



UMass
Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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CROP CONDITIONS

Thanks to all of you for your subscription to Veg Notes! We hope that this newsletter has provided you with useful, applicable, timely information throughout the 2021 growing season.

Much of our work within the Vegetable Program is grant-funded, which means we have funding to do specific research and educational activities, but the production of *Veg Notes* does not have its own source of funding and the newsletter is available without a paid subscription. To produce each issue of *Veg Notes*, we:

- **Collect data** from farmers and scouts across the state and the region for 'Pest Alerts'
- **Monitor for insect pests** using pheromone traps set up on farms across the state
- **Visit farms** weekly to scout fields and check in with growers for 'Crop Conditions'
- **Conduct research** to give you up-to-date and cutting-edge information
- **Write articles** to make the latest research and knowledge available to you in an approachable way
- **Gather news/event information** on farmer funding opportunities, regulatory updates, and grower meetings

Every year, your generous donations and business sponsorships help support these activities. Any and all donations are helpful! Click the buttons at left to learn how to donate by check or credit card.

Own a business? Businesses can also sponsor the Vegetable Program and receive logo placement within *Veg Notes* and on our website! Contact us for details about our readership and audiences, and click the blue button above for 2022 sponsorship levels.

Thank you for supporting *Vegetable Notes*!

BIRDS: PESTS OR PEST CONTROL?

--Written by Sam Mayne & Isabel Brofsky, UMass Amherst Environmental Conservation

We've all seen it. A huge flock of black silhouettes soaring through the sky, descending to feed in the fields below. Birds can present an intimidating problem for producers trying to protect their crops, and from sound cannons, to streamers, to netting, efforts to deter these marauders can be costly. But are we really stuck in a timeless battle with nature over the food we produce? When birds go into fields to eat, it's not always to gorge themselves on the fruits of others' labor. During the spring and summer, most songbirds switch to a mostly insect diet. That means when they're in fields, a lot of what

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.

they're eating are agricultural pests, not crops.

Thanks to a grant from the USDA Natural Resources Conservation Service (NRCS), we conducted research in 2019 and 2020 to determine just how much of farm birds' diets are crop pests, and how much impact they have on pest populations on crops. Our research was conducted on small-scale, organic, diversified fruit and vegetable farms in western Massachusetts. We found that birds eat insect pests on cucurbits, like squash and cucumber, and brassicas like kale and broccoli. Birds didn't

have much impact on solanaceous crops like eggplant. By netting off sets of crops, we were able to compare the number of pests and the amount of pest damage on crops where birds were eating pests versus those where they weren't.

On cucurbit crops, birds reduced the number of squash bugs (*Anasa tristis*). There were only half as many adult squash bugs on cucurbits when birds were present, and only a quarter as many squash bug nymphs. Birds also reduced the number of squash bug egg masses by 37%. All of this pest control resulted in 40% less damage to leaves when birds were present. In brassicas, birds reduced the number of imported cabbageworm and diamondback moth caterpillars by about 35% each. Things were a little bit more complicated in eggplant. Birds ate insect predators of Colorado potato beetle larvae, leading to an increase in their populations. However, there was still less damage to eggplant leaves when birds were present, so the increased numbers of Colorado potato beetle larvae probably didn't hurt yield.

Overall, 12% of fecal samples collected for our research included DNA from at least one agricultural pest, while only 2% of samples included a pest natural enemy. Gray Catbirds and Common Yellowthroats were two species that particularly excelled in their consumption of crop-damaging insects. In fact, about 1 in 6 samples collected from these birds contained an agricultural pest! Both of these species are abundant in hedgerows and field edges with plenty of tall, dense, shrubby vegetation, which provides ideal places for them to build nests and hide from predators. Farmers interested in improving pest control by birds like catbirds and yellowthroats may be able to do so

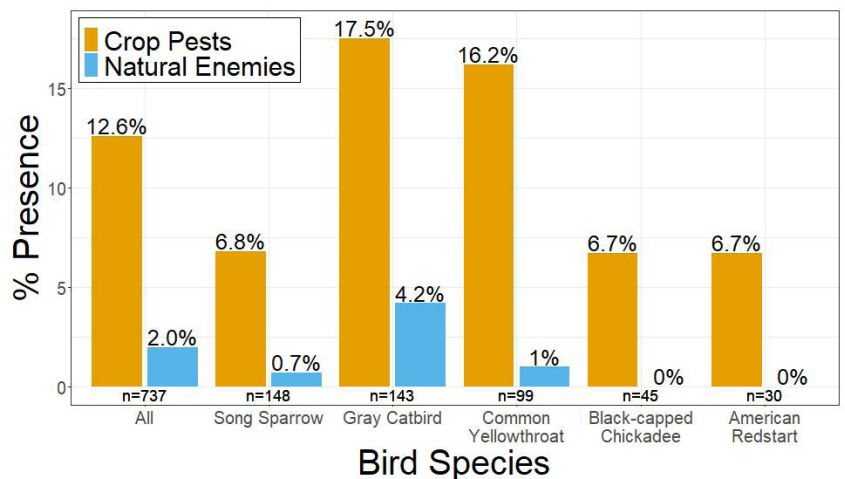


Figure 1. Presence of insects in bird fecal matter. The percent of fecal samples that contained either crop pests or pest natural enemies for the five species for which we collected the most samples. Fecal samples were collected from birds on western Massachusetts farms.

Pests and natural enemies found in bird fecal samples	
Common Name	Scientific Name
Crop Pests	
Spotted wing drosophila	<i>Drosophila suzukii</i>
Seedcorn maggot	<i>Delia platura</i>
Black cutworm	<i>Agrotis ipsilon</i>
Copper underwing moth	<i>Amphipyra pyramidoides</i>
Raspberry fruitworm	<i>Byturus unicolor</i>
Variegated cutworm	<i>Peridroma saucia</i>
Colorado potato beetle	<i>Leptinotarsa decemlineata</i>
Tarnished plant bug	<i>Lygus lineolaris</i>
Gypsy moth	<i>Lymantria dispar</i>
Cherry fruitworm	<i>Grapholita packardii</i>
Spotted cutworm	<i>Xestia c-nigrum</i>
Spotted cutworm	<i>Xestia dolosa</i>
Pest Natural Enemies	
Eastern calligrapher fly	<i>Toxomerus geminatus</i>
Margined calligrapher fly	<i>Toxomerus marginatus</i>
Green lacewing	<i>Chrysopa oculata</i>
Red-lipped green lacewing	<i>Chrysoperla rufilabris</i>
Insidious plant bug	<i>Orius insidiosus</i>

by increasing the amount of natural shrubland and woodland on their land, especially adjacent to fields in production. Another way farmers can improve bird populations on their farms is by installing nest boxes. Although yellowthroats and catbirds don't use nest boxes, Eastern Phoebe, Eastern Bluebirds, and swallows do and they all primarily eat insects during the summer.

The benefits of songbirds to crops aren't limited to brassica, cucurbit, and solanaceous crops. Birds have been found to reduce pests in vineyards, orchards, strawberries, corn, alfalfa, cotton, and a variety of tropical crops, often more than making up for any damage they cause and increasing yields. Birds reduce pests in corn, saving farmers about \$275 worth of pest damage per hectare each year. Birds also sometimes cause reductions in total yield, for instance in soybeans, but healthier natural communities usually lead to increased benefits for crops. Birds are often more beneficial when there is more natural habitat near fields, so keeping trees and shrubs on farmlands can help bird populations with positive or negligible effects on yields. In fact, many bird species that inflict crop damage, such as European Starling and House Sparrow, are actually less abundant on farms that have more tall, dense shrub or woodland habitat – the same kind of habitat that also favors species that eat insect pests. At the end of the day, maintaining a mix of natural and semi-natural habitat on farms is likely to help conserve birds, reduce the number of bird and insect pests, and have positive or minimal impacts on crop production.

Want to know more? Contact Sam Mayne at smayne@umass.edu or Isabel Brofsky at ibrofsky@umass.edu.

References

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- Brofsky, I., King, D. 2021. Small, diversified farms in New England provide conservation opportunities for shrubland birds. <https://doi.org/10.32747/2021.7538599.nrcs>
- Dainese, M., *et al.*, 2019. A global synthesis reveals biodiversity-mediated benefits for crop production 1–14. <https://doi.org/10.1016/j.sbsbs.2019.04.001>

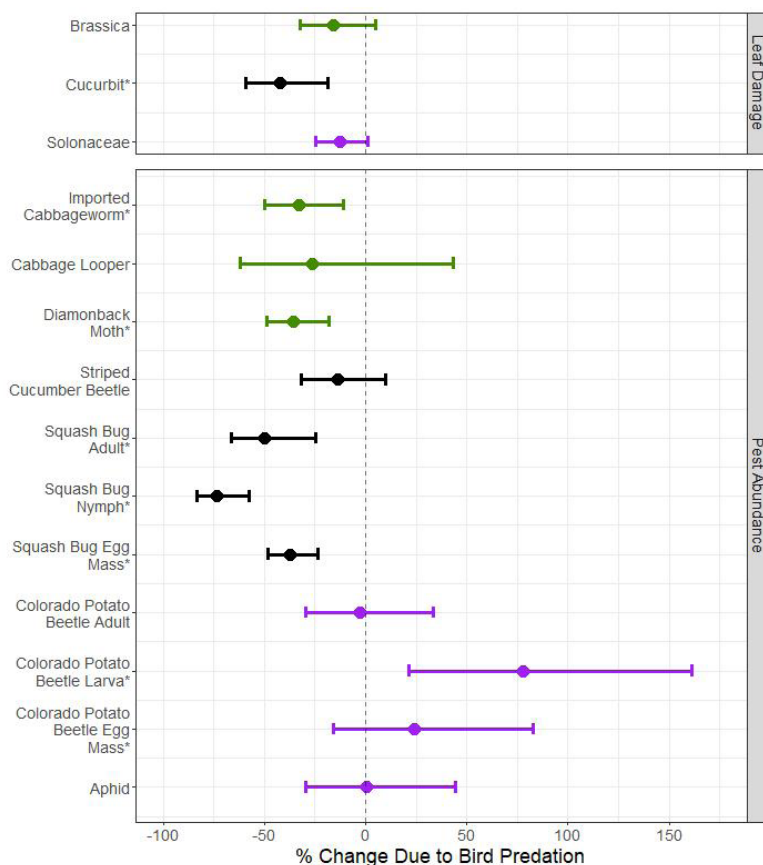


Figure 2. Percent change in pest populations. Points show the percent change in pest populations or leaf damage, comparing plants where birds were excluded to where they were allowed to forage for insects. Brackets show the range of values that we're 95% sure the percent change falls within.

Garfinkel, M.B., Minor, E.S., and Whelan, C.J., 2020. Birds suppress pests in corn but release them in soybean crops within a mixed prairie/agriculture system. *Condor*. <https://doi.org/10.1093/CONDOR/DUAA009>

Rosa-Schleich, J., Loos, J., Mußhoff, O., and Tschardt, T., 2019. Ecological-economic trade-offs of Diversified Farming Systems – A review. *Ecol. Econ.* <https://doi.org/10.1016/j.ecolecon.2019.03.002>

LETTUCE DOWNY MILDEW

Downy mildew (*Bremia lactucae*) is a common disease of lettuce in cooler growing environments, where temperatures are low and there are long periods of leaf wetness caused by overnight dew. These conditions are common in late-fall and in cool-season greenhouses. Symptoms include white sporulation on leaf surfaces, which growers may assume to be powdery mildew. Downy mildew sporulation is raised and appears slightly granular, whereas powdery mildew is flatter and appears flush with the leaf. Importantly, downy mildew requires cool weather and leaf wetness while powdery mildew occurs during warm weather and under dry conditions. Downy mildew is caused by an oomycete (like late blight) and powdery mildew is caused by a fungus, so fungicides used to control one may not control the other. If you plan to control lettuce powdery or downy mildew with fungicides, be sure to properly identify the pathogen or submit a sample to the diagnostic lab before making an application.

Symptoms: Lettuce downy mildew causes leaf yellowing in angular patches, as the spots are vein-limited. On red leaf varieties the initial spots may appear more grayish and water-soaked. Under humid conditions, sporangiophores emerge from stomata and produce sporangia (infective spores). This crusty white sporulation looks similar to brassica downy mildew. Sporulation usually forms on the underside of the leaf but may also be seen on the upper leaf surface. Later, lesions turn tan or brown and papery as the tissue is killed. Older leaves close to the ground usually are the first to show symptoms.

Crop Injury: Downy mildew can reduce yields and quality of the crop. Infected wrapper leaves must be removed at harvest. Mild infections may go unnoticed, if sporulation only occurs on lower leaves, but infections on the cap leaves or of leaf lettuce may require abandoning heads or whole plantings in the field. Sporulation can develop after harvest, resulting in symptomatic lettuce on market shelves. Downy mildew-damaged leaf tissue can be an entry site for secondary rot producing organisms. These rot organisms may compound crop losses in the field, and can also cause losses later when the lettuce is in transit.

Life Cycle: Damp, cool conditions and moisture on leaves are required for the pathogen to infect lettuce and cause symptoms to develop. The short-lived sporangia are dispersed by wind. Cultivated lettuce is the main host but it has also been reported on other plants in the Asteraceae family such as artichoke, cornflower (*Centaurea cyanus*), and strawflower (*Helichrysum bracteatum*). *Bremia lactucae* is a complex organism, consisting of



Crusty, white sporulation forms under humid conditions.
Photo: S. Scheufele.



Grayish, water-soaked lesions on red lettuce.
Photo: S. Scheufele



Lettuce powdery mildew. Photo: M.T. McGrath

multiple races or pathotypes, which affect different lettuce cultivars. Major pathotypes are numbered in both Europe and the U.S., and the numbering is separate between the two continents. Currently, 9 races have been identified in the U.S. and 37 have been identified in Europe, however US races 1-4 and EU races 1-15 are no longer active or important in the field, so economically important pathotypes are limited to US 5-9 and EU 16-37. However, the pathogen is highly complex and new races continue to occur as the pathogen changes. Within each pathotype, some isolates have developed a lack of sensitivity to some fungicides. It is not entirely clear whether or not *B. lactucae* produces more persistent overwintering spores (oospores) in our area, if it is blown in from other growing regions, or is associated with seed.

Cultural Control: Planting resistant varieties is the most effective strategy for preventing lettuce downy mildew. However, choosing the right resistant variety necessitates that one knows which strain(s) of the pathogen is present. Resistance is reported for EU and US strains separately; for example, the head lettuce variety ‘Muir’ is reported as having resistance to EU 16–26, 28, 32 and US 5–9. Because the pathogen is constantly changing and because there are so many more identified EU pathotypes than US pathotypes, the strongest resistance can be achieved by growing lettuce varieties with resistance to as many EU pathotypes as possible (despite not all of the EU pathotypes being present in the US). Resistance to newer pathotypes (e.g. higher numbers) may also provide better, broader protection against the newest, unnumbered pathotypes.

We are interested in hearing from anyone who sees lettuce downy mildew on their farm this winter so that we can track which pathotypes are showing up in the Northeast—contact us at umassveg@umass.edu if you suspect the disease in your lettuce!

Other cultural controls may include:

- Destroying crop residues promptly after harvest
- Crop rotation into unaffected fields
- Buying quality seed
- Reducing leaf wetness by using drip irrigation, increasing spacing, orienting rows parallel with wind, controlling weeds, and so on
- Heat and vent greenhouses to remove moist air

Chemical Control: Many fungicides are labeled to control downy mildew and can be effective if a spray program is started early, before disease occurs when conditions are favorable. Oomycete-specific materials (e.g. Tanos, Ranman, Curzate) should be mixed with a broad spectrum fungicide (e.g. mancozeb or copper). For organic growers, contact fungicides (e.g. Oxidate or Milstop) have been found by growers to be most effective. Organic contact fungicides need to be applied on a tight spray schedule, as they do not have residual activity. See the [New England Vegetable Management Guide](#) for a complete list of registered fungicides. Greenhouse or high tunnel growers: Make sure that any fungicide you plan to apply is not prohibited from use indoors. Unless the label specifically prohibits indoor/greenhouse/high tunnel use, it is allowed. This [Michigan State University article](#) includes a spreadsheet with information about whether or not pesticides can be used in greenhouses or high tunnels. Be sure to check the label yourself as well (we find the easiest way is to find the product label at <http://www.cdms.net/Label-Database>, then search the pdf for the words “indoor” and “greenhouse”, as well as carefully reading the applicable crop section on the label). Check labels for pre-harvest intervals.

--Written by Susan B. Scheufele, UMass Vegetable Program

WARM ROOMS FOR STORAGE CROPS & FREEZE PROTECTION FOR COOLERS

--Written by Chris Callahan, University of Vermont Ag Engineering. Originally published on the [UVM Ag Engineering Blog](#) on November 29, 2021,

Some crops like winter squash and sweet potatoes are ideally kept in “warm” rooms for long-term storage. It is also helpful to have some freeze protection even in cold storage rooms during the winter months when outside temperatures drop below the storage temperature. The information below should help accomplish both of these needs simply and inexpensively.

Knowing Your Heat Load

The first step in figuring out how to keep a space warm or prevent freezing is knowing how much heat will be needed. This depends on the size of the space, the insulation, air infiltration and the inside and outside temperatures. Our [online calculator](#) will help you determine how much heating you need to keep a specific space at the right temperature. A heat load is typically given in units of BTU/hr (British thermal units per hour) or Watts. Sometimes heater specifications simply state “BTUs” which can be read as BTU/hr. Electric heaters are typically rated in Watts and combustion appliances such as wood, propane, or fuel oil heaters or stoves are rated in BTU/hr. The calculator provides the heat load in both units and you can always [convert between units](#) knowing that there are 0.239 Watts per BTU/hr (or 3.41 BTU/hr per Watt).

It may be helpful to remember that storage crops are living organisms and they respire. Respiration gives off heat and moisture. Some growers are able to store warm storage crops without any additional heating when using a well-insulated and well-sealed room due to the heat given off from the crops. Winter squash, for example, has a high rate of respiration and can “self-heat.” For an estimate of respiration heat, you can use our [crop storage planner](#).

Choosing a Heater

Select an appliance that is actually designed for heating. It may be tempting to use a lightbulb or heat lamp, but these can present other problems such as sprouting (due to light) or fire hazards (due to exposed hot surfaces). Some pointers:

- Choose a heater with a UL listing.
- Make sure there are fire protections included in the heater such as grates, stand-offs, tip sensors, and overheat switches.
- Heaters with lower maximum surface temperatures are generally going to be more safe.
- Choose a heater that will turn on when power is applied or one that has an integrated thermostat (see next section). Some heaters have a second step required after power is applied to activate it. These won't work well with an external thermostat used for freeze protection.

Below are some heaters that should work well in this application.

Panel heaters with on/off control that would work with an external thermostat for freeze protection.

- Cozy Chicken Coop Flat Panel Heater – \$40, 200 Watts. Available at [Tractor Supply](#) and [Home Depot](#).
- Cozy Legs Flat Panel Heater – \$45, 150 Watts. Available at [Bed, Bath & Beyond](#).
- AirChoice Electric Heater – \$150, 400 Watts. Available on [Amazon](#).

Oil filled heater with integrated thermostat best suited for warm room applications (won't work well with an external thermostat).

- NewAir Electric Oil Filled Radiator Heater – \$150, 1000 Watts. Available at [Tractor Supply](#).

Controlling the Heat

Heaters are typically controlled by thermostats or timers. Timers simply turn the heater on for a period of time and don't offer precise control of temperature. Thermostats measure temperature and turn a heater on or off based on that measurement. Read more at our post about [thermostats](#).

Some heaters come with a thermostat integrated into the heater. This may be the easiest option for heating a warm room. Unfortunately, these integrated thermostats are most often designed for human comfort (>50 °F) and don't go low enough to offer freeze protection for cold rooms.

An external thermostat with a wider range can be used to turn heaters on and off at lower setpoints such as 32 °F. These can be purchased with plugs attached to make installation easier. Check the amperage rating of the thermostat compared to the heater(s) you plan to control. Some examples are provided [in this post](#).

Distributing the Heat

It may be helpful to add a small circulation fan in the room to distribute the heat throughout the space. Aim for 2-4 cubic feet per minute of air flow per square foot (CFM/ft²) of storage space. For example a 10 foot x 10 foot warm room should

have 200-400 CFM of circulation air flow which is generally one or two small fans. Consider a wall or ceiling mount fan to keep it out of the way and to prevent it being knocked over or falling over.

Air circulation is important even if trying to make the most of respiration heat from the crops. It is also helpful to leave some space between storage bins and also between bins and the wall. This allows air to pass more freely so that all storage crops see the same conditions. Remember that stored produce is alive and respiring, so air circulation can help prevent hot spots and areas of high humidity and condensation.



This Honeywell TurboForce HT-900 is an inexpensive option for air circulation. It provides up to 185 CFM with 3 selectable speeds and has slots on the base for wall or ceiling mounting. \$20. Photo: C. Callahan

NEWS

FDA PROPOSES CHANGES TO AGRICULTURAL WATER REQUIREMENTS IN THE PRODUCE SAFETY RULE

The FDA issued a [press release](#) today announcing the publication of new proposed requirements related to agricultural water in the FSMA Produce Safety Rule, familiar to some as subpart E.

For an overview, see [FSMA Proposed Rule on Agricultural Water](#)

The proposed revisions would significantly change the requirements related to pre-harvest water while retaining the existing standards for post-harvest water and for sprouts. The proposal would replace the microbial criteria and testing requirements for pre-harvest agricultural water with an “agricultural water assessment” of pre-harvest water systems that considers several factors in determining whether the water is likely to introduce contamination to fresh produce.

The proposed rule will be published in the Federal Register [here](#). There will be 2 virtual public meetings and a 120-day public comment period. We’ll be sure to provide information to Veg Notes subscribers about how to participate as soon as that information is available.

MDAR URBAN AGRICULTURE PROGRAM NOW ACCEPTING APPLICATIONS

MDAR’s Urban Agriculture Program seeks proposals for projects that will support commercial urban food production in the Commonwealth. They seek to award grants, statewide, to promote strategies addressing food insecurity, to expand and create new economic opportunities and to increase access to fresh, local produce in urban neighborhoods. *This is the second round for FY’22.*

- Application deadline is **4:00 PM on December 30, 2021.**
- For questions regarding the RFR, contact Rose.Arruda@mass.gov.
- Applicants are responsible to refer to the COMMBUYS link for any changes or updates to the RFR.

Learn more about the Urban Agriculture Program here: <https://www.mass.gov/how-to/apply-for-the-urban-agriculture-program>

Direct link to COMMBUYS: www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-22-1002-1003-001-68954&external=true&parentUrl=close

UConn SURVEY FOR VEGETABLE PRODUCERS: PRODUCE WASH WATER

UConn Extension is conducting a survey in order to prioritize research and extension efforts at UConn regarding the application of natural antimicrobial and probiotic based produce wash to control food-borne pathogens on vegetable produce and reducing pathogen loads in wash water. We would also study the use of dump tank wash versus spray systems to reduce Ag water use and wastewater disposal. Results will be used in the development of a grant proposal for a project to address these needs. This survey should only take 7-10 minutes or less to complete. This survey is open to all vegetable producers in the Northeast. Your responses are confidential, and this survey does not contain questions that may personally identify you.

[Click here to take this survey.](#) Thank you!

USDA ORGANIC & TRANSITIONAL EDUCATION & CERTIFICATION PROGRAM: APPLICATION OPEN NOW

The USDA will provide pandemic assistance to cover certification and education expenses to agricultural producers who are certified organic or transitioning to organic, under the new [Organic and Transitional Education and Certification Program \(OTECF\)](#) as part of USDA's broader [Pandemic Assistance for Producers initiative](#), which provides new, broader and more equitable opportunities for farmers, ranchers and producers.

OTECF will cover eligible certification and education expenses paid during the 2020, 2021, and 2022 fiscal years. For descriptions of eligible expenses and payment limits, see the program website.

Signup for 2020 and 2021 OTECF is November 8, 2021 through January 7, 2022. Producers apply through their local Farm Service Agency (FSA) office and can also obtain one-on-one support with applications by calling 877-508-8364. Visit farmers.gov/otecf to learn more.

EVENTS

REGISTER NOW FOR THE 2021 NEW ENGLAND VEGETABLE & FRUIT CONFERENCE!


When: Monday – Friday, Dec. 13 – 17, 2021

Registration: \$50 registration fee gains you full access to the program and 3 months access to the recordings.

Join for 5 days of presentations, designed with the zoom-fatigued farmer in mind. The conference will be comprised of a morning (9-11am) and afternoon (1:30-3:30) session every day. See the Conference-At-A-Glance schedule below for session topics. Co-sponsored by the New England and Eastern New York State Cooperative Extensions, MFGA, MOFGA, and NEVBGA.

For more information, including registration information, visit the conference website, <https://nevbga.com/nevfc/>, or **click the button below to register.**

[Click here to register for the Conference](#)

					
New England Vegetable and Fruit Conference					
	MON Dec. 13	TUES Dec. 14	WED Dec. 15	THURS Dec. 16	FRI Dec. 17
Morning Session 9:00- 11:00am	Tillage Reduction Innovations	Tree Fruit 1	Vegetable Disease and Pest Updates	Berry Crops 2	Automation for Small Vegetable Growers
Afternoon Session 1:30- 3:30pm	Climate Adaption Strategies on the Farm	Berry Crops 1	Soil Health	Tree Fruit 2	Inspiration from Away

LISTENING SESSIONS: PRODUCTION AND REVENUE HISTORY (PRH) COVERAGE FOR FRESH MARKET SWEET CORN

When: Friday, December 10, 2021, 9-10:30am

Where: Zoom. To join on the day of the session, click the following link: <https://bit.ly/3n0E1Li>. If prompted, the passcode is “corn”.

You are invited to participate in a Listening Session with Agralytica who is working under contract for USDA’s Risk Management Agency (RMA). The sessions are to gather feedback about a potential production and revenue history policy for fresh market sweet corn. The sessions are for fresh market sweet corn growers in areas covered by the Fresh Market Sweet Corn Dollar Plan of Insurance, as well as industry members and regional insurance representatives.

Questions? Contact Andre Williamson, awilliamson@agralytica.com (Subject Line Sweet corn PRH insurance) or 240-432-0308.

SANITATION FOR STRAWBERRY GROWERS: AN ONLINE SUPPLEMENTAL CURRICULUM TO THE PSA GROWER TRAINING

When: Tuesday, December 14, 9am-12pm OR Tuesday, January 11, 1-4pm *Central Time. Attendees will attend just one session, not both.

Where: Online

Registration: Free, limited to 20 participants for each date. Registration closes 2 days before each training. [Click here to register.](#)

Want to learn more about keeping your strawberry farm safe and free of microbial contamination during growing, harvesting, packing, and holding fresh produce? Join the University of Arkansas System Division of Agriculture and Clemson University for this online supplemental training. This training is intended to supplement, not replace more general Produce Safety Grower Trainings required by the FSMA Produce Safety Rule. Topics covered by this training will include the importance of food safety, cleaning & sanitizing terms, SOPs for cleaning & sanitizing surfaces, and documentation & recordkeeping.

Questions? Contact Rip Weaver, UADA Extension Program Technician, rweaver@uada.edu or 501-671-2388

MDAR BUSINESS PLANNING COURSE: GROWING YOUR FARM

When: Tuesday evenings, January 11 to March 8, 2022

Where: Southborough, MA

Registration: \$150 per farm. Complete a [Growing Your Farm Application](#) and email to Michael.Parker@mass.gov or mail to MDAR, Attn: Michael Parker, 138 Memorial Ave, Suite 42, West Springfield, MA 01089. Applications will be accepted until **December 3rd** or until the course is full.

A hands-on course to help established farmers develop a business plan and financial projections for their farm business. This course covers topics including resource assessment, marketing strategy, financial management, risk management, quality of life, and goal setting. The course is taught by professional business planners with years of experience working with Massachusetts farms and guest speakers on current topics such as succession planning and online marketing. The cost is \$150 per farm. Enrollment is open to farmers who have been operating a farm business in Massachusetts for at least the two prior years. Eight weekly classes will be held on Tuesday evenings starting January 11 and ending March 8 (with one vacation week).

Farmers that complete a business plan by participating in the Growing Your Farm business planning course and then apply and get accepted to MDAR’s APR Improvement Program or Matching Enterprise Grants for Agriculture may be able to waive the business planning phase of these programs, enabling them to move to the contract phase earlier to start implementing their projects. The Growing Your Farm business planning course has been approved as a certified USDA Farm Service Agency (FSA) borrower training for financial management.

Questions? Contact Michael Parker at 857-895-0023.

Funding provided by the MA Department of Agricultural Resources’ Agricultural Business Training Program.

NOFA/MASS WINTER CONFERENCE

When: Saturday-Sunday, January 15-16, 2022, 9am-6pm

Registration: \$45-250 sliding scale. Scholarships available. [Click here to register.](#)

Join your peers in the organic, regenerative, sustainable living movement at the NOFA/Mass Winter Conference this January. Gain access to presenters and information that keeps you on the pulse of the latest developments, insights and innovations happening on the farms and gardens of your local region as well as from further afield.

The Conference will be held as a hybrid event, with both in-person and virtual attendance options. You'll be welcome to join us on the campus of Worcester State University or from your very own home.

2022 LONG ISLAND AGRICULTURAL FORUM

When: Tuesday-Thursday, January 18-20, 2022

Where: online

Registration: \$45 per participant. [Click here to register for the Long Island Ag Forum.](#)

The past year has been different in many ways, but as you know the Long Island agricultural and horticultural industries have not slowed down! Like so many other conferences and events this year, the 2022 Ag Forum will be presented through Zoom webinars and online meetings. While the Forum will be coming to you in a different format, you will still hear the latest in research on environmentally safe and viable production, marketing tips, issues related to crop culture, and legislative, agency, and association updates. Pesticide credits are available – see the [event page](#) for more information.

For more information check out the [sessions brochure](#).

FARM SUCCESSION SCHOOL

When: Tuesdays, January 25, February 15, & March 15, 2022, 9am-4pm

Where: John W. Olver Franklin Transit Center, Greenfield, MA

Registration: \$100 per farm. [Click here to register for this series.](#)

MDAR is hosting Land for Good's Farm Succession School for Massachusetts farmers this winter! This is an opportunity for senior generation farmers to talk with peers, learn from advisors, and get support on the challenging process of farm succession and transfer planning.

Succession planning is a process of exploring how to transfer the farm business and assets to a future owner. Succession School provides farmers and farming partners with the structured and sustained support to make decisions, engage their families, and organize the legal and financial mechanics.

Questions? Contact Shemariah Blum-Evitts, shemariah@landforgood.org or 603-357-1600

Funding provided by the MA Department of Agricultural Resources' Agricultural Business Training Program.

UMASS EXTENSION JUMPING WORM CONFERENCE

When: Wednesday & Thursday, January 26 & 27, 2022, 9-11:45am

Where: online

Registration: \$25 per person for 1 day, \$40 per person for both days. [Click here to register.](#)

Do you have questions about jumping/snake worms? If you immediately answered yes, this conference is for you! Join UMass Extension as we welcome scientists who specialize in jumping/snake worm research to discuss the latest understanding of these earthworms. How to identify these worms, what their potential impacts are, and the latest research into how we might manage them to be discussed. These LIVE virtual presentations will also give you the chance to get your questions answered following each speaker's presentation. So bring your questions!

½ pesticide credit contact hour per day for categories 29, 25, 26, 27, and Applicator's (core) License. Association credits: 1 MCA, 1 MCLP, 1 MCH, 1 CFE, 2 ISA, and 2 SAF (cat 1) credits per day.

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