



UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 26, Number 2

February 6, 2014

IN THIS ISSUE:

Crop Conditions

Ten Reasons Not To Grow Tomatoes in High Tunnels

Fresh Produce for All

Hot water seed treatment: Now's the time!

Grant Opportunities

Upcoming Events and Webinars

CROP CONDITIONS

We have been seeing many of you at various grower meetings and hope that you are going home with new ideas and insights to help you plan for the 2014 season. The winter conference season is not over yet and more good programs are coming up through February and March. Whether you are planning better crop storage, seeking better control of diseases, venturing into new markets, or building healthy soils, you can find a program to meet your needs (See the Upcoming Events section at the end of this issue). January brought us a large dose of gray skies, near or below-zero temperatures, and open bare ground. There's the possibility that these conditions will reduce the overwintering survival of some of the insect pests and plant pathogens that have been building up in recent years, especially where their range has been creeping northward. However, the survival strategies of insects like flea beetles and

root maggot flies or fungal diseases like white mold and Phytophthora blight include a wide range of adaptations to cold. In unheated tunnels where winter greens were hunkered down, very little growth took place in January. Crop growth in these structures will accelerate in February as day length increases. Growers are beginning to seed and transplant their 'spring' crops of greens that will be harvested in March and April. Some growers have reported seed shortages of popular varieties of kale and late blight resistant tomatoes so place orders soon.

TEN REASONS NOT TO GROW TOMATOES IN HIGH TUNNELS

Every good reason to grow tomatoes and other high-return vegetables and small fruits in high tunnels has a compelling argument to counter it. These potential pitfalls of tunnel culture are seldom mentioned in the rush to put a high tunnel on every farm.



High tunnel tomato production can increase yield or expand markets but may not be right for every farm.

1. Return on investment: Input costs are substantially higher in a tunnel versus the field. After amortizing the costs of the structure, the plastic film, and other specialized equipment required to effectively produce in a tunnel, a field planting has much lower input costs. Yes, increased yield, higher quality, or market window can justify the increased costs of tunnels. However, we have observed some poorly managed tunnels with yields equal to or less than field plantings. Consider the worth of every square foot of production space and manage that space with the goal of justifying the increased input costs.

2. Increased risk: Greenhouses and high tunnels are typically engineered to balance the environment with the need to keep material costs low. On occasion, metal tube structures and crops fail. Considering your investment in the tunnel itself, the costs incurred in producing a crop, and your anticipated return on investment, growing in protected culture requires greater attention to details and pest management in order to realize economic goals.

3. Increased pressure from insects and arthropods: Although tunnel culture allows the opportunity for higher crop quality, Aphids, Whiteflies, Western Flower Thrips, Spider Mites, and Broad Mites also thrive under tunnel conditions. The dry foliage, stems, and fruit grown under intense irrigation and fertigation are ideal environments for these pests to flourish. Without

rainfall, a population of Spider Mites can increase extremely rapidly unless carefully managed. Scout regularly for pests and use proactive pest management that includes banker plants such as Black Pearl and Purple Flash peppers hosting Minute Pirate Bugs (*Orius*). Every crop reacts differently under tunnel conditions versus field conditions.

4. Irrigation management requires greater care: This is especially so on the margins of the season, when there are often days with little sunshine, and you must react to rapidly changing conditions. Learn to grow dry(er) during the early and late season to reduce root-borne diseases. Know when to increase irrigation flow to maximize plant growth and reduce cracks and Blossom End Rot. Invest in tensiometers or irrometers to monitor root zone moisture levels. Tunnels will require more irrigation than field plantings; farms with a less than adequate water supply should consider tunnels with caution.

5. Increased disease pressure: Tunnels do reduce diseases such as Early Blight and Septoria Leaf Spot but exacerbate other diseases. Brown Leaf Mold, Powdery Mildew, and Botrytis, only occasionally seen in field-grown vegetables, are standard fare under high tunnel conditions. Increase air flow, reduce humidity, and use disease-resistant varieties to help manage these diseases. Brown Leaf Mold in tomatoes is almost exclusive to tunnel-grown tomatoes. We are finally seeing the release of the first tomato varieties with strong resistance to leaf molds. Check with your Extension Specialist / Horticulture Educator for the latest on recommended tunnel varieties.

6. Tunnels perpetuate viruses: Tunnel tomatoes are a ‘hands-on’ crop, as many growers have come to appreciate the benefits of greenhouse methods of pruning to improve yields. However, viruses such as Tobacco Mosaic (TMV) are spread mechanically by workers who move the virus down the row with weekly suckering or pruning. Field tomatoes see much less handling and thus are generally at lower risk. High-technology greenhouses have disinfection protocols in place to reduce viral spread, but a high tunnel’s soil-based system is more difficult to disinfect than a concrete floor. A high tunnel, with characteristics between a greenhouse and a field, perpetuates TMV. So how to prevent TMV in tunnels? Buy only from reputable seed sources, consider seed treatment, and remove suspect plants immediately. Disposable gloves, regular hand washing, and tool disinfection will reduce the spread of viruses and other systemic diseases. Commercial pruning tools with reservoirs to disinfect the blade continually during use are now available.

7. Soil health and nutrition: Tomatoes are the single most popular high tunnel crop due to their high return on investment and high market demand. There is considerable pressure not to rotate tunnel crops as you would field crops. This can result in steadily increasing soil-borne diseases such as Fusariums and Verticilliums. Use only the best quality plants from known and trusted sources, and inoculate plant roots with Actinovate AG, RootShield Plus, Companion, Cease....(There are an increasing number of biological root inoculants available.) These practices reduce the potential need to fumigate.

In addition, tomatoes are heavy feeders, making strict attention to soil tests and tissue analysis especially important in the usually higher (than field) densities used in high tunnels. Maintaining recommended levels of Ca, Mg and K is often challenging in tunnels. Since it never rains in a tunnel, all nutrients that the roots utilize are within the drip irrigation zone. This root area can quickly become exhausted of nutrients. Both injected and foliar-applied nutrients are necessary to maintain nutrient levels at their optimum levels during ideal growing periods.

8. Negative R values: Under early and late season short, cloudy days and clear, cold nights, it is possible to have the low temperature in a high tunnel be lower longer than outdoors. Cold nights, particularly in spring, can see temperatures lower inside the tunnel than out (hard to believe, but true). Under these conditions, a set of heavy floating row covers can help to keep a crop alive, but many growers opt to use a low output heater to keep temperatures above 45-50°F. In general, an unheated high tunnel can be reliably planted with tomatoes about four weeks prior to the normal outdoor planting season. Adding heat can speed up successful planting by eight weeks or more.

9. Increased management and labor: It is more challenging to manage tomatoes, peppers, cucumbers, strawberries, and raspberries indoors. Pest populations and infestations tend to come on quickly, requiring a strong proactive management program. Narrow aisles require careful attention to crop canopy management, so pruning and trellising are constant chores. Is there room within your schedule as manager to accommodate the increased demands of a tunnel? We have seen many cases where the answer is No.

10. Playing field irregularities due to subsidized tunnel purchases: Recent grant programs have created two levels of tunnel purchases, those that are subsidized and those that are not. Growers who purchased their tunnels without the grant subsidy may have paid 40-60% more for their first high tunnel. If you are not a grant recipient, your input costs will be higher, and your margin lower, than others.

We remain optimistic about the role of high tunnels on vegetable farms, but they are not ideal for all farms. Here we have presented some of the less glamorous aspects of tunnel production to balance the many favorable programs we've conducted for many years. These challenges must be met by growers currently using high tunnels and carefully weighed by growers considering them.

-Steve Bogash, Penn State Extension and Judson Reid, Cornell Cooperative Extension

FRESH PRODUCE FOR ALL: HOW A FARMER AND A FOOD BANK ARE PROVIDING FRESH PRODUCE TO THE FOOD INSECURE.

In the heat of harvest season, some growers have wondered how to distribute their excess produce to food banks, pantries, gleaners, or to families without access to fresh produce. At the same time, farmers have struggled with time, labor, or simply a lack of connection to appropriate outlets for food donations. In this article, we invite you to prepare for this future scenario by taking the necessary planning steps ahead of time and making connections so that your excess produce will be put to good use all season long. Below you will find a personal perspective on produce donations from LuAnne Bonanno, co-owner and operator of Pleasant Valley Gardens in Methuen, MA, and an invitation from the Food Bank of Western Massachusetts to participate in a food donation program.



The Food Bank of Western MA provides fresh produce to those in need.

Connecting with Local Food Banks, Feeding the Hungry, and Feeling Good

by LuAnne Bonanno, Pleasant Valley Gardens, Methuen, MA

Because we are wholesalers, Pleasant Valley Gardens always has ‘unsellable’ produce after each day’s harvest. This is produce that may be marked, or misshapen, or not the right size to fit into our packing boxes. The supermarkets and other customers we sell to just don’t want it. The vegetables are just as fresh and just as nutritious as the vegetables we pack for sale but because of cosmetics, they are deemed unsellable. Overall, about 5% of our harvest is in this category.

For a number of years, these vegetables went to the compost pile. As the economy changed, more people than ever lost their jobs or became homeless and shelters and food pantries became busier than ever. We knew we could make a difference in these people’s lives by donating our fresh, nutritious, but unsellable produce to these organizations. Finding a shelter to take the produce proved to be a daunting task, however. Most food pantries will willingly take canned goods with long shelf life and no refrigeration requirements, but are not always able to take perishables. We also requested that they pick the vegetables up at the farm. We started by calling the Boston Food Bank. They came out once and took about 500 pounds of zucchini, but when we called them the next day they said they could not handle the volume of perishables and were no longer interested.

We decided to take the more local route. There is an organization called Lazarus House in Lawrence, MA. This is a wonderful organization with 2 halfway houses (many families with young children), several food distribution centers, and a thrift store. Every Tuesday, up to 1000 families are fed with donated food. They start lining up at the center 3-4 hours before the food distribution starts. We contacted Lazarus House but it took a series of phone calls to make the initial contact. Calls were passed from person to person and it took almost a week before calls were returned; we were very frustrated. Didn’t these people want our vegetables? All of a sudden, being charitable was becoming a long, tiresome process. Our patience was running out. It was so much easier to compost! Finally, we were put in touch with Ken Campbell from Lazarus House. He insisted on visiting our farm and pack shed, to assure himself that we were legitimate and that the facility was clean and well managed. A few days after that visit, Lazarus House picked up their first vegetables. It was heartwarming to hear how excited the people were to get fresh vegetables with their food distribution.

Ironically, that same week, we were contacted by another food bank, Neighbors in Need. They had an intern for the sum-

mer, and she was looking for donations. They came the next day and picked up our leftover produce.

Through word of mouth, a third organization with a local soup kitchen called Cor Unum asked to be contacted when we have produce to donate. They can't handle a lot of produce but they take what they can and they are grateful. In the 10 years that we have been working with these organizations, we have donated well over 400,000 lbs of produce. These food banks, shelters and soup kitchens pick up on a rotating schedule. It has worked out well for everyone. Hungry people get fresh produce, the food banks don't have to scrounge around as much, and we get not only the good will, but the good publicity. We tell our CSA customers about the donations, and they will often tell us to donate their share if they are unable to pick up one week. A few of our customers volunteer at these food banks, so they get to see how much the donated vegetables are enjoyed.

Making the connections was not an easy process-many phone calls had to be made. Trust needs to be established. The food banks need to know that your farming practices are sound, and as farmers we need to know that they will take whatever we have available. We don't deliver, the food banks send trucks to pick up, and they have to bring their own bins.

Farm to Food Bank to Family *by the Food Bank of Western Massachusetts*

Farm to Food Bank to Family, a new initiative of The Food Bank of Western Massachusetts, is asking farmers in Berkshire, Franklin, Hampden, and Hampshire Counties to plant a quarter acre or more of land to provide our neighbors in need of food assistance with fresh, local produce. You can help supply fresh, nutritious food through a combination of field-gleanings, donations and contract growing.

The Food Bank of Western Mass is fortunate to be surrounded by a thriving agricultural community. Many local farmers already donate generously to The Food Bank. The Food Bank always welcomes outright donations directly. One of our goals is to provide more nutritious food for families in need – and nothing fits the bill better than fresh local produce.

With this new initiative, farmers dedicate a quarter acre of land (or more) for one of The Food Bank's target crops including potatoes, winter squash, onions, apples, carrots, cabbage or sweet potatoes. Each participating farm will receive a display (to be created) that will demonstrate to the community their commitment to The Food Bank and will be listed on our website.

There are two options for harvesting:

- A. The Food Bank will coordinate volunteers to harvest the crop at the right time, and transport the produce back to our facility in Hatfield for processing.
- B. The Food Bank will pay a Pick and Pack Out fee (PPO) to help offset the costs of the farmer to harvest and package materials used. Either the farmer or The Food Bank transports the produce to our warehouse in Hatfield, MA. The amount of the PPO fee is negotiated, depending on a variety of factors.

In 2013, The Food Bank distributed more than 8 million pounds of food, including 1 million pounds of produce, to more than 200,000 individuals, a number that has more than doubled in 5 years. As the demand for food assistance continues to rise, we need more community support than ever before. We are reaching out to our neighbors for our neighbors in need. If you are interested in participating in the Farm to Food Bank to Family initiative, please contact Lisa Limont, Food Sourcing Coordinator, at lisl@foodbankwma.org or 413-247-9738. To find out more about the work of The Food Bank, visit www.foodbankwma.org.

HOT WATER SEED TREATMENT: NOW'S THE TIME!

Some pathogens can occur on or within seed and can be responsible for spreading diseases or introducing them to areas where they had not previously occurred. Even when only a small percentage of seeds are infested, disease can spread among transplants in the greenhouse or in the field, causing significant crop loss or increasing the need for sprays. In some cases, whole seedlots may be infested and this can result in severe disease outbreaks, as all seedlings will be affected and young plants may not be able to overcome early, systemic infections. Using disease-free seed is an important first step in management of many diseases, especially for small-seeded crops where seed-borne diseases are common such as tomatoes, peppers, spinach, onions, carrots, and all the brassicas. Hot water seed treatment is a cheap and effective way

to penetrate the seed and kill pathogens that might be present.

Not all pathogens can penetrate and survive within the seed but bacterial pathogens are commonly seed-borne, and some fungi (e.g. Alternaria leaf spot of brassicas), oomycetes (e.g. some downy mildews), and many viruses (e.g. TMV and CMV) are also seed-borne. Tomato, pepper and brassicas are good candidates for hot water seed treatment because there are common bacterial diseases of these small seeded crops (eg. bacterial leaf spot of pepper and tomato, black rot of brassicas, bacterial canker of tomato, etc.). Even though bacterial pathogens do not survive well in soil once infected crop residues have decayed, they can be difficult to manage once established on a farm. Preventing establishment of these diseases, or reintroduction year after year, is a critical management tool. Large seeded crops (beans, cucurbits, peas, etc.) cannot be effectively disinfested with hot water treatment because the temperature required to heat the whole seed inside and out would kill the outer seed tissue and the seed will not germinate.



Cabbage seeds surface sterilized with bleach but not hot water treated still have fungi present within seed coat.

To decide whether to use heat treatment, first determine the likelihood that seed-borne pathogens could be present based on the crop ([see table on the UMass Veg website here](#)). Next, ask your seed supplier if the seed was produced in a way to minimize exposure to seed-borne pathogens and if the seed was tested for their presence. Find out if the seed has already been treated with hot water, as treating again could adversely affect the seed.

The temperature of water for treating seed varies from 115 to 125°F, depending on the crop, and the treatment period varies from 10 to 60 minutes. It is important to use the appropriate protocol for each crop to control pathogens without damaging the seed. While hot-water seed treatment can be done effectively on a stovetop, it is much better to use a precision water bath and an accurate thermometer. For details on treatment procedures for each crop and for a list of supplies needed please see the following factsheet published by Cornell and Rutgers Cooperative Extensions: <http://vegetablemdonline.ppath.cornell.edu/NewsArticles/HotWaterSeedTreatment.html>. For a detailed table listing seed, treatment protocol, and diseases affected by treatment please check here: <https://extension.umass.edu/vegetable/news/managing-seed-pathogens-hot-water#>.

See ‘Upcoming Events’ below for information on how to register for one of two Hot Water Seed Treatment workshops coming up - one to be held in Eastern, MA and one in Western, MA!

GRANT OPPORTUNITIES

USDA Value-Added Producer Grants

Grants are available to help agricultural producers create new products, expand marketing opportunities, support further processing of existing products or goods, or to develop specialty and niche products. They may be used for working capital and planning activities. The maximum working capital grant is \$200,000; the maximum planning grant is \$75,000. Eligible applicants include independent producers, farmer and rancher cooperatives, and agricultural producer groups. Funding priority is given to socially disadvantaged and beginning farmers or ranchers, and to small-to medium-size family farms, or farmer/rancher cooperatives. Deadline to apply: February 24, 2014.

UPCOMING EVENTS

Engineering Storage Facilities for Winter Vegetable Crops

When: Thursday, February 13, 2014

Where: Connecticut Farm Bureau Association, Windsor, CT

A full-day program covering topics in produce storage facility construction and use with presentations from Luke Doody and Ben Weil of UMass Building Sciences and Ruth Hazzard of UMass Extension, as well as farmers Rob Johanson from Goranson Farm in Dresden, ME and Laura Tangerini from Tangerini farm in Millis, MA. Co-sponsored by UConn Cooperative Extension and UMass Extension.

Forum on Cover Crops and Soil Health

When: Tuesday, February 18, 2014, 9:30am – 1:00pm

Where: Several locations:

1. Fernald Hall, Rm 11, 270 Stockbridge Rd., UMass Amherst MA 01003
2. UMass Cranberry Experiment Station, 1 State Bog Rd, East Wareham, MA 02538
3. Doyle Center, Trustees of Reservations, 464 Abbott Avenue, Leominster, MA 01453
4. Brigham Hill Community Farm, 37 Wheeler Rd, North Grafton, MA 01536

Sponsored by SARE, each of these forums will feature a live-streamed video broadcast of the opening sessions of the *National Conference on Cover Crops and Soil Health* in Omaha, Neb. Following the broadcast, discuss with fellow forum participants how cover cropping can build soil health, improve yields, curb erosion, manage pests and build resilience into your farming system.

The broadcast will feature: Howard G. Buffett, Howard G. Buffett Foundation; Jason Weller, USDA-NRCS Chief; Ray Gaesser, American Soybean Association president and a panel of expert producer conservationists: Dave Brandt (Ohio); Gabe Brown (North Dakota); Dan DeSutter (Indiana); Clay Mitchell (Iowa)

To reserve a seat, RSVP to: Tom Akin, 617-997-8232, thomas.akin@ms.usda.gov

Wholesale Success Workshop

When: Tuesday February 25, 2014

Where: Wachusett Village Inn, 9 Village Inn Rd. Westminster, MA

Farmers! Thinking about wholesaling? Already wholesaling, but want to grow your business? The Mass Farm to School Project and USDA present a day-long workshop and lunchtime networking event. This FREE workshop will cover many aspects of successful wholesale marketing, including: post-harvest handling; maintaining the cold chain; cleaning and drying; packing and grading; relationships with buyers; food safety best practices.

Participating producers will receive a free copy of the Wholesale Success manual.

Hot Water Seed Treatment Workshops

When and Where:

[Friday, February 28th, 2014](#) at Bristol County Agricultural High School, Dighton, MA

[Monday, March 3rd, 2014](#) at UMass Research and Education Farm,
91 River Rd. South Deerfield, MA

What: These will be free hands-on workshops where growers bring their saved and ordered seed for hot-water treatment using precision water baths and with the assistance of experienced extension vegetable specialist, Meg McGrath, from Cornell University. Tomato, pepper, eggplant, and crucifer seeds are those most commonly treated. Seed heat treatment is used to control seed borne bacterial and fungal pathogens. Pelleted seed cannot be treated and old seed should not be treated. Please note: while this is a scientifically-tested procedure and we will use precision equipment, the universities involved with the workshop cannot accept responsibility for seed that is treated.

Space is limited to about 40 people at each location, so register soon!

Pre-Registration Required.

For Friday, February 28th at [Bristol County Agricultural High School](#): contact Sue Guiducci, (508)-990-2854, sguiducci10@gmail.com.

For Monday, March 3rd at [UMass Research and Education Farm](#): contact Katie Campbell-Nelson (413)-545-1051, kcampbel@umass.edu.

These workshops are supported by the Bristol County Conservation District and grants from the USDA Extension Integrated Pest Management Program.



Meg McGrath demonstrates hot water seed treatment to growers at last year's workshop.

Ethnic Greens and Herbs Research Data Workshop

When: Monday, March 3, 2014

Where: Valley Forge, PA.

Co-hosted by Rutgers University, The Pennsylvania State University, University of Massachusetts, and University of Florida. A mix of topics will be presented including: dissemination of research results, stakeholders describing their experiences with growing, sourcing, and marketing ethnic greens and herbs, and a presentation describing changes in U.S. consumer demographics. Registration will open soon!

Local Food Trade Show – Seeking Exhibitors!

When: Tuesday, March 4th, 2014, 8:30 AM - 1:30 PM

Where: Curry Student Center, Northeastern University, 346 Huntington Ave, Boston, MA

Sponsored by the Sustainable Business Network of Massachusetts, this trade show is designed to facilitate connections and stimulate business relationships between producers and wholesale buyers of local food, with a focus on specialty crop food products in Massachusetts. Includes Seminar Series, which will offer topics addressing best practices around some of the most pressing barriers to local food sales in Massachusetts. The Trade Show portion of the event will allow producers to highlight their products to potential buyers, with a focus on wholesale relationships.

24th Annual Mississippi Greenhouse Tomato Short Course

When: Tuesday, March 4 to Wednesday, March 5, 2014

Where: Eagle Ridge Conference Center, 1500 Raymond Lake Road, Raymond, Mississippi

Brought to you by the Mississippi State University Extension. Special topics this year will be components of the greenhouse system, greenhouse design and engineering, alternative heating options, marketing, budget for greenhouse growers, updates on the latest research, plant nutrition, alternative crops, water sanitation, and of course the pest management workshop, which will include physiological disorders, diagnosing plant problems, plant disease identification and control, and pest management.

Growing Over to the Dark Side: Building a Successful Enterprise with Winter Vegetable Production & Sales

When: Thursday, March 6, 2014

Where: Sturbridge Publick House, Sturbridge, MA

Co-hosted by UMass and UNH Extensions and funded by NE-SARE, this all-day program will cover how to manage products for winter markets, including washing, packing, and storage, as well as the season extension production systems being used. Topics will be covered in short presentations with plenty of time for facilitated farmer-to-farmer discussions. More details and registration information coming soon!

2nd Annual Massachusetts Urban Farming Conference

When: Saturday, March 8, 2014, 8:30 am – 4:30 pm

Where: Northeastern University Curry Student Center

The Urban Farming Institute present the 2nd Annual Massachusetts Urban Farming Conference (UFC) Designed to advance urban farming issues ranging from farming techniques and business models to climate change adaptation and food security, the UFC contributes to short-term and long-term state-wide strategic planning for a sustainable food system in Massachusetts. Network with Massachusetts' diverse, multi-sector stakeholders in this dynamic event that looks at current issues, emerging practices and programs, and markets that can contribute to Massachusetts' urban farming sector resiliency.

University of Vermont Extension's 10th Annual Grain Growers Conference

When: Thursday, March 13, 2014, 9:30 am - 5:00 pm

Where: Essex Resort, Essex, VT

This year's theme is “*Grow it Here*”. Vermont grain grower extraordinaire Jack Lazor will be the keynote speaker. Registration fee is \$45 per person and includes lunch. NGGA Members (with active membership) pay \$40.

Greenhouse Plant Disease Diagnostic Workshop

When: Wednesday, March 19, 9:00 am – 1:00 pm

Where: Fernald Hall, UMass Amherst campus.

Presented by UMass Extension, this program for commercial growers of greenhouse crops will include a lecture to review the basics of diagnostic plant pathology followed by a hands-on workshop using diagnostic test kits for viruses and root diseases of greenhouse crops. We will also use microscopes to view fungal root pathogens such as Thielaviopsis, Rhizoctonia and Pythium and foliar pathogens such as Downy mildew and Botrytis that were covered in the lecture. 4 pesticide contact hours. Cost: \$70. **Limited to 25 attendees.**

UPCOMING WEBINARS

[Growing Raspberries and Blackberries with IPM](#)

When: Thursday, February 20, 2014, 11:30 am - 1:00 pm

Presented by the University of Minnesota Extension and the national Extension network. This webinar is geared toward Master Gardeners and home gardeners and will cover planting and management recommendations for growing raspberries and blackberries; diseases, including viruses; and insect pests of raspberries and blackberries including the spotted winged drosophila. Best management practices will be covered including minimizing pest problems and prevention of pests. The three, 20 minute presentations will each be followed by 10 minutes of questions and discussion.

[Vermont New Farmer Project Webinars](#)

Introduction to Shiitake Mushroom Production.

When: February 20, 2014, Noon-1 pm EST

Presented by Ben Waterman, mushroom grower and coordinator for the Northeast Sustainable Agriculture Research & Education funded project, "Cultivation of shiitake mushrooms as an agroforestry crop for New England."

[Getting Started Growing Small-Grains in New England](#)

When: March 20, 2014, Noon-1 pm EST

Presented by Heather Darby, Agronomic and Soils Specialist for the University of Vermont Extension and lead researcher on small grain production systems in Vermont.

[Farm Credit East Webinar: Navigating the Grant Process](#)

When: Thursday, February 27, 2014, 10:00 am - 12:00 pm

This webinar will provide answers to questions about the grant process. For example: What kinds of grants are available to Northeast producers? Who funds them? What application processes are like? What can farmers apply for on their own and when should they engage a grant writer? What services does Farm Credit East provide? This webinar features Farm Credit East consultant Nathan Rudgers.

Vegetable Notes. Ruth Hazzard, Katie Campbell-Nelson, Lisa McKeag, Susan Scheufele, co-editors. Vegetable Notes is published weekly from May to September and monthly during the off-season, and includes contributions from the faculty and staff of the UMass Extension Vegetable Program, other universities and USDA agencies, growers, and private IPM consultants. Authors of articles are noted.

Where trade names or commercial products are used, no company or product endorsement is implied or intended. Always read the label before using any pesticide. The label is the legal document for product use. Disregard any information in this newsletter if it is in conflict with the label.