



UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

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MA growers are busy prepping crops for cold weather and short day lengths in low tunnels or hoophouses. For low tunnels, burying edges with soil holds plastic the best.

CROP CONDITIONS

The harvest season extended longer into the fall this year, making it difficult for some growers to get out and plant cover crops or conduct other fall transitional activities. However, the long harvest season did help to make up for losses caused by the rough beginnings of the 2013 season. Drier conditions were generally welcome and reduced the impact of some fall diseases such as *Alternaria* in Brassicas. Eastern MA and southern New England received almost no rain in October which hurt the growth of fall crops and establishment of cover crops. Producers of lettuce and greens were hustling to get their harvests in and cover cold-sensitive crops last week before hard frosts hit across the state. Harvest of potatoes, carrots, parsnips and turnips for storage is nearly complete for some growers, while others will continue harvesting into November. Incorporate crop residues after harvest (or mow, if using reduced tillage) to encourage decomposition. Those committed to winter greens production should have their crops established now and make sure their tunnels are in place before the ground freezes. See the article this issue for tips on weather-proofing your greenhouses and high tunnels. Check out the updated [UMass Vegetable website on winter production and sales](#) for reports on our research projects. There are many educational opportunities coming up, see the back of this issue for upcoming events and important deadlines. Don't miss the [New England Vegetable and Fruit Conference](#) from December 17-19 in Manchester, NH. Register and book your hotel room now!

Finally, a reminder: comments to the FDA on the Food Safety Modernization Act need to be submitted on-line or postmarked by

November 15th. Several farmer advocacy organizations have provided suggested talking points and summarized background information on their websites to help farmers and consumers understand the issues surrounding the implementation of FSMA. Please take the time to read this information, understand how the law will affect you or your business and put together an impactful letter sharing your story and suggestions for how the law can be improved to ensure consumer safety without imposing unreasonable burdens on farmers. A template comment can be found at any of the following sites along with instructions for submitting your letter:

[Community Involved in Sustaining Agriculture: Suggested Talking Points](#)

[Massachusetts Farm Bureau Federation's Page](#)

[National Sustainable Agriculture Coalition's FSMA page](#)

PEST ALERTS

[Inspect your Garlic seed](#) for symptoms of garlic bloat nematode or *Fusarium* basal rot (see images) before putting them in



Garlic bloat nematode



Fusarium basal rot

the ground. Both diseases can persist for a long time in the soil and the best management strategy is avoidance. *Fusarium* invades roots, resulting in empty, tan-colored, non-functional roots, while the basal plate region may develop a pinkish-brown growth of mycelium. Symptoms of infection by garlic bloat nematode include brown, spongy tissue and lack of roots on bulbs. Testing is the only way to confirm an infection. Anyone selling garlic seed should have it tested before offering it for sale. Regardless of the cause, it is a bad idea to plant unhealthy-looking garlic seed. Discard cloves with unhealthy looking basal plates, with dents or lesions on or under the wrapper leaf, and any cloves that feel unusually light. Do not compost these cloves--either bury them away from the field or throw them away. For testing, select 4-6 symptomatic bulbs (not just 1) and have them tested for nematodes and other bulb diseases. For UMass Diagnostic Lab contact M. Bess Dicklow, (413) 545-3209, mbdicklo@umext.umass.edu.

[Cabbage Aphids](#) can build up on fall harvested kale, cabbage, Brussels sprouts and other brassicas. After hard frost, the impact of beneficial insects declines. Pesticide efficacy is also reduced under cold temperatures. Treat if greater than 10% of the plants are infested with aphids after heads or sprouts begin to form. After harvest, a thorough salt water wash can clean up produce for sale.

[Voles, mice and rats](#) can be a problem in winter storage and greenhouses damaging produce and seeds. In the greenhouse, plug any holes with steel wool to keep rodents out and use traps. If bins are outdoors, or in barns, keep tall weeds and hay or straw away from storage as these are good habitat for rodents.

REDUCING MOISTURE IN HIGH TUNNEL SYSTEMS

One of the most common complaints of growers using high tunnels is excessive moisture inside the tunnel, especially during the early part of the growing season. When there is high moisture inside the high tunnel, there are commonly increased disease problems. The lack of supplemental heat makes this problem much more difficult to handle in high tunnels than in heated greenhouses. Here are some of the strategies that may be used in a grower's effort to minimize excessive moisture in the high tunnel during the early growing season.

Proper site selection is most important. Set the high tunnel on a ridge crest where possible and avoid sites that are lower than the surrounding terrain.

Address drainage issues. The impermeable cover of the high tunnel results in a high volume of water shed which falls along the sides. The design of the structures makes guttering impractical. Therefore, it is critical that earth be sloped away from the baseboards. This will be part of the directives for those using the NRCS program. Additionally, when two houses are sited near each other, there must be extra effort to address drainage issues between the two tunnels. Some growers use French drains to address drainage requirements while others use drainage tile. Care must be taken to avoid creating erosion problems in efforts to improve drainage.

Keep water from running in from outside the tunnels. This may require the development of diversion ditches or channels and may involve additional needs for drain tile.

High tunnels must have adequate ventilation. This can be managed to help reduce humidity levels (moisture) within the house. By using several cycles of opening and closing, moisture levels can be reduced. This is similar to the technique used in greenhouses. In the greenhouse, growers reduce humidity levels by drawing in cold air (typically in the evening). As the air is heated by the furnace in the greenhouse it becomes lower in humidity. This allows the air to pick up additional water from the plants, media, etc., in the greenhouse. After the now heated air becomes higher in humidity, it is in turn exhausted from the greenhouse and new cold air is drawn in, and in turn heated and the cycle is repeated. A few cycles per night over a couple of nights nearly always dries down even the wettest greenhouse. Since there is no supplemental heat source in a high tunnel, we modify this technique by venting the house as soon as it gets warm in the morning which results in cooler air being drawn in. The tunnel is then reclosed and allowed to re-heat. This can be done two or three times each morning and will help dry down the house.

Employ the use of circulation fans. The use of fans (typically 4 or 6 for a 96' structure) can help in keeping the plants drier

and also helps make the air throughout the house more uniform. This makes the method above more effective.

Use a wetting agent. If a grower is having problems with water dripping down onto the crop from the polyethylene covering, there are wetting agents which can be purchased and sprayed onto the covering. These will result in the water running down the covering and being shed to the hip board rather than dripping down onto the crop.

-- Jeff Kindhart, University of Illinois Cooperative Extension

PEST CONTROL FOR WINTER PRODUCTION

High tunnels and hoop houses serve many functions and are often in use all year long on Northeast farms. In spring tunnels are used to get an early start to the season then, in summer, growers use them to protect sensitive crops and get some control over the environment to lower the effects of pests and diseases. At this point in the season, growers who are using tunnels for extending the growing season into the late fall and winter will have seeded or transplanted many of these plantings by now. As high tunnels are transitioned from summer crops into winter greens and other cold-hardy vegetables, keep in mind that extending the growing season for crops also means extending the potential for damage from pests. The best practices for minimizing pests in winter tunnels is to control them throughout the season and prevent them from building up in fall when they are harder to control; but there is still time to take action and to improve your strategies for transitioning tunnels next year.

Insect Management



Cabbage aphids affect brassica crops

It's important to remember that, though insect pests tend to be less of a problem in colder seasons, infestations of aphids, whiteflies, slugs and other pests can develop. According to Judson Reid at Cornell Cooperative Extension, who has been studying natural pest management in winter high tunnels, summer crops are the main source of insect pests in winter greens. He notes that pest management can be difficult in the winter, as beneficial insects that prey on many insect pests don't survive the cold, even in high tunnel environments. Furthermore, pesticides are often less effective at lower temperatures, if spraying is possible at all. Controlling pests in summer crops is the most important factor in year-round high tunnel pest control.

Which insects, if any, are you seeing in your high tunnels now? If you had an aphid infestation on your tomatoes, without timely management it is likely that you'll find aphids on your late season greens as well. It's too late to begin implementing a biological control program at this point in the season since they cannot survive the lower temperatures and shorter day lengths, but it is a good time to start thinking about this for next year. Make note of which pests you are seeing in your tunnels and begin to make a plan for rotating crops or moving tunnels if possible, and incorporating biocontrol (releasing beneficial insects that parasitize pest species) into your production system next year. Companies that rear and provide natural enemies, such as Biobest and IPM Laboratories, can help with putting together a plan.

If pesticides are required, growers should consider materials that are least toxic to humans, beneficial insects, and pollinators, and those with short residual periods considering the closed nature of the tunnels. Insecticidal soaps, horticultural oils, and biological pesticides (such as *Bacillus thuringiensis* and *Beauveria bassiana* or botanical pesticides such as neem (azadirachtin). These materials do not perform as well at cold temperatures and we are now in the narrow window of time within which biological pesticides are likely to still be effective. Scout regularly for pests, and try to control populations while their numbers are low, and before air temperatures get too cold.

Animal Pests

Rodents can be a big problem in high tunnels. Prevent damage by reducing year-round habitats for small animals near high tunnels. Grass should be mowed very short and perimeters should be kept weed-free. Make sure wood piles, rock piles, and equipment are moved away from tunnels. Set traps inside the house and maintain them all winter long.

Disease Management

The high tunnel environment differs from outdoors in winter: it's warmer, has less free moisture (rain), and is more humid. As a result, different diseases are common in tunnels than are common on the same crops grown outdoors. A few common

high tunnel pathogens are downy mildews and *Rhizoctonia* spp. These pathogens thrive under warm, moist conditions and can quickly take down tender greens (eg. Spinach and Lettuce Downy Mildews) or cause damping off or bottom rot of a wide range of crops including heartier brassica greens (*Rhizoctonia* spp.).

The most effective way to prevent plant diseases in high tunnels is to manage humidity by ensuring sufficient ventilation, and running fans if necessary. See the article Reducing Moisture in High Tunnel Systems in this issue of Veg Notes for more information. Though challenging given the limited space available and the limited variety of crops that can be grown into a New England fall and winter, crop rotation is another important tool to managing both insect and disease pests. For example, if you grew fall spinach in your tunnel and had a severe outbreak of *Cercospora* leaf spot, you should anticipate another outbreak of *Cercospora* if you plant beets to overwinter. Remember to rotate crops within a tunnel and within a season.



Bottom rot on Bok choy caused by *Rhizoctonia solani*

--Adapted by Lisa McKeag from materials written by Judson Reid, Cornell Cooperative Extension

WORKER PROTECTION STANDARDS FOR ALL FARM WORKERS



Some farmers may not know that the federal Worker Protection Standards apply to their farm workers regardless of whether the farm uses restricted or general pesticides. Massachusetts Department of Agriculture (MDAR) requires farmers who want to apply “restricted use” pesticides on their farms to have a private certification for pesticides. “Restricted use” is a federal EPA designation that appears on the pesticide label. All other pesticides fall into the EPA designation of “general use”. Pesticides that are listed by the Organic Materials Review Institute as allowed in organic production are all in the general use category. In Massachusetts, farmers who use only general use pesticides are not required to be certified to use pesticides, but they must be trained as EPA Worker Protection Standard (WPS) pesticide handlers. Farm employees who apply general use pesticides must also have WPS training as pesticide handlers. All other workers on the farm should receive EPA WPS worker training. The trainers of these employees must have either a private pesticide certification or attend an EPA WPS Train-the-Trainer workshop. Note that other states may require pesticide certification for farmers who apply general use products.



All farms using restricted or general use pesticides may be subject to a pesticide inspection to ensure the WPS standards are being met. If you are contacted by MDAR to schedule an inspection, they will be looking to see if your workers have had WPS training, if you have a WPS Central Information Display Area, and are following other requirements under WPS. If you are certified to use pesticides, you may also be asked to show your pesticide application records, storage and mixing areas.

Note: all pesticides used on the farm must be labeled for agricultural use. Pesticide products that indicate ‘backyard gardens only’ may not be used by farmers. All agricultural pesticide product labels have an “Agricultural Use Requirements” section and refer to the EPA Worker Protection Standard (WPS).

EPA Worker Protection Standard

Worker Protection Standard (WPS) regulations are designed to reduce poisoning and injuries among agricultural workers and pesticide handlers. They regulate pesticide use and require that workers and pesticide handlers be given appropriate training, equipment and information. Growers are required to provide personal protective equipment (PPE), restrict entry into treated areas, provide notification of pesticide applications, post specific information regarding pesticide applications (what, where and when), assure that workers have received safety training, post safety information, provide decontamination supplies, and provide access to emergency assistance if needed. State agencies generally have primary jurisdiction for enforcing WPS

WPS information can be found on any product label.

misuse violations. To come into compliance, contact the [Pesticide Education Program](#) and follow the [EPA WPS Manual](#).

The following are frequently asked questions about pesticide licensing and answers provided by Taryn LaScola, Pesticide Division, Massachusetts Department of Agricultural Resources.

How do I obtain a MA pesticide license or certification?

[Dates and locations for exams.](#) Please note that there are only two dates left in 2013 to take the exam: November 15th and December 6th, 2013 at the Lantana, 43 Scanlon Dr., Randolph, MA.

When do I need to get a Massachusetts Pesticide License?

A Massachusetts Pesticide License is required in agriculture when an individual is going to use a Restricted Use Pesticide (RUP). If an individual is using a General Use or OMRI listed pesticide, then he/she does not need to have a pesticide license. However, that individual would need to be trained as a handler to comply with the Worker Protection Standard.

What kind of license is needed?

The individual making the Restricted Use Pesticide (RUP) Application would need to obtain a Private Certification License. There are several categories associated with this type of license and the individual would need to pick the appropriate category depending on the type of agriculture facility. For example an individual who is applying an RUP in vegetable fields would get a Private Certification License with a Category in Vegetable (#31).

If I have a Private Certification license can I supervise someone without a license to make a Restricted Use Pesticide application?

No. In order to supervise an RUP application, the individual making the application would need to have the Commercial Applicators License (commonly referred to as the Core license). An application of an RUP cannot be done by someone without a license (supervised or not).

How many credits do I need in order to maintain my license?

To maintain a Private Certification license, the license holder needs to obtain 12 Continuing Education Units (CEU) during their three year cycle. It is also important to remember that an individual needs 12 credits for each category. For example, if an individual has a Private Certification license with two categories (greenhouse and tree fruit) he/she would need 24 credits in total.

How do I know when my three year cycle resets?

When you receive your new license each year, your cycle is listed on the new card.

Do I need to send in my CEU forms when I receive them?

No. Hold onto your CEU's and only send them to MDAR if you receive an audit letter asking for them.

Pesticide Applicator Training Workshops

Optional 2-day workshops held by the UMass Extension Pesticide Education program are designed to help individuals prepare for the pesticide applicator license exam. Preregistration is required. For a complete list of Pesticide Education Program Workshops, contact Natalia Clifton, UMass Extension at 413-545-1044 or check the [Pesticide Education Website](#).

--Katie Campbell-Nelson, UMass Extension

REDUCING STORM DAMAGE TO YOUR GREENHOUSES

Nature seems to be getting more violent in recent years with frequent earthquakes, increased numbers of hurricanes and record breaking snowstorms. Insurance damage claims have increased considerably. The International Building Code has revised upward its wind and snow loading requirements for some areas of the U.S.

Each year there are reports of greenhouses that have been damaged by weather and natural events. Greenhouse design is different than conventional farm buildings in that the structural profile has to be small to allow maximum light to reach

the plants. Most other farm buildings are over designed to handle severe weather conditions.

Damage to greenhouses can include racking of the frame, bending of the hoops, broken glass or torn plastic and uplifted foundation posts. Preparation ahead of time can minimize the damage.

Wind loading

Wind forces that act on a greenhouse are influenced by numerous factors including the basics wind speed, building orientation, exposure, height and shape of doors or vents that may be open. The wind passing over a greenhouse creates a positive pressure on the windward side and a negative pressure on the leeward side. These can combine to create a force that wants to collapse or overturn the building. An 80 mph wind can produce a pressure of 16 pounds per square foot (psf). For example, the 10' by 100' sidewall of a gutter-connected greenhouse would have to resist a 16,000 pound force.

Wind can also create a force similar to an aircraft wing that wants to lift the greenhouse off the ground. An 80 mph wind blowing perpendicular to the side of a 28' x 100' hoophouse can create a lifting force of 220 pounds per foot of length or 22,000 pounds of uplift on the whole structure. When you consider the total weight of materials and equipment in the greenhouse is about 6000 pounds, the foundation must have a withdrawal resistance of about 300 pounds each. This is why building inspectors frequently require that the posts be surrounded by concrete.

Although you have no control over the force or direction of severe winds, here are a few tips to help minimize storm damage:

- Check the area for loose objects. Anything that can be picked up and hurled through the glazing should be secured or moved indoors. Metal chimney (stove pipe) sections should be secured with sheet metal screws.
- Inspect for dry or weak tree limbs that could fall on the greenhouse.
- Close all openings including vents, louvers and doors. The effective force of the wind is doubled when it is allowed inside the building. The wind on the outside puts a pressure or lifting force on the structure. The wind inside tries to force the walls and roof off.
- On air inflated greenhouses, increase the inflation pressure slightly by opening the blower's intake valve. This will reduce the rippling effect. Check to see that the plastic is attached securely and that any holes are taped.
- Disconnect the arm to the motor on all ventilation - intake shutters and tape the shutters closed. Then turn on enough exhaust fans to create a vacuum in the greenhouse. This will suck the plastic tight against the frame.
- Windbreaks can reduce the wind speed and deflect it over the greenhouse. Conifer trees (hemlock, spruce, pine, etc.) in a double row located at least 50' upwind from the greenhouse can reduce the damaging effects of the wind. Wood or plastic storm fencing can be used as a temporary measure.

Snow loading

Snow that accumulates on a greenhouse can put significant weight on the structural members. Snow loads vary considerably from 0 along the southern coastline to more than 100 pounds per square foot in Northern Maine. Local building codes specify the design snow load.

Snow can be light and fluffy with a water equivalent of 12 inches of snow equal to 1 inch of rain. It can also be wet and heavy with 3 inches equal to 1 inch of rain. Snow having a 1 inch rain water equivalent will load a greenhouse with 5.2 psf. This amounts to 6.5 tons on a 25' x 96' greenhouse.

The following are a few pointers to consider before the next snow season:

- The foundation piers or posts should be large enough to support the weight of the building including crop and equipment loads.
- All greenhouses should have diagonal bracing to keep it from racking from the weight of the snow or force of the wind.
- Collar ties and post connections should have adequate bolts or screws. This is a weak point in some greenhouse de-

signs.

- Allow 10' to 12' between individual greenhouse for snow accumulation and to prevent sidewalls from being crushed in.
- When building new hoopouses, consider using a gothic design that sheds snow easier. In hoop shaped houses, install 2 inch x 4 inch posts under the ridge every 10' when heavy snow is predicted.
- The heating system should be large enough to maintain 60F to melt snow and ice. It takes 250 Btu/hr per square foot of glazing to melt a wet snow falling at a rate of 1 inch per hour. Heat should be turned on in the greenhouse or under the gutter several hours before the storm begins.
- The plastic should be tight and inflated to at least 0.25 inch water pressure. This can be checked with a monometer. Any cracked or broken glass should be replaced.
- Energy screens should be retracted to allow heat to the glazing.
- A standby generator should be available with adequate fuel for the duration of the storm to power heaters, fans and blowers.

Selection of greenhouses that meet the International Building Code and good construction techniques are important considerations when building new greenhouses. A little preparation before a storm can minimize damage from severe weather events.

Resources for storm preparation and response

UMass Extension: [USDA Assistance Available to Producers with Losses due to Snow Storm](#)

Massachusetts Emergency Management: <http://www.mass.gov/eopss/agencies/mema/>

Mass. Dept. of Agricultural Resources Farm Emergency Plan Template: <http://www.mass.gov/eea/agencies/agr/animal-health/farm-emergency-plan/>

Inspection of Storm Damaged Trees: <http://extension.umass.edu/landscape/news/inspection-storm-damaged-trees-revisited>

Mass. Emergency Regulations: <http://www.mass.gov/dep/service/regulations/newregs.htm#emerg>

UMass Extension Storm Preparedness and Crop Safety in the event of flooding: <http://ag.umass.edu/storm-preparation-response>

--John W. Bartok, Jr., Extension Professor Emeritus and Agricultural Engineer, NRME Department, University of Connecticut, Storrs
CT 06269-4087

UPCOMING EVENTS

Online Courses & Webinars

Marketing for Profit: Tools for Success Marketing Webinars for Direct Marketing Farmers

The Farmers Market Federation of NY and the NY Farm Viability Institute have partnered with USDA Northeast SARE to present a series of webinars on marketing: "Marketing for Profit: Tools for Success." The webinars are FREE, approximately an hour and a half long, and easy to access with a basic internet connection. This winter, 6 webinars will be held and interested participants are encouraged to [REGISTER](#) today for the webinars they want to attend.

The series includes coverage of 5 categories of marketing concepts spanning three years: Self-Assessment, Market Assessment, Customer Assessment, Communications Assessment and Business Assessment. Each Assessment encompasses a series of 3 webinars. The winter season of 2013-14 will focus on Communications and Business Assessment. In these sessions you will learn key concepts in effective communications with your customers and presenting your product for maximum profits. You will also learn to identify key customer characteristics and how to use the information to better present your products and your business. One session will prepare you to weather a crisis and come out stronger than ever. Finally, the last session will help you to track all the data you have gathered throughout the process of developing your business and marketing plans and use this information to help you make critical business decisions. Topics include:

Communications Assessment: How To Say What We Mean and Mean Something!

November 19, 20

You Are What You Look Like! Preparing The Product

December 3, 4

You Are What They THINK You Are! Selling The Product

December 17, 18

Long Term Assessment: Keeping an Eye On Your Customers.

January 8, 9

Putting a Handle on the Tomato: Reinventing the Product

January 28, 29

Drudgery That Pays Well! Maintaining Databases and Information

February 4, 6

[Growing Places Online Course for Starting Farmers](#)

Where: Online; Sponsored by UVM and Women's Agricultural Network

When: Jan-Feb. 2014

Growing Places is co-sponsored by UVM's New Farmer Project and the Women's Agricultural Network. This online course is organized into six modules, each addressing a different aspect of business development. Each session pulls in experts in that particular topic area to give depth to the lecture, discussion, and hands-on exercises that make up the course format. Farmer guest speakers and panelists are an important component, and by sharing their experiences with the group, offer a much appreciated realistic perspective.

Physical Meetings & Conferences

[UMASS Food Science Department: Industry Short Courses for Value Added Products: HACCP Certification Workshop](#)

When: Tuesday, December 3, 2013 to Thursday, December 5, 2013

Where: Campus Center, University of Massachusetts, Amherst, MA

This course covers the fundamentals of HACCP (Hazard Analysis Critical Control Point) taught by certified International HACCP Alliance instructors. This particular course will have an emphasis on fresh-cut produce, beverages (including juice and cider), baked goods, and dairy products. The concepts will be reinforced by breakout group activities in which participants will have the opportunity to prepare a HACCP plan. All participants will receive an International HACCP Alliance certificate issued through the University of Massachusetts upon successful completion of the course.

[New England Vegetable and Fruit Conference](#)

Where: Radisson Hotel in Manchester, NH

When: Dec. 17-19, 2013

Will be held at the Radisson Hotel in Manchester, NH and will include more than 25 educational sessions over 3 days, covering major vegetable, berry and tree fruit crops as well as various special topics. Most educational sessions consist of 4 to 5 talks where you get the perspectives of farmers, Extension Educators, industry and re-searchers. There are five concurrent sessions each morning and afternoon with discussions groups between and after sessions, and before the social mixers in the evening. There will also be 8 Farmer to Farmer meetings after each morning and afternoon session which will bring speakers and farmers together for informal, in-depth discussion on certain issues, a trade show with over 100 Exhibits, and 2 social mixers to help you make new friends and contacts. For more information, session schedules, and to registration details go to: <http://www.newenglandvfc.org/index.html>

[27th Annual NOFA/Mass Winter Conference](#)

Where: Worcester State University, 486 Chandler Street, Worcester, Massachusetts

When: January 11, 2014

This year's Winter Conference will offer a diverse line-up of more than 60 workshops, exhibits by numerous regional vendors, an all-day seminar (see seminar details below) and keynote and all-day seminar by Mark Shepard, perennial agriculture and permaculture design expert and author of Restoration Agriculture. The children's conference (for ages 3-12) provides a lively, interactive way for your kids to get educated. Also in 2014, the NOFA/Mass Organic Land Care program will hold their annual Lawn and Turf Course at the Winter Conference. Veteran instructors Chip Osborne and Bernadette Giblin - along with a host of others - will offer practical, applicable information about organic lawn and turf management techniques.

[Growing Spring Crops in Greenhouses](#)

Where: Cranberry Experiment Station, 1 State Bog Rd., East Wareham, Massachusetts

When: Wednesday, January 15, 2014 - 10:00am to 3:00pm

University of Massachusetts Extension specialists will present information on managing plant height, plant nutrition and managing pests for spring crops being grown in commercial greenhouses.

[Empire State Producers Expo](#)

Where: Oncenter Convention Center in Syracuse, NY

When: Jan. 21-23, 2014

This show combines the major fruit, flower, vegetable, and direct marketing associations of New York State in order to provide a comprehensive trade show and educational conference for the fruit and vegetable growers of this state, as well as the surrounding states and Eastern Canada. At this time, the pre-registration process is closed. However, walk-in registrations are always welcome at the door!

[Mid-Atlantic Fruit and Vegetable Convention](#)

Where: Hershey Lodge and Convention Center in Hershey, PA.

When: Jan 28-30, 2014

This conference combines three days of six or more concurrent educational sessions with a large industry trade show and numerous networking opportunities - all designed to enable fruit, vegetable and berry growers as well as direct marketers to stay on the cutting edge of their industries. About 2,200 persons from throughout the mid-Atlantic region and beyond gather each year at the Hershey Lodge and Convention Center for the Convention. Registration is open to all interested commercial fruit, vegetable and berry growers, direct marketers and allied industry personnel.

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.