



UMass
Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



Volume 31, Number 2

February 1, 2019

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SUPPORT 2019 *VEGETABLE NOTES!*

Thank you to those of you who have already donated to support Veg Notes! If you're wondering what your donation money supports, in addition to the weekly production of Veg Notes, attached is the annual report of the UMass Extension Vegetable Program. If you'd still like to donate to support the newsletter and our program, you can make a gift online or by check with the buttons below. If you have a business, consider sponsoring *Veg Notes* to have your logo placed in the newsletter and/or on our website for the year.

Make a Gift by Check

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Sponsor *Veg Notes*

VEGETABLE PROGRAM SURVEY

If you're looking for another easy way to support our program, please fill out our Vegetable Program Survey. Your response will help us adapt the program to better meet your needs as growers, farm workers, ag service providers, and home gardeners. The survey should take about 10 minutes to complete. See the article in this issue on why we conduct (so many!) surveys.

[Click here to take the 2018 Vegetable Program Survey.](#)

PEST ALERTS: MUSTARD APHID ON WINTER BRASSICA GREENS

Mustard aphids were identified on mustard greens growing in a greenhouse in Franklin County this past week. Also known as turnip or cabbage aphids, the scientific name of this pest is *Lipaphis pseudobrassicae* (recently changed from *Lipaphis erysimi*, a name which now refers to a species found only in Europe). This species of aphid is specific to hosts in the brassica family. They may vector a number of plant viruses, including cucumber mosaic virus (CMV) and cauliflower mosaic virus (CaMV).

Identification: adult mustard aphids are approximately 1.4-2.4 millimeters long. They are yellow-brown to olive green with a light waxy bloom and have a washboard-like texture to their bodies (see photo). Antennae are dark and approximately half the length of the body. Eyespots are also dark. Immature forms may be yellow-green. Winged forms are black from head to prothorax, with green abdomens.

L. pseudobrassicae is very similar to *Brevicoryne brassicae*, also known as the cabbage aphid. The species differ in that *B. brassicae* typically has a heavier waxy coating that can be powdery in appearance. Its antennae are also dark at the ends and lighter near the insect's head, whereas the antennae of *L. pseudobrassicae* are uniformly dark. The cornicles of *L. pseudobrassicae* reach the base of the cauda, whereas the cornicles of *B. brassicae* fall significantly short of this mark. *B. brassicae* is also considered more cold tolerant than *L. pseudo-*



Mustard aphid. Note the washboard-like texture and light waxyness on the surface of the aphid. Photo: A. Madeiras.

brassicae, which slows to the point of ceasing activity at temperatures <48°F.

Management: Scout crops regularly for the presence of mustard aphids. Treat hot spots; remove any heavily infested plants. Thoroughly remove, destroy, or bury crop debris. Rotate away from Brassica crops. Remove weeds (especially those in the brassicaca family) inside and around the greenhouse.

A number of natural enemies are known to prey upon mustard aphids, including *Aphidius*, *Aphelinus*, ladybird beetles, lacewings (larvae and adults), and syrphid flies. *Aphidius matricariae* may be more effective than *A. colemani* against mustard aphids in cool greenhouses as it has a lower optimum temperature range (64-77°F). Manage ants if they are present- some ant species tend aphids for their honeydew and will protect them from natural enemies. *Beauveria bassania* (Mycotrol) is effective at cool temperatures. Other labeled materials include insecticidal oils and soaps, pyrethrins, neem, and azadirachtin. Consult the [New England Vegetable Management Guide](#) for a full list of products registered for use on edibles in the greenhouse. Check labels to ensure that products are approved on your crop in your state.

--Written by Angie Madeiras, UMass Plant Diagnostic Lab

VEGETABLE PROGRAM ANNUAL REPORT: OCTOBER 2017-2018

Our team of Extension Educators includes: Katie Campbell-Nelson (nutrient management and team leader), Genevieve Higgins (field technician and program support), Lisa McKeag (food safety) and Susan Scheufele (plant pathology and applied research). As a lead trainer with the Produce Safety Alliance, Lisa McKeag has trained 172 farmers this year and began a graduate program in Food & Agricultural Law & Policy. Her educational pursuits have already greatly informed our work! Genevieve Higgins has been tracking spinach and lettuce downy mildews across Massachusetts and is now managing a spinach research trial with downy mildew resistant varieties. She and Lisa also developed a top notch 'Food Safety for Farmers' website. Katie will be the general editor of the 2020-2021 New England Vegetable Management Guide, and conducted a high tunnel soil survey in MA as part of a New England regional survey. Sue broke her personal record and conducted 6 research trials this summer on management of cabbage aphid, brassica flea beetle, cucurbit downy mildew, and reduced risk pesticides for protecting pollinators in butternut! Sue also launched the Brassica Pest Collaborative with researchers from UNH, UConn, and Cornell and received an award from World Farmers for Supporter of the Year. We were greatly supported by departmental assistants Avi Flynn and Michele Meder. Avi scouted on farms across the state this summer while also managing our pest trapping network, and made the beautiful pest alert maps you saw this year in [Vegetable Notes](#). Michele was our summer field assistant – she did the tractor work to keep our research plots weed-free all summer, kept us geared up and well prepared to collect data, and kept us well-nourished with her mean pies. Following is a report of our activities and impacts this past year.

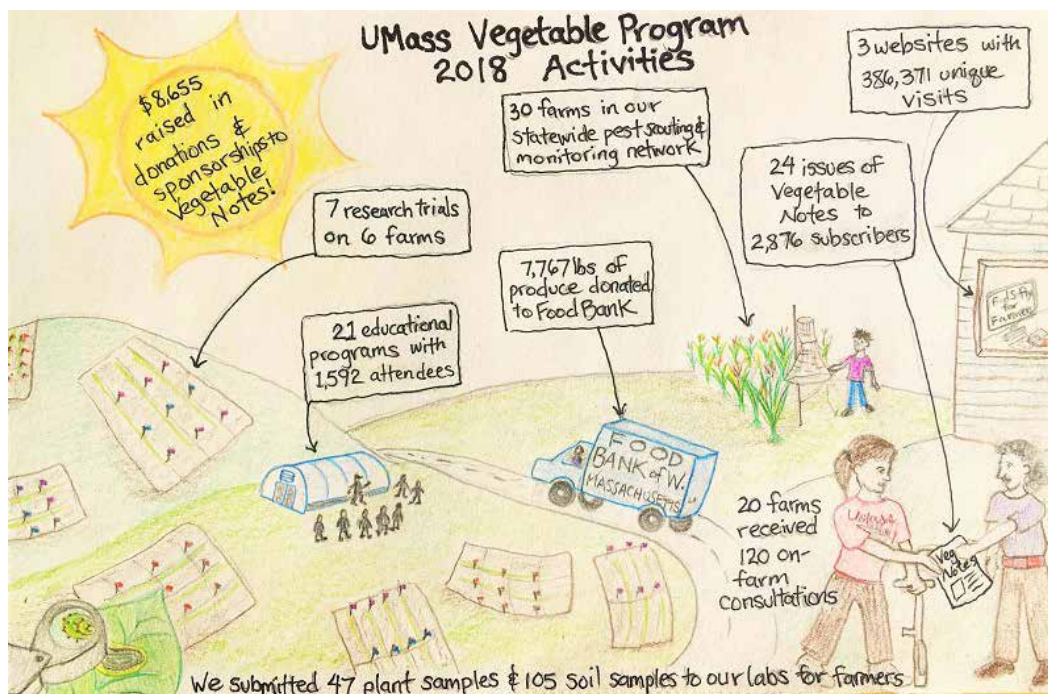
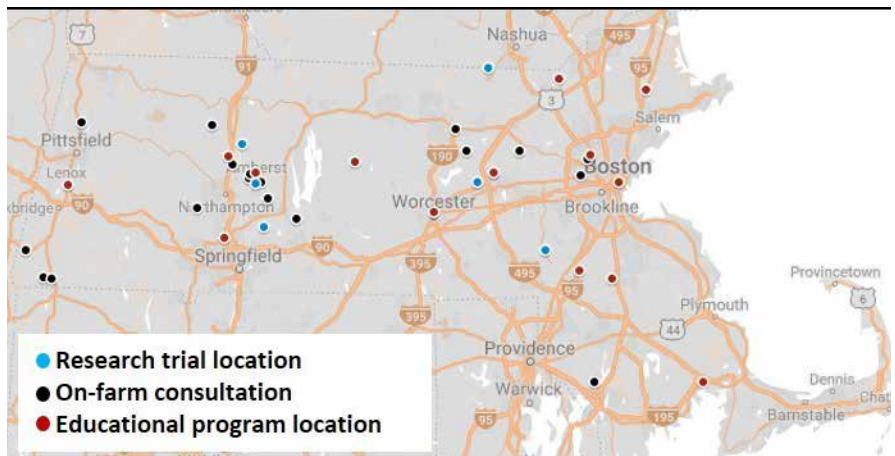


Illustration by
Katie Campbell-
Nelson!

Impacts:

- 144 people who attended our educational programs and completed evaluations reported that they were confident in implementing a new practice.
- 173 people who attended our educational programs and completed evaluations reported a gain in knowledge.
- 20 Agricultural Extension Educators participated in a professional development program and 11 reported using information they gained in outreach to the farmers they work with.
- We completed construction of a 30'x96' high tunnel at the UMass Research Farm for conducting trials in.



Research Trials:

Project Director Susan Scheufele:

Location: UMass Crop and Animal Research and Education Center, South Deerfield, MA.

- [Attracting Beneficial Insects to Reduce Cabbage Aphid Population Size](#)
- [Using Mulches to Reduce Flea Beetle Damage and Improve Crop Yield](#)
- [Beneficial Nematodes to Reduce Flea Beetle Population Size](#)
- *Evaluating Varieties for Cucurbit Downy Mildew Resistance and Yield*
- *Reduced Risk Fungicides for Pollinator Protection in Cucurbits*
- *Sentinel Plot for Cucurbit Downy Mildew Tracking on CDM-IPM-Pipe*

Project Director Katie Campbell-Nelson:

- *New England High Tunnel Soil Survey*. Locations: 5 farms in MA, plus 13 farms in VT, NH and RI.

Grants Awarded:

Principle Investigator Katie Campbell-Nelson

- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA) (NESARE), **Title:** *2018-2020 NESARE MA Professional Development and Outreach Program*, **Total Award:** \$60,000, **Expiration:** 9/30/2020
- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA) (USDA), **Title:** *Massachusetts Vegetable Scouting Network*, **Total Award:** \$80,000, **Expiration:** 12/31/2019

Principle Investigator Lisa McKeag

- Prime Sponsor: US Dept of Agriculture (USDA) Risk Management Agency (RMA), **Title:** *UMass Extension Comprehensive Crop Insurance/Risk Management Education Program*, **Total Award:** \$225,000, **Expiration:** 3/31/2020
- Prime Sponsor: Food and Drug Administration (FDA), **Title:** *Massachusetts Department of Agricultural Resources Interdepartmental Service Agreement*, **Total Award:** \$146,000, **Expiration:** 6/30/2021

Principle Investigator Susan Scheufele:

- Prime Sponsor: US Dept of Agriculture (USDA)(NESARE) Research and Education Grant, **Title:** *Increasing grower adoption of ecologically-based pest management strategies to improve quality and yield of brassica crops*, **Total Award:** \$198,754, **Expiration:** 6/30/2021
- Gift: New England Vegetable and Berry Grower's Association. **Title:** *Evaluating Varieties for Cucurbit Downy Mildew Resistance and Yield*, **Total Award:** \$2,000

Principle Investigator Hilary Sandler

- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA), **Title:** *Supporting IPM on Diverse Massachusetts Farms through the Integration of Applied Research and Extension Outreach*, **Total Award:** \$857,427.00
Expiration: 8/31/2020

Collaborations:

- [SARE](#) – Katie Campbell-Nelson serves as state coordinator and helps applicants submit successful grant proposals.
- [MDAR](#) – We worked with MDAR staff to provide educational programming on Nutrient Management and Food Safety.
- [SEMAP](#), [NEVBGA](#), [NRCS](#), [CRAFT](#), [Master Gardeners](#), [NOFA](#), MA Horticultural Society, Cornell Cooperative Extension, New Entry, CISA, Berkshire Grown, Harvest New England, Kimball Fruit Farm, Langwater Farm, and Ward's Berry Farm – We gave presentations at workshops and conferences hosted by these farms and agricultural organizations at multiple locations around the region.

Services: We treated seeds for 6 farms this year from ID, MA, and VT through our [Hot Water Seed Treatment service](#). We submitted 105 soil and tissue tests to the UMass Soil Lab and submitted 47 plant samples to the UMass Diagnostic lab on behalf of farmers to provide valuable diagnostic support.



*L-R: Genevieve, Lisa, & Sue presenting Vegetable Program poster at the annual Extension staff retreat.
Photo: S. Thomas*



*L-R: Michele & Genevieve prepare a flea beetle emergence trap.
Photo: S. Scheufele*



*Avi Flynn checks a sweet corn trap at Golonka Farm.
Photo: K. Campbell-Nelson*



Sue knows how to get people's attention at a talk on cucumber varieties at the UMass Research Farm – samples! Photo: UMass Extension



*Farmers demonstrate a no-till transplanter at a twilight meeting.
Photo: K. Campbell-Nelson*

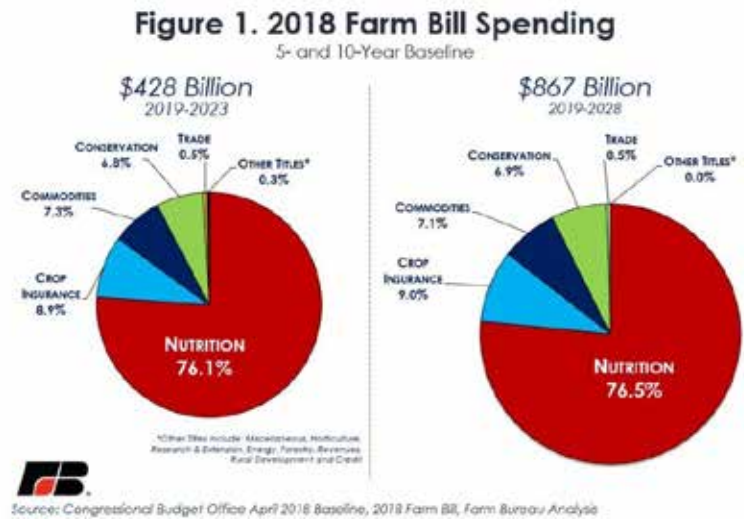


Katie is a pro at carrying research samples!

WHAT'S WITH ALL THE SURVEYS?! EXTENSION VEGETABLE PROGRAM FUNDING

As farmers you probably get the question “what do you do in the winter?” all the time. Well, we often get asked the same question, as people wonder what we might possibly be up to with very few crops in the ground. Many of you see us at winter meetings, and know that’s how a lot of our off-season time is spent, working on educational outreach: compiling powerpoint presentations, summarizing research results for newsletter articles, updating websites, writing new factsheets, working on the New England Vegetable Management Guide, and planning and presenting at educational programs around the region. But another big chunk of time is spent working on grants—writing new project proposals and reporting on activities completed for our current grants.

Why do we need grant funding? Federal funding for Cooperative Extension is distributed to each state based on a formula that takes into account the state’s farm acreage and rural population. Federal funding for agricultural research and Extension is authorized under the farm bill—omnibus legislation passed every five years (or so) consisting of 12 titles that cover all-things-food-and-farming. The total allocation of farm bill funds for “Research and Extension”—Title 7 in the bill—is just a sliver of the sliver consisting of “other titles” in the pie chart in Fig. 1. This “other” sliver also includes Horticulture, Energy, Forestry, Revenues, Rural Development, Credit, and Miscellaneous titles and in total accounts for less than 0.3 percent—about \$1.3 billion—of the farm bill’s 5-year baseline budget of \$428 billion. The total 2019 estimated budget for just the formula funds that go to Research and Extension for the US is only \$749 million dollars¹.



Graphic source: <https://www.fb.org/market-intel/reviewing-the-2018-farm-bill-baseline>

For more information on the farm bill, visit these resources:

- [¹USDA, FY 2019 Budget Summary](#)
- [Farm Bureau, Reviewing the 2018 Farm Bill Baseline](#)
- [NSAC, 2018 Farm Bill Drilldown: Research and Plant Breeding](#)

Each state then matches those federal formula funds and that makes up our core funding for Extension. Because we are a relatively small agricultural state, our Extension gets less formula funding than our more agriculture-heavy neighbors like New York. As with most other state Cooperative Extensions, UMass Extension’s state and federal funding has been flat or in decline since about the mid-1980’s when huge state budget cuts were announced and we had to close most of our county-based Extension offices. In order to continue to provide services like farm visits, responding to phone calls and emails to diagnose crop problems, writing newsletters, doing research on applied topics that are unlikely to be funded in academic settings, and doing all the educational workshops and twilight meetings we do, we have come to depend on other sources of funding. Those other sources include fees for services like diagnostic testing, soil testing, and hot water seed treatment, honoraria for educational presentations, sponsorships and donations from farmers, consumers, or industry partners, and a large portion from external grant funding.

The UMass Extension Vegetable team uses all of these funding streams in order to support the activities and outreach we currently provide to stakeholders, including farmers, gardeners, and consumers. Most of this external funding is used for staff salaries, covering their time to make farm visits, do research, plan workshops, write newsletters, give presentations, and attend trainings. External funds also allow us to purchase needed equipment, supplies, and cover travel costs. The breakdown of annual funding for the Vegetable Program is about like this:

- 68% grant funding
- 18% core state and federal funding

- 10% Service Fees (hot water, speaker fees, workshop registrations)
- 4% donations and sponsorships

You can see that our core state and federal funding covers only a small portion of our activities, while grant funding covers about three quarters of the cost to run our program, and services. For a list of current grant-funded projects please see the annual report which is also in this issue.

So, what does this mean for you? Lots of surveys!! In order to prioritize which proposals to pursue, and be successful in getting the grant funding we need to support our program, we need to first prove that there is a need for the research or education project we are proposing—survey #1. Then, if the proposal is funded, we often need to conduct additional surveys to show the funding agency that we are meeting all of our goals along the way (survey #2 (or more)), and at the end of the project we need to show that all of our efforts had some impact (survey #3, sometimes we call these evaluations). Multiply this by the total number of grants we have (9), and you're up to 27 surveys! Okay, not all of the grants we have require this kind of regular surveying but many do, then add to that all of the proposals being submitted by other Extension colleagues around the region that we think are interesting and that you would benefit from, and you begin to see why your email inbox is full of surveys in the winter (and all year, really). We do try to be very conscientious of your time, to only conduct surveys when truly necessary, and to be judicious about what questions we ask and how, but they do still seem to add up.

So we hope that next time you get a survey in your inbox, you will consider this to be **your chance to weigh in on what projects happen in our region**. This is a **practical way you can help support the work we do** (along with, of course, considering donating to the program with the buttons at the top of this issue). More survey responses means more projects funded, and that means more resources (money for educational workshops, research on topics YOU think are important, and sometimes even new staff!) coming into our region. While we wish that we could rely on more permanent and stable sources of funding to support our research and education efforts without having to bombard you with surveys, they can be very valuable in informing our education and research programs and this is the situation for the foreseeable future across our region and across the country.

Thanks always for your attention and time, and working with us to get the resources we need to serve you better! If you have questions, comments, or ideas for how we can improve our survey design and delivery please write us at umassvegetable@umext.umass.edu.

EVENTS

Produce Safety Alliance Grower Training Series

Wondering where to begin with food safety? Start here! Whether you have a farm that is fully covered by the law or a small, exempt farm and you're just looking for information, this training is for you. The PSA Grower Training Course satisfies the FSMA Produce Safety Rule requirement outlined in § 112.22(c) that requires 'At least one supervisor or responsible party for your farm must have successfully completed food safety training at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration.' The training is also required for participation in Massachusetts' Commonwealth Quality Program.

Presented by UMass Extension and the Massachusetts Department of Agricultural Resources (MDAR) and co-hosted by several different community organizations. Cost is \$40 for each program and includes the required PSA Grower Manual (\$50 value), a Certificate of Course attendance from AFDO (\$35 value), and lunch and refreshments. The training will be held in 5 locations:

Plymouth, MA

When: Wednesday, February 13, 2019, 9am-5pm

Where: Hotel 1620, 180 Water St., Plymouth, MA 12360

Registration: [Click here to register for the PSA Grower Training in Plymouth, MA](#)



Holyoke, MA

When: Friday, February 15, 2019, 9am-5pm

Where: Holyoke Community College, 303 Homestead Ave., Kittredge Center room 205, Holyoke, MA 01040

Registration: [Click here to register for the PSA Grower Training in Holyoke, MA](#)

Westborough, MA

When: Wednesday, February 20, 2019, 8am-4pm

Where: MA Division of Fisheries & Wildlife Headquarters, 1 Rabbit Hill Rd., Westborough, MA 01581

Registration: [Click here to register for the PSA Grower Training in Westborough, MA](#)

Beverly, MA

When: Friday, March 1, 2019, 9am-5pm

Where: Wylie Inn & Conference Center, 295 Hale St., Beverly, MA 01915

Registration: [Click here to register for the PSA Grower Training in Beverly, MA](#)

Stockbridge, MA

When: Thursday, March 14, 9am-5pm

Where: Stockbridge Town Hall, 50 Main St., Stockbridge, MA 01262

Registration: [Click here to register for the PSA Grower Training in Stockbridge, MA](#)

Questions or problems with registration? Contact for all programs: Lisa McKeag, lmckeag@umass.edu, 413-545-1051 (office) or 917-573-5558 (cell)

UMass Extension Vegetable Program Winter Workshop Series

Each workshop in this series will involve hands-on exercises, presentations, and discussions with Extension Educators, other experts, and farmers. Attendees will leave each workshop with practical plans in each subject, tailored to their individual farm. Hope to see you there!

Pre-registration is required. **\$30 per workshop** - Soils Part 2 is free thanks to grant funding! See each event listing, linked below, for full workshop descriptions and registration information.

Disease Biology & Management Workshop

When: Tuesday, February 12, 2019 – 10:00am to 3:00pm

Where: UMass Amherst, 270 Stockbridge Rd., Fernald Hall room 107, Amherst, MA 01002

**4 pesticide recertification credits are available for this workshop.*

REGISTRATION DEADLINE: Friday, February 8, 12:00noon

Insect Biology & Management Workshop

When: Tuesday, February 19, 2019 – 10:00am to 3:00pm

Where: UMass Amherst, 270 Stockbridge Rd., Fernald Hall room 107, Amherst, MA 01002

**4 pesticide recertification credits are available for this workshop.*

REGISTRATION DEADLINE: Friday, February 15, 12:00noon

Soils Part 1. Soil Testing & Nutrient Management Planning

When: Tuesday, February 26, 2019 - 10am - 3pm

Where: UMass Amherst, 161 Holdsworth Way, Paige Laboratory, Amherst, MA 01002

Soils Part 2. Soil Health, Cover Cropping, and Nutrient Management Planning

When: Thursday, February 28, 2019 - 9am-2pm

Where: Brattleboro, VT

Funding Opportunities for Your Farm

When: Tuesday, March 5, 2019 - 10am - 3pm

Where: MA Division of Fisheries & Wildlife Headquarters, 1 Rabbit Hill Rd., Westborough, MA 01581

Food Safety Planning

When: Tuesday, March 12, 2019, 10am - 3pm

Where: MA Division of Fisheries & Wildlife Headquarters, 1 Rabbit Hill Rd., Westborough, MA 01581

These workshops are partially funded by the National Institute of Food and Agriculture and the U.S. Department of Agriculture.

Planning for the Next Successor on your Farm

Massachusetts Department of Agricultural Resources is offering 3 sessions of this workshop across the state for farmers to better understand what is involved in succession planning. Experts from Land for Good and MDAR will provide tools and resources - including the state's Agricultural Preservation Restriction (APR) Program- to help you identify the next owner of the farm and take steps towards making the transition.

Workshop dates:

- Wednesday, February 6, 2019, 5-7pm: Red Barn @Hampshire College, Amherst, (snow date 2/7)
- Thursday, March 7, 2019, 5-7pm: Fidelity Bank, 9 Leominster Connector, Leominster (snow date 3/25)

To register for a workshop session email Dorothy Du at Dorothy.Du@mass.gov – please include which date/location you will attend and how many people will be attending from your farm. Sponsored by MDAR's Agricultural Business Training Program.

NEVBGA & Cooperative Extension 599th Growers' Meeting

When: Saturday, February 9, 2019 - 8:30am to 4:00pm

Where: Hudson-Concord Elks Lodge, 99 Park Street, Hudson, MA 01749

TO REGISTER, please RSVP to 978-423-6694 or secretary@nevbga.org by February 5th

There is a \$20 registration fee, which is waived for members of NEV&BGA. Lunch buffet is an additional \$20.

To reserve a lunch, please contact the Secretary, Chris Grant at (978) 423-6694 or secretary@nevbga.org.

Talks include:

- **Permanent and Temporary Fencing Options for Wildlife Exclusion and how to Make Them More Effective** - David Kennard Owner & President Wellscroft Fence Systems, LLC
- **Working With Family** - Ted Clark, Director of the Northeastern University Family Business Center
- **How Climate Change Could Affect Farming in New England** - Dr. Toni Lynn Morelli, Research Ecologist, Northeast Climate Adaptation Science Center
- **Crop Insurance Update** – Tom Smiarowski & Paul Russell, University of Massachusetts Extension Risk Management/Crop Insurance Education
- **Retooling Your Sprayer for Mummy Berry and Spotted Wing Drosophila** - George Hamilton UNH Cooperative Extension Fruit & Vegetable Production Field Specialist
- **NEVBGA Research: Improving our Understanding of Tunnel Tomato Nutrition Across New England** - Katie Campbell-Nelson UMass Vegetable Team
- **Neonics vs. Bees: Do We Need Alternatives?** - Richard Cowles Connecticut Agricultural Experiment Station
- **What to expect in 2019: Produce Inspections in Massachusetts** - Michael Anthony Botelho, MDAR Produce Safety, Market Access & Certification Program Area Director

*** 3 pesticide recertification credits have been approved for this meeting ***

Commercial members are welcome to put up table-top displays.

Co-sponsored by the UMass Extension Risk Management/Crop Insurance Education Program

[7th Biennial New England Agricultural Marketing Conference & Trade Show](#)

Early registration discount extended until February 8

The Harvest New England Agricultural Marketing Conference and Trade Show is New England's premier agricultural marketing conference. Sponsored by the six New England State Departments of Agriculture, this biennial conference began in 2007. With nearly 30 workshops, about 800 people in attendance, and a trade show of almost 100 exhibitors, this is New England's largest agricultural conference solely dedicated to agricultural marketing. Farmers of all types and sizes, new and established, from throughout New England, attend to enhance their marketing and business skills.

When: February 27-28, 2019

Where: Sturbridge Host Hotel, 366 Main St., Sturbridge, MA 01566

Registration: [Click here to register for this event.](#)

Agenda: [Click here to see the full schedule for this event.](#)

THANK YOU TO OUR SPONSORS:



Sponsor Veg Notes

Vegetable Notes. Katie Campbell-Nelson, Genevieve Higgins, Lisa McKeag, Susan Scheufele, co-editors.

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