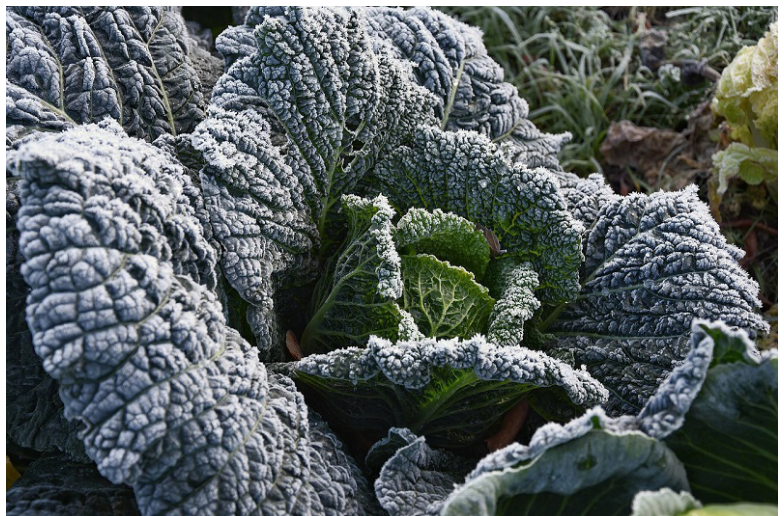
When temperatures drop below 32°F, freezing injury can occur in plants as a result of ice forming within plant tissues. Ice can either form between cells or within cells. If ice forms between plant cells, it actually draws water out of the cell, resulting in cell dehydration. Plants have varying abilities to withstand this dehydration—cold-tolerant plants can withstand more dehydration than cold-sensitive plants. Ice formation between cells is the reason why you should **never handle a frosty crop that you are hoping to harvest or otherwise work with**. Handling a leaf with ice crystals between the cells will result in those crystals puncturing the cell walls, like an icicle stabbing a water balloon. But, if the leaf is allowed to defrost without being moved, the cells will remain undamaged.

When water within a plant cell freezes into ice, it expands and the cell membrane bursts—the same way a glass jar filled to the rim with water will crack when it freezes.

Cold-tolerant plants have adapted ways to prevent ice from forming within their cells. Triggered by short daylight hours and a gradual temperature drop, four different processes happen in cold-hardy plants:

1. **Cells gradually become more dehydrated.** Water will move out of cells so that it will freeze between instead of within the cells. Cold-hardy plants have a greater capacity to tolerate this dehydration than cold-sensitive plants.
2. **Sugar accumulates within the cells.** Sugars dissolved in water will lower the freezing point of the water, so that the cell can withstand colder temperatures without freezing. Sugar also becomes embedded in the cell membranes

Table 1. Frost tolerance of common vegetable crops		
No frost tolerance Will survive 31-33°F	Light frost tolerance Will survive 28-32°F	Frost hardy Will survive 24-28°F
Beans	Beets	Brassicas (24-28°F)
Sweet corn	Carrot	Parsnips (For best quality, harvest after several moderate freezes, 24-28°F. Can be overwintered and harvested in the spring.)
Potatoes	Cauliflower	
Pepper	Lettuce	
Eggplant	Alliums	
Cucurbits	Parsley	
Sweet potatoes	Peas	
Tomatoes*	Radish	
Muskmelons*	Rhubarb	
Pumpkins*	Spinach	
	Swiss chard	
*Will not tolerate frost but will ripen further after harvest		
Source: <a href="#">Fall Frost Tolerance of Common Vegetables</a> , South Dakota State University Extension		



*Wait to work in frosty crops until they have defrosted on their own, to avoid damaging the cells. Photo: Univ. of Nebraska Extension*

to help stabilize them and keep them fluid at low temperatures. This process is why crops like spinach, brassicas, and many root vegetables taste much sweeter if they're harvested in the late fall compared to mid-summer.

- 3. Antifreeze proteins accumulate within the plant.** These are proteins that bind to the surface of ice crystals to slow down ice crystal expansion.
- 4. Cell membranes become more unsaturated.** Plant cells swap out some of the saturated fatty acids (think butter – solid and rigid in the fridge) in their cell membranes for unsaturated fatty acids (think canola oil – liquid and flexible in the fridge).

These four processes help to explain why some crops melt and some stand tall after a frost.

--Written by G. Higgins

## **EFFICACY OF CONVENTIONAL AND OMRI-LISTED FUNGICIDES FOR CERCOSPORA LEAF SPOT CONTROL IN TABLE BEETS**

--Written by Sarah Pethybridge ([sjp277@cornell.edu](mailto:sjp277@cornell.edu)), Sean Murphy and Pratibha Sharma, Cornell University, and Julie Kikkert, CCE Cornell Vegetable Program. Originally published in *Cornell Veg Edge* Volume 19, Issue 4 on November 1, 2023.

Cercospora leaf spot (CLS), caused by the fungus, *Cercospora beticola*, is the major disease affecting foliage of table beet in NY. Symptoms of the disease begin as small necrotic lesions, circular to oval in shape. The lesions have a gray center and tan to purple margins. Severe disease results in defoliation. The maintenance of healthy foliage to the end of harvest is important for several reasons. Firstly, for processing crops, harvest is conducted through top-pulling machinery which requires strong foliage. For the fresh market, CLS reduces product quality if selling with intact leaves. Diseased foliage may also reduce root sizes and quality.

Fungicides are often applied to reduce the spread of CLS and potential crop loss. The most used conventional products are Tilt (propiconazole, Fungicide Resistance Action Committee [FRAC] group 3) and Miravis Prime (pydiflumetofen + fludioxonil, FRAC 7 + 12). However, the development of fungicide resistance is one of the major concerns for the sustainability of disease control. Organic Materials Review Institute (OMRI)-listed products with moderate efficacy for CLS control according to our previous studies include: LifeGard (*Bacillus mycoides* isolate J; FRAC P 06) and Cueva (copper octanoate, FRAC M 01) + Double Nickel LC (*Bacillus amyloliquefaciens* strain D747; FRAC BM 02). Apart from being registered for use in organic table beet production, these products also have a place in conventional production for rotation of different FRAC groups and fungicide resistance management. The objective of this study was to evaluate the efficacy of selected fungicides and fungicide programs for CLS management in table beet, including some additional OMRI-listed products.



*Symptoms of Cercospora leaf spot on table beet cv. Ruby Queen. Photo: S. Pethybridge*

**2023 Trial.** This year we conducted a small plot replicated trial at Cornell AgriTech, Geneva. The trial was planted with cv. Ruby Queen on 31 May with 30 inches between single rows and standard Cornell recommendations for nutrient and weed management. The products included in the trial are listed in Table 1. The fungicide treatments and a nontreated control were arranged in a completely randomized block design with four replications, and plots were two 10-ft long rows (Table 2). Fungicides were applied four times at 62, 68, 78, and 83 Days After Planting (DAP). Fungicides were applied at 26.4 gallons/A (30 psi) with flat fan nozzles. The trial was inoculated with *C. beticola* the day after the first fungicide application.

Product	Active Ingredient(s)	FRAC Group <sup>z</sup>	Product Rate (per A)	Company
Tilt	Propiconazole	3	4 fl oz	Syngenta
Miravis Prime	Pydiflumetofen + fludioxonil	7 + 12	11.4 fl oz	Syngenta
Howler	<i>Pseudomonas chlororaphis</i> strain AFS009	BM02	1.25 and 2.5 lbs	AgBiome
Theia	<i>Bacillus subtilis</i> strain AFS032321	BM02	1.5 lb	AgBiome
BF009-03	Proprietary	-	0.5 and 0.75 lbs	AgBiome
Champ 2F	Copper hydroxide	M1	2.66 pt	NuFarm

**Results.** Conditions were conducive for CLS which resulted in high severity in nontreated plots (90.1%) by the end of the season (109 DAP). All treatments significantly reduced CLS severity compared to the nontreated plots. The most efficacious treatments were Champ 2F and the rotation programs that included Miravis Prime. Substituting Tilt with Howler or Theia in the Miravis Prime rotation program had no significant effect on CLS control and were all highly effective. As single products, Theia and Howler provided moderate and equivalent CLS control, reducing final severity by 41.3% and 41.6%, respectively. The experimental product, BF009-03 also provided moderate CLS control, and interestingly, CLS severity was significantly higher in plots treated with the higher (0.75 lb/A) rate than those receiving 0.5 lb/A (**Figure 2; Table 2**).



*Comparisons of table beet foliar health in plots of four selected treatments within a small plot replicated trial conducted at Geneva, New York. Photos: S. Pethybridge*

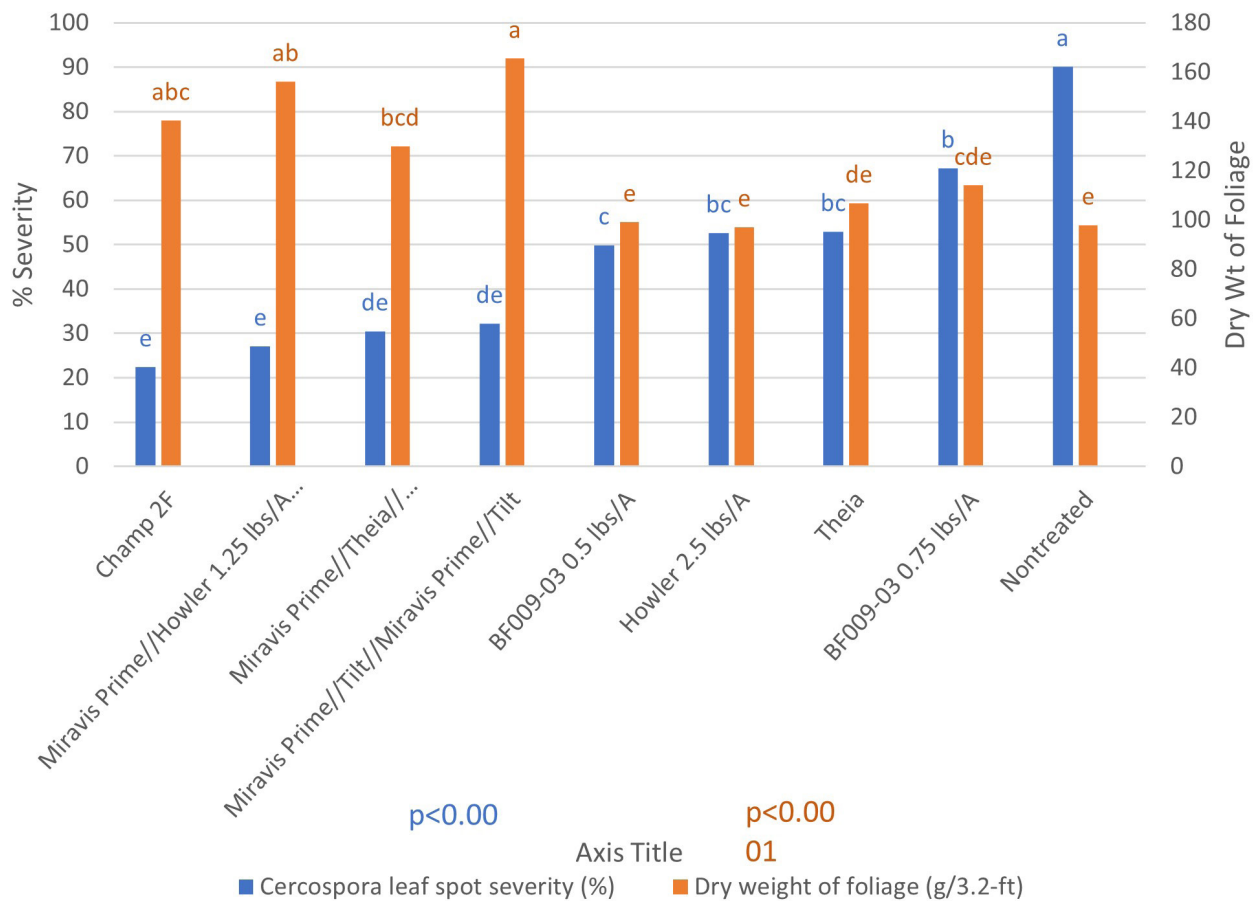
Reduced CLS severity translated to a significant increase in the dry weight of foliage (Table 2). The dry weight of foliage was significantly increased by an average of 57.3% in plots receiving Miravis Prime//Howler//Tilt//Howler, Miravis Prime//Tilt//Miravis Prime//Tilt, and Champ 2F, compared to the nontreated plots, and were not different between each other. Four applications of Champ 2F increased the dry weight of foliage by 43.3% compared to the nontreated plots. The dry weight of foliage in plots receiving Theia, Howler, BF009-03 (both rates) were not significantly different from the nontreated control plots and between each other. Treatment had no significant effect on root weight, root number and average root shoulder diameter (data not shown). The absence of an effect from the fungicides on root yield components is highly desirable for fitting into the processing table beet market, where root size is strictly regulated for placement in cans and jars.

**Take-home messages were:**

- Champ 2F provided effective control of CLS. Champ 2F is a multi-site mode of action copper and hence could be useful for rotation with site-specific mode of action fungicides for fungicide resistance management.
- Other OMRI-listed copper products may also have similar CLS control for use in organic table beet production. However, caution should be used if residue is not desirable for fresh market sales.
- Rotation of Miravis Prime with several other products of differing FRAC groups did not compromise disease control.

- The microbial biopesticides, Theia and Howler, provided moderate CLS control on their own.

<b>Table 2. Effect of fungicides on Cercospora leaf spot severity (109 Days After Planting; DAP) and the dry weight of foliage (110 DAP) of table beet at Geneva, NY in 2023 at the end of the trial. The symbol // represents separation of the products in time to form a program.</b>		
<b>Treatment</b>	<b>Cercospora leaf spot severity (%)</b>	<b>Dry weight of foliage (g/3.2-ft)</b>
Theia (applied 4 times)	52.9 bc	106.8 de
Miravis Prime // Theia // Miravis Prime // Theia	30.5 de	129.9 bcd
Howler 2.5 lbs/A (applied 4 times)	52.6 bc	97.1 e
Miravis Prime // Howler 1.25 lbs/A // Miravis Prime // Howler 1.25 lbs/A	27.1 e	156.1 ab
Champ 2F (applied 4 times)	22.4 e	140.3 abc
BF009-03 0.5 lb s/A (applied 4 times)	49.9 c	99.1 e
BF009-03 0.75 lbs/A (applied 4 times)	67.2 b	114.0 cde
Miravis Prime // Tilt // Miravis Prime // Tilt	32.2 de	165.5 a
Nontreated	90.1 a	97.9 e
	<i>P</i> =	<0.001
		<0.001



# OPTIMAL CONDITIONS FOR STORAGE CROPS

--From the UMass and UNH Northeast SARE Project "[Expanding winter harvest and sales for New England vegetable crops](#)", 2010-2013. Updated 2018 by G. Higgins.

Crop	Storage	Notes	Ethylene Sensitivity*
<b>Beet, Radish, Turnip &amp; Rutabaga</b>	Store at 32°F and 95% RH with greens removed. Radishes can be stored for 2-4 months, turnips and rutabaga for 4-5 months, and beets for 4-6 months.	Low humidity causes shriveling and weight loss, and shortens storage life.	LOW
<b>Cabbage</b>	Store cabbage at 32°F and 98-100% RH. Can last 4-6 months in optimum conditions.	Cabbage and other brassicas freeze at 30°F, and storability starts to decrease at >34°F. Presence of light in storage can decrease leaf yellowing during storage.	HIGH (promotes leaf yellowing, wilting, and abscission)
<b>Carrot</b>	Store carrots at 32°F and 98-100% RH. Can be stored 5-9 months. Potential storage time increases with higher RH.	May be stored washed or unwashed. Washing immediately after harvest may reduce disease incidence in storage but can cause skins to dry out. Storing with ethylene producers (like apples), and wounding and bruising during washing, can cause bitterness in skin.	HIGH (causes bitterness in skin)
<b>Garlic</b>	Store at 32°F and 65-70% RH. Seed garlic should be stored at 50°F. Can be stored 6-7 months at 32°F.	High temperatures (>65°F) cause dehydration, intermediate temperatures (40-65°F) promote sprouting, and high RH promotes root growth and molding.	LOW
<b>Onion</b>	Store at 32°F and 65-70% RH. Avoid condensation by cooling gradually and maintaining steady temperature. Storage potential depends on variety.	As onions mature, their dry matter content and pungency increase. Onions produced from seeds store longer than those from sets. High temperature increases sprouting, high RH stimulates root growth, and the combination increases likelihood of rotting.	LOW
<b>Parsnip</b>	Store at 32°F and 90-95% RH with greens removed. Can be stored 2-6 months in optimum conditions.	Starches in parsnip roots convert to sugars at cold temperatures. Early fall-dug parsnips can be induced to sweeten with a short (2-3 weeks) cold storage treatment.	HIGH (causes bitterness)
<b>Potato</b>	Lower temperature gradually to 40-45°F for tablestock or seed. Store at 50°F for chip stock varieties. Maintain RH at 90%. Can be stored 5-8 months.	Curing and storage environments must be dark to prevent greening. At colder temperatures, starches convert to sugar, but this is reversible if temperatures are raised again.	LOW
<b>Sweet potato</b>	Store at 55-60°F at 90% RH. Well-cured roots can store for up to a year in optimal conditions.	Starches in roots convert to sugars for the first 30 days postharvest; wait until 3 weeks after harvest for best flavor. Avoid chilling injury by keeping roots above 50°F. Chilling injury promotes root decay and decreases storage potential.	MODERATE (causes discoloration)
<b>Winter Squash</b>	Store at 55-60°F and 50-75% RH. Storage potential varies with variety, from 2-6 months.	Avoid chilling injury in field or storage, which occurs when temperatures are below 50°F. Injury increases as temperature decreases and/or length of chilling time increases. Decay accelerates after chilling. High temperatures decrease flesh quality, and high RH promotes decay.	MODERATE (causes discoloration)

\*Crops that produce significant amounts of ethylene during storage include: apple, pear, peach, plum, cantaloupe, tomato, plus several tropical fruits.

# NEWS

## UMASS EXTENSION IS HIRING! 2 EXTENSION FACULTY & 1 EXTENSION EDUCATOR POSITIONS

- **Extension Assistant Professor – Urban Agriculture**

Click [HERE](#) for more information and to apply.

Review of applicants will begin December 1, 2023, and will continue until an ideal candidate is identified. Questions can be directed to the search committee chair, Dr. Daniel Cooley ([dcooley@umass.edu](mailto:dcooley@umass.edu)).

- **Extension Assistant Professor - Sustainable Fruit & Vegetable Production**

Click [HERE](#) for more information and to apply.

Review of applicants will begin November 15, 2023, and will continue until an ideal candidate is identified. Questions can be directed to the search committee chair, Dr. Jaime Piñero ([jpinero@umass.edu](mailto:jpinero@umass.edu)).

- **IPM Extension Educator III**

Click [HERE](#) for more information and to apply.

## CLIMATE ADAPTATION AND MITIGATION FELLOWSHIP NOW ACCEPTING APPLICATIONS

The Climate Adaptation and Mitigation Fellowship Program is now accepting applications for the winter 2024 cohort. CAMF is designed to empower farmers and agricultural advisors to gain and share knowledge and tools needed to be resilient in the face of climate uncertainty. These cohort-based learning opportunities are for farmers and agricultural advisors in the Northeast and Midwest who are interested in climate change adaptation and mitigation strategies and planning, as well as peer-to-peer networking and support.

Click [here](#) to view an informational webinar with an overview of the program and application submission instructions.

**Applications are due by 11:59 PM on November 11, 2023.** [Click here to apply.](#)

## FARM LABOR STABILIZATION AND PROTECTION PILOT PROGRAM - APPLICATIONS DUE NOVEMBER 28

The USDA is accepting applications for grants under the new [Farm Labor Stabilization and Protection Pilot Program](#) (FLSP). The program will award grants in amounts ranging from \$25,000 to \$2 million dollars to agricultural employers who implement robust labor standards to promote a safe, healthy work environment for both U.S. workers and workers hired from northern Central American countries under the seasonal H-2A visa program.

Grants can cover costs related to the hiring and onboarding of US and H-2A workers (e.g., recruitment costs, attorney's fees) as well as operational costs (e.g., wages, administrative costs) and housing maintenance costs, including rental or housing conversion costs. For more information on the allowable and unallowable costs, see pages 9-10 of the [FLSP terms and conditions](#).

**The application deadline is November 28, 2023**, but USDA encourages applicants to **submit materials at least 2 weeks prior** to the deadline to ensure all certifications are met.

**FLSP and H-2A Technical Assistance:** USDA will offer no-cost technical assistance (TA) to help applicants navigate a broad range of needs in applying to this grant program, including determining eligibility and desired award level, meeting grant requirements, and navigating U.S.-based recruitment and the H-2A program and compliance. In addition to the grant funding itself, the technical assistance is one of the program's primary benefits for agricultural employers. For more information on technical assistance available, visit: [www.ams.usda.gov/FLSP](http://www.ams.usda.gov/FLSP).

## ORGANIC CERTIFICATION COST SHARE PROGRAM APPLICATION DEADLINE EXTENDED TO DECEMBER 15

The 2023 Organic Cost Share Reimbursement application period has been extended to **December 15, 2023**.

MDAR is authorized by the USDA – Agricultural Marketing Service (AMS) to reimburse certified Organic Crop and Livestock Producers and Handlers for the Federal 2023 Fiscal Year. Reimbursements are limited to 75% of an operation's certification costs, up to a maximum of \$750 of certification, for this program year. Organic operations certified for crops, wild crops, livestock and handlers are all eligible to participate.



Details and application [here](#).

If you have a question about your grant proposal that you would like to keep confidential, contact Candice Huber at [candice.huber@uvm.edu](mailto:candice.huber@uvm.edu).

## USDA DISCRIMINATION FINANCIAL ASSISTANCE PROGRAM

Have you experienced discrimination in USDA farm lending? Section 22007 of the Inflation Reduction Act (IRA) provides \$2.2 billion in financial assistance for farmers, ranchers, and forest landowners who experienced discrimination in USDA's farm lending programs prior to January 1, 2021. Distribution of these funds is one step in the long march towards justice and an inclusive, equitable USDA. The program complements other assistance made possible through the IRA, including [assistance for distressed borrowers](#).

The application process is now open—the **deadline to apply is January 13, 2024**. Applications for this program are free, and do not require a lawyer.

For more information and to apply, see the USDA's website at [Inflation Reduction Act Assistance for Producers Who Experienced Discrimination in USDA Farm Loan Programs](#).

## STRAWBERRY PRODUCTION GUIDE FOR THE NORTHEAST, MIDWEST, AND EASTERN CANADA - 2<sup>ND</sup> EDITION, NOW AVAILABLE!

The second edition of the Strawberry Production Guide for the Northeast, Midwest, and Eastern Canada is now available online and available as a [free downloadable pdf](#) with a [downloadable Microsoft Excel workbook](#). A limited number of hard copies will be available; please contact your local Extension specialist for information.

Click [here](#) for more information.

## UJAMAA COOPERATIVE FARMING ALLIANCE SURVEY

The [Ujamaa Cooperative Farming Alliance](#) is a BIPOC-led collective seeking to increase grower and crop varietal diversity in the United States. In partnership with the University of Vermont, we are conducting a research study to examine how food and agriculture can better enhance access to culturally meaningful seeds and food. This information will support farmers and other participants in the seed value chain to expand regionally adapted, sustainably grown and less commercially available varieties of seed (and the crops that come from these seeds).

To do this, we need your help! As an essential participant in the seed value chain, you are being invited to participate in a survey entitled Market opportunities for culturally meaningful seed and food. Completing the survey will take about 20 minutes.

Participating in the survey is completely voluntary, and your responses will be kept confidential. If you do participate, you can opt into a raffle for one of 50 \$100 gift certificates.

Take the survey [here](#).

Questions? Contact Daniel Tobin, [uvmseeds@uvm.edu](mailto:uvmseeds@uvm.edu) or [ujamaacfa.researchsurvey@gmail.com](mailto:ujamaacfa.researchsurvey@gmail.com).

## EVENTS

### UPCOMING UMASS EXTENSION PESTICIDE EDUCATION WEBINARS

**When:** November 9, 15, and 16, various times

**Where:** Online

The UMass Extension Pesticide Education Program is offering 8 online workshops in November to obtain continuing education contact hours for your pesticide license. Most workshops are for all categories of pesticide licenses.

Click [here](#) for the list of workshops and registration instructions.

Questions about these workshops or pesticide recertification credits in general? Contact Natalia Clifton, [nclifton@umass.edu](mailto:nclifton@umass.edu).

## **HIGH TUNNEL PRODUCTION CONFERENCE: REVITALIZING YOUR TUNNEL VISION**

**When:** Wednesday-Thursday, December 6-7, 2023

**Where:** Fireside Inn & Suites, 25 Airport Rd., West Lebanon, NH, 03784

**Registration:** \$100 for first farm attendee. \$75 for each additional farm attendee. [Click here to register.](#)

Come learn how to fine-tune your high tunnel crop production skills and visit the trade show. This conference is for high tunnel growers and agricultural service providers of all experience levels.

[Click here for full agenda.](#)

*3 pesticide recertification credits are available for day 1, and 3.5 credits are available for day 2. This event is co-sponsored by UVM, UMaine, UNH, and Northeast SARE.*

## **CT VEGETABLE & SMALL FRUIT GROWERS CONFERENCE 2024**

**When:** Tuesday, January 9

**Where:** UConn Student Union

**Registration:** Early registration \$40, ends December 20. Normal registration \$60. Online registration will close on January 3 at noon. Lunch and parking included in registration. [Click here to register.](#)

For more information and a full agenda, please see [here](#).

*4 pesticide recertification credits will be offered.*

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