UMass Extension
Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

Volume 27, Number 3 March 19, 2015

In this issue:

Crop conditions

We checked in with farms in several counties across MA to find out how the lingering cold and snow is affecting their farms. It seems that a foot or more of snow remains in most locations except parts of the Connecticut River Valley and southern Bristol Co. One farmer noted that he could drive his tractor on the melted and refrozen snow pack without sinking in, while another wished he could spend the day skating where his creek has flooded the hayfield. Underneath that insulating layer, frost is reported to be absent or not more than an inch or two deep, which means that the snowmelt may sink nicely into the soil once above-freezing temperatures return. Growers are using the short breaks between very windy days to fix or replace plastic on high tunnels and greenhouses. Winter spinach in high tunnels usually kicks into active regrowth by early March but has grown much more slowly this winter, delaying harvests and sales. It is finally going strong now, and winter markets will soon see a nice uptick in greens for sale. One grower noted that an insulated root cellar in his barn saw some frost this February for the first time in 11 years – not surprising given the record cold of February. Some growers have delayed starting lettuce transplants because fields are unlikely to be ready as early as usual, and to reduce theirheating costs, but onions and leeks seem to be on schedule. For those who aim for early greenhouse tomatoes, starts are about on schedule, with the first planting going into the greenhouse in the next week or two. Although the first official days of spring are not expected to feel much like spring, warming could come fast. Only in Southeastern MA is there enough bare ground and light soil to plan for digging parsnips and preparing the ground for early radishes 'as soon as we get a couple days of 50 degree weather'. Everyone else is going to have to be a bit more patient, and make use of the time to get all their equipment in top shape and ready to go. Also it's a good time to plan for IPM of greenhouse pests, which are starting to show up in overwintered crops and in new starts. The New England Vegetable Guide section on vegetable transplant production is an excellent resource for vegetable growers on cultural practices, what to look for, how to scout, and how to use a range of management options including biological controls for insect and diseases. Starting with a clean environment, using healthy plant material, and planning ahead are key. Biological controls work well against aphids, whitefly, thrips and other pests but need to be applied preventatively before populations build up (see article on aphid biocontrol). We hope to see you at one of the early spring workshops (see Events) coming up in late March and April!

--The editing team, with input from farmers at Caretaker Farm, Simple Gifts Farm, Gove Farm, Foppema Farm, Four Town Farm, Applefield Farm, Kitchen Garden, and Alprilla Farm in Berkshire, Hampshire, Worcester, Middlesex, Bristol, & Essex Counties.

MANAGING APHIDS IN EARLY-SEASON TUNNELS

Green peach aphid winged and wingless forms. Photo: D. Ferro

As some of you may already have noticed, aphids can survive in tunnels where crops were produced throughout the winter, and their populations can really start to increase at this time of year. Young seedlings and early-season tunnel crops being planted now are very susceptible to damage from aphid feeding, and must be protected. Scout now to catch problems before the population skyrockets, and consider using biocontrol organisms to maintain aphid colonies at non-damaging levels.

Correctly identifying the species of aphid affecting your crop is an important first step before selecting which biocontrol organisms will be effective:

Green peach aphid: This aphid species can be distinguished from the melon/cotton aphid by the length and color of the cornicles (the pair of tube-like protrusions extending from the end of the abdomen). Green peach aphids have long (approximately the length of the body) cornicles and only the tips are black. In addition, the head has a distinct indentation at the base of the antennae. Hosts include peach, apricot, and over 200 species herbaceous plants including vegetables and ornamentals.

Melon aphids. Notice range in coloration, size, winged and wingless forms. Photo: Martin

Melon/cotton aphid: The cornicles on melon/cotton aphid are short (approximately 1/3" or 8.0 mm, the width of the body) and vary in color from light yellow to very dark green (making them appear black). The antennae are typically shorter than the body. Melon/cotton aphids do not have a distinct indentation at the base of the antennae like that of the green peach aphid. Its host range includes hundreds of species such as pepper, eggplant, spinach, asparagus, okra, and it is particularly damaging on cucurbits.

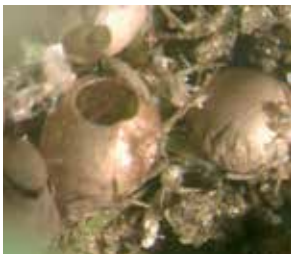
Potato aphids. Photo: Joseph Berger

Foxglove aphid: Foxglove aphids have green flecks located at the base of their cornicles. In addition, they have black markings on their leg joints and antennae. Foxglove aphids tend to fall off plants when disturbed and they can cause severe leaf distortion, more so than the green peach and melon/cotton aphid. This aphid has many hosts including foxglove, lettuce, potato, clover and bulbs.

Potato aphid: may be difficult to identify because their sexual forms produce both green and pink aphids, however they move more quickly than the other aphids. These aphids complete 2-6 generations on their winter host of rose plants before moving on to their summer hosts such as potato and tomato. Therefore, this aphid pest is not typically seen in tunnels until later in the season but they have been reported as an increasing problem among high tunnel tomato growers and keeping an eye out for them early is a good idea.

Cabbage aphid: Not typically considered a tunnel pest, this species has been reported recently in several tunnels where brassicas have been overwintered. Mature females are greyish green with dark heads and cornicles. They are approximately 1/12 inch long. Hosts are only the brassica species.

Root aphid: The primary root aphid (*Pemphigus* species) overwinters as eggs and infests plants in the spring and fall. Root aphids may be misidentified as mealybugs because they are covered with white wax although they are smaller than mealybugs. Root aphids have reduced cornicles that resemble rings, which are located on the end of the abdomen. These cornicles can be seen when magnified.



Brown shell of mummified aphid with exit hole. Photo: A. Cavanagh

Biological Control Using Parasitoids. In general, parasitoids are more effective than predators (such as ladybeetles, green lacewings, and predatory midges) in keeping aphid populations low, although parasitoids may fail to provide acceptable control under warm conditions or at times when aphid populations tend to increase rapidly. For more info on predators please see the resources listed below. Parasitoids lay eggs inside aphids and when those eggs hatch, larvae feed on the aphid internally, killing it. Parasitoid larvae pupate within the dead aphid exoskeleton, which becomes a tan, dome-shaped shelter known as a "mummy." Adult parasitoids emerge from aphid mummies and continue the cycle. Aphid parasitoids are host-specific in terms of the aphid species they attack. For example, *Aphidius ervi* attacks foxglove and potato aphid, while *Aphidius colemani* attacks both green peach and melon aphids. Currently no parasitoids are com-

mercially available for cabbage and root aphids. Mixtures of different parasitoid species are commercially available and should be used when multiple aphid species are present. Parasitoids are shipped either as adults or 'aphid mummies' from which parasitoid adults soon emerge. To increase the parasitoids' effectiveness, place small groups of the aphid mummies in cups near aphid colonies. Do not let these aphid mummies get wet. Release rates may vary depending on the parasitoid species. Containers often contain approximately 250 aphid mummies, which can treat 5,000 ft2 at the high release rate (for high aphid populations) or 25,000 ft2 at the low release rate (for less severe outbreaks).

Greenhouse temperatures should be 65-77°F (18-25°C), with 70-85% relative humidity. Aphid parasitoids must be applied preventively to suppress aphid populations. They are less effective when aphid populations are high and already causing plant damage. Release parasitoids on a regular basis to sustain their populations during the growing season. Avoid releasing parasitoids near sticky cards to prevent capturing the released parasitoids. When scouting, look for aphid mummies that have circular holes on one end. These are the exit holes created by adult parasitoids during emergence. Aphid parasitoids are sensitive to pest control materials.

Banker Plant Systems. One of the challenges associated with trying to build up parasitoid populations before the pest aphids emerge is that parasitoids may leave the tunnel in search of food. However, there is a way to keep the parasitoid in your tunnels by giving them an alternate food source. Aphid banker plants are containers with winter barley, common rye or oats on which colonies of grass-feeding aphid species, such as bird-cherry oat aphid (*Rhopalosiphum padi*), are established. The grass-loving species will not affect your crop, but serve as alternative hosts of the parasitoids. In this way, banker plants support a sufficient population of continually reproducing natural enemies to control pest aphid species. There are several species of grass-loving aphids, which each serve as hosts for different parasitoids. You can purchase one or a few different species of banker aphids, to acheive control of multiple pest aphid species at once. For these reasons, it is helpful to know the species of aphid pest present, so you know which alternative hosts, and also which parasitoids to purchase. Importantly, bird cherry oat aphid is commonly sold as a banker aphid and this species is too small the parasitoid A. ervi to develop, so if foxglove or potato aphids are your dominant pest species look for a different species of banker aphid or use another strategy.

Banker plants need to be placed along walkways and at the end of benches. It is essential to evenly distribute them throughout a greenhouse. Some growers will place the banker plants in hanging baskets with drip irrigation to ensure that the banker plants will remain irrigated without inadvertently washing the parasitized aphids off of the plant. Distribute containers of rye or barley, with the grass-feeding aphid, among the main crop at a rate of one banker plant per 1,000 ft^2 even before aphids are detected. It should be noted that existing recommended rates may vary since limited research has been conducted; start with this rate and adjust in succeeding years based on your experience. Research with aphid banker plants in greenhouse pepper production in the Netherlands showed that when 4 banker plants per acre were introduced every two weeks, aphid pests were kept below threshold. With this rate and frequency of introduction of banker plants, the average number of *Aphidius* caught per sticky card (3.9» by 9.75») per week was 10 per card per week. Banker plants may have to be placed closer together or placed in greater frequency within a given area in order to allow parasitoids such as *Aphidius colemani* to find prey on plants, since research has found that this parasitoid migrates just 3.2 - 6.5 feet from the point of release. Occasionally, the banker plant aphids may be found on your main crop; this should not cause alarm, as they only feed on grasses, and it may be a sign that the pot of barley oats or rye has been fed on too heavily needsg to be replaced. It is helpful to start fresh pots of banker grass every 2 weeks to keep the aphids well fed.

Starter aphid banker plants are available from several biological control suppliers including BioBest and IPM Labs. One starter kit is enough to get your banker plant system started for the season, as long as you're growing your own pots of oat, rye or barley.

Tips for using Banker Plants:

- Place orders for banker plants up to 6 weeks before aphids are expected in your greenhouse.
- Transplant the plugs or seed directly into larger-sized pots (10 inch) so that the grass plants have plenty of room to grow.
- Wait one or two weeks for grass feeding aphid populations to grow.
- Lightly release the "aphid mummies" or *Aphidius colemani* adults onto the starter banker plants. For example, 100 hundred *Aphidius* per banker plant before it is divided and repotted. *Aphidius colemani* attacks the grass-

feeding aphid, which is not an aphid pest of most greenhouse-grown crops except monocots such as ornamental grasses.

- Check banker plants weekly and look for newly parasitized aphids ("aphid mummies"), which indicate that the parasitoids are establishing on the banker plants.
- Start new banker plants every 2 weeks because they will decline from aphid feeding within a few weeks.
- Inoculate new banker plants by physically transferring aphids from old banker plants onto new ones every 2 weeks. This can easily be done by gently rubbing the aphid infested grass plants over the fresh banker plants.
- It may be necessary to "protect" or isolate your replacement banker plants from natural enemies (either established in your greenhouse or naturally occurring natural enemies that may enter the greenhouse from outdoors during warmer weather). If so, place banker plants in "starter cages" so you can build up your population of grass feeding aphids before releasing *A. colemani*.

For more detailed instructions on using banker plants please read this factsheet from UVM and BioBest.

Entomopathogenic fungus: The entomopathogenic fungus, *Beauveria bassiana*, is commercially available for use against aphids. However, because aphids have high reproductive rates and molt rapidly, especially during the summer, repeat applications are typically required. *Beauveria bassiana* is most effective when aphid populations are low. This fungus may not be compatible with the convergent ladybird beetle (*Hippodamia convergens*) depending on the concentration of spores applied.

--Compiled by Susan Scheufele, UMass Extension Vegetable Team, from the following resources:

Aphids on Greenhouse Crops, by Tina Smith, UMass Extension

Managing Aphids in the Greenhouse, by Leanne Pundt, UConn Extension.

Aphid Banker Plants, by Leanne Pundt, UConn Extension

Other helpful resources:

Aphid Banker Plant System for Greenhouse IPM: Step-byStep, by Margaret Skinner & Cheryl Frank, UVM Entomology Research Lab and Ronald Valentin, BioBest

Scheduling Biologicals, by Linda Taranto, D&D Farms and Tina Smith, UMass Extension

IPM Labs (http://www.ipmlabs.com)

Biobest (http://www.biobestgroup.com)

Koppert Biological Systems (http://www.koppert.com)

Bioline (http://www3.syngenta.com/global/Bioline?en/products/Pages/ProductList.aspx)

TRANSPLANTING SWEET CORN FROM UNTREATED SEED

Sweet corn seed placed into the cold soils of spring is a magnet for wireworms, seed corn maggots, damping off pathogens, and crows. As a result, seed treatments have become a vital part of most commercial sweet corn production. For growers who opt for organic production methods, most fungicide and insecticide seed treatments are prohibited, and stands of direct-seeded early corn can be too low to make the crop worthwhile. Lack of herbicides creates a further challenge, as weeds and corn germinate together, and frequent, close cultivation is needed. Sweet corn transplants, once a curious anomaly, are now a regular part of season-long organic sweet corn production. Organic growers are often reluctant to include sweet corn in their crop mix, because it requires substantial acreage, is not as high value per acre as many other vegetable crops, and because it may require some different equipment such as sprayers. However, sweet corn can offer benefits as well: it is an ex-

Transplanting corn at Woods Market Garden, Brandon, VT.

cellent rotation crop for many vegetable crop families; it draws customers to retail markets & CSA's; and it is not widely available organically so the demand (including wholesale markets) is high. Using transplants is one practice that has made organic sweet corn more consistent and profitable over the full growing season. Some growers use transplants only for the first 2-4 successions, while others make transplanting their standard practice. The economic return on a full, even stand of 21,000 plants per acre turns out to be worth the extra cost of seeding, growing transplants, and getting them in the field.

In a 2003 SARE Farmer Grant, grower Jon Satz of Wood's Market Garden in Brandon, VT trialed 2 tray sizes (98's and 162's) using both single and double seeds per cell. Plants were grown for 14 days at 68-75°F day/64°F night temperatures, hardened off outside for two days, then planted at 8" in-row spacing for single or 16" for double cells, with 36 inch between-row spacing. They were immediately covered with row cover, which protected the earliest planting (April 29) from subsequent frosty nights. Covers were removed for a cultivation and side dressing 2-3 weeks after planting, and replaced for earliest successions until tasseling. Jon found that the larger cells gave plants a quicker start – a longer tap root in the cell with quicker early growth – but the final yields and harvest dates were the same for both cell sizes. The most important finding was that all of the transplanted corn gave consistent yields of 250-300 bushels per acre. The additional cost per acre for transplants was about $750 per acre above standard establishment costs, using the 162 tray and two seeds per cell, but Jon also estimated that there were reduced costs compared to direct seeding, about $220/acre less to seeding, cultivate and hand weed direct-seeded crops. See the full project report on the SARE Project reports database for more details.

Other tips for transplanting sweet corn:

Using two seeds per cell take up less tray space and requires less time to transplant since the double seedling is placed twice as far apart. To reduce labor for seeding, a drop seeder (Fig 1.) for double seed may be useful.

2-seed drop seeder plate with 7/8th inch holes can be used to speed up seeding.

Cell size and spacing: Some growers use 128 cells as a compromise that gives adequate root space with fewer trays than 98's. Hutchins Farm of Concord, MA seeds 2 seeds/cell in 72's, then plants at 12" in-row spacing and 40 inches between rows, thereby crowding more corn into the field and also providing plenty of fertility to support it. Ray Mong of Applefield Farm, Acton, MA has adopted this method and likes being able to hold the transplant a little longer if needed, and get 2 ears per row foot – an efficient use of land. It seems to be worth trying various cell and spacing combinations to see what works best for each farm's particular equipment, soil and location.

Corn needs to germinate in a heated greenhouse (trays can be stacked crosswise to save space during germination) but can be moved to an unheated or low temperature house to grow. Cooler temperatures and moderate watering grows a shorter, stockier transplant (4-6 inches tall). Leggy plants are hard to handle.

Corn seedlings ready to be transplanted.

Transplanters such as Mechanical Transplanter Model 1000, the Holland Carousel and the Powell transplanter are able to accommodate the required spacing.

Seedlings do not hold well beyond 14 days, as the tap root needs to grow rapidly and keep growing for good plant growth. If it starts circling in the cell, field growth will be delayed. As soon as roots hold together and plant can be pulled out of the trays and handled easily, it's time to transplant.

Varieties with vigorous early growth are best for transplanting.

One advantage of using transplants is that main season varieties with good quality ears can be used in early plantings, because their cold-soil emergence success is not a factor.

Corn transplants are too big to be of interest to crows, which are after the newly germinated seed.

Growers report using less seed and less land compared to direct seeding, because of high germination and a guaranteed stand.

--Written by Ruth Hazzard, UMass Extension

WEED MANAGEMENT UPDATE 2015

In 2015 there are a few new herbicide options for vegetable crops including a section 3 label and a 24c label expansion for Dual Magnum. The section 3 labels are usually available for full, nationwide use, while a 24c label is restricted based on local state needs determined by EPA or liability determined by the company. Dual Magnum (metolachlor) has a section 24c registration in Massachusetts and New Hampshire ONLY for the following crops: asparagus, beets, leafy brassica greens, broccoli, transplanted and direct-seeded cabbage, carrots, cucumber, garlic, melons, dry bulb and green onions, bell pepper, spinach, Swiss chard, pumpkins, caneberry, highbush blueberry. Regular section 3 registrations include beans, sweet corn, potato, pumpkin, and tomato. Dual provides excellent control of annual grasses, hairy galinsoga, nightshade, and yellow nutsedge. To access the Section 24c labels, go to www.farmassist.com. Under "products", select "indemnified labels" (you will be prompted to register a login name and password), select "Massachusetts" or "New Hampshire" and "Dual Magnum". Fill in the required information and print the label. Always read and follow all Worker Protection Standards information on the label. This information can be found in the Agricultural Use Requirements box.

Prowl H2O (pendimethalin) registered crops include: asparagus, beans, corn, melons, onions, peas, potato, pepper, sunflower, brassica head and stem, carrots, garlic, leek, eggplant, tomato, grapes, pome and stone fruits and strawberries. It can be either pre-plant incorporated or applied to the soil surface prior to transplanting. If applied to the soil surface, treated soil falling into the transplant hole may delay crop growth. Preplant incorporated treatments are generally safer. Prowl may be surface applied between plastic mulch, however, do not apply over the top of pepper plants and do not apply within 60 days of harvest. While similar, an advantage over Treflan is that Prowl will control velvetleaf. Prowl is also good on lambsquarters, including triazine-resistant lambsquarters.

There are some new options for sweet corn weed management. As long as the corn is planted at least 1 inch deep, Zidua (pyroxasulfone) provides residual control of yellow nutsedge, crabgrass, panicum, foxtails, and barnyardgrass as well as the broadleaves: pigweed, carpetweed, nightshade, and purslane. It provides weak control of lambsquarters. No surfactant is needed, and Zidua is a little safer to use in early, cold soils than Prowl for other crops. New sweet corn varieties are on the market that will tolerate either Liberty (Rely, glufosinate) or Roundup (glyphosate). These sweet corn varieties are "Liberty Link" which has both Bt and resistance to *glufosinate* stacked traits, and "Seminis Performance Series Sweet Corn" which also has resistance to *glyphosate* and Bt stacked. No refuge is required because of short growing time of sweet corn compared to field corn, but stewardship requires the grower to disc in stalks after harvest. Field corn growers using these technologies have reduced their herbicide use by 33% to 50%. Using a residual herbicide at planting is still a useful option followed by a postemergence application of either Liberty or Roundup depending on variety.

When tank mixing pesticides, mix in the proper order. The order is Wettable Powders (WP), Water Dispersible Granules (WDG), Flowables (F) (DF) (SC), Water-dispersible liquids (AS), Emulsifiable Concentrates (EC), and Solutions (S). Always follow the pesticide label when using adjuvants such as spreader stickers, surfactants, etc. When suggested, use the right product at the right rate.

-- Richard Bonanno, UMass Extension. Compiled by Katie Campbell-Nelson, UMass Extension

NEWS

Mass ROPS Rebate Program is Up and Running

The Massachusetts Department of Agricultural Resources (MDAR), with the help of the New York Center for Agricultural Medicine & Health, is pleased to introduce a Tractor Rollbar Rebate Program for Massachusetts. The MA Rollover Protective Structure Program (ROPS) is a PILOT Program designed to assist farmers in installing rollbars by offering a rebate of 70% of costs up to $865. This pilot program has limited funds, but MDAR hopes to assist in retrofitting 28 to 35 tractors with rollbars in 2015. Participants in the ROPS program will be chosen on a first come first served basis.

All participants must apply on-line or by calling the ROPS Hotline (1-877-ROPS-R4U or 1-877-767-7748). ROPS Hotline staff will provide estimated costs as well as sources for purchasing certified ROPS. Prior to ordering, participants must call for pre-approval. Flyer and complete details here.

Contact Barbara Bayes - ROPS Hotline (1-877-ROPS-R4U or 1-877-767-7748), bbayes@nycamh.com, or Bob Rondeau, MDAR, 617-626-1804, robert.rondeau@state.ma.us.

UMass Extension is hiring for two educator positions—one vegetable specialist and one soil and nutrient management specialist, see and share widely the descriptions below.

Extension Educator Vegetable Specialist

The successful candidate will direct and manage the UMass Extension Vegetable Program to address the diverse and dynamic needs of vegetable farmers at the state and regional level through educational programs, applied research, and on-farm projects. Facilitate the conception, funding, design and implementation of programming that enhances the economic, human, and environmental health and sustainability of the vegetable industry in Massachusetts and New England. In collaboration with UMass and external partners, develop, evaluate and teach sustainable production methods for diverse vegetable crop and pest management systems, with special attention to arthropod management. Identify and respond to changing needs including new and emerging insect pests. Provide oversight for staff and resources of the Extension Vegetable Program.

To Apply: Go to http://umass.interviewexchange.com/jobofferdetails.jsp?JOBID=57688. Review of applications begins April 1, 2015. *The University of Massachusetts Amherst is an Affirmative Action/Equal Opportunity Employer of women, minorities, protected veterans, and individuals with disabilities and encourages applications from these and other protected group members.*

Extension Educator - Soil & Nutrient Management Specialist

The successful candidate will direct and manage the UMass Extension's Nutrient Program which includes a testing operation and facility to address the diverse and dynamic nutrient management and tissue analysis needs of fruit, vegetable and forage growers and turf and landscape agri-businesses (herein called agricultural industries) at the state and regional level through educational programs, applied research, and on-site projects. Facilitate the conception, funding, design and implementation of programming that enhances the economic, human, and environmental health and sustainability of the agricultural industries in Massachusetts and New England. In collaboration with UMass Extension specialists and faculty and external partners, develop, evaluate and teach best nutrient management practices for the agricultural industries with special attention to soil analysis and interpretation and applications to various soil conditions and crop use. Identify and respond to changing agricultural industry needs. Provide oversight for staff and resources of the Extension's soil and tissue testing facility and operations.

To Apply: Go to http://umass.interviewexchange.com/jobofferdetails.jsp?JOBID=57577. Review of applications begins March 25, 2015. *The University of Massachusetts Amherst is an Affirmative Action/Equal Opportunity Employer of women, minorities, protected veterans, and individuals with disabilities and encourages applications from these and other protected group members.*

UPCOMING EVENTS

UMass Extension Symposium: Pollinator Health for Agriculture and Landscapes

When: Thursday, March 26, 2015 from 8:45 am to 4:00 pm

Where: Campus Center Auditorium, 1 Campus Center Way, Amherst, MA 01003

UMass will host experts from New England Extensions to cover the following important topics in pollinator health:

Biology, Diversity and Conservation of Native Bees in the Northeast
Joan Milam, Department of Environmental Conservation, University of Massachusetts-Amherst

The Natural History and Ecology of Honey bees in Our Landscapes
Dr. Frank Drummond, School of Biology and Ecology, University of Maine

How Healthy are the Bees?

Dr. Frank Drummond, School of Biology and Ecology, University of Maine

Designing Pollinator Support Plantings: Think Like a Bee
Dr. Lois Berg Stack, University of Maine, Northern New England Pollinator Habitat Working Group

Neonicotinoids in Agriculture and Landscapes: Do They Harm Honey Bees or Native Bees?
Dr. Kim Stoner, The Connecticut Agricultural Experiment Station

Creating a Bee-friendly Landscape: Protecting Bees from Pesticide Exposure
Dr. Anne Averill, Department of Environmental Conservation, University of Massachusetts

**4 Pesticide Credits have been approved in all categories.

For more information about the program contact:
Tina Smith, Univ. of Mass, Amherst 413-545-5306, tsmith@umext.umass.edu or
Ellen Weeks, Univ. of Mass, Amherst, 413-545-2685, eweeks@umext.umass.edu

Cost: $65 for one, if two or more from same business, then $40/person

Mail-in Registration: Printable Program and Registration Form or **Register On-Line** using a credit card.

Massachusetts Agriculture Day at the State House

When: Tuesday, March 31, 2015 from 8am to 2:30pm

Where: Massachusetts State House, 24 Beacon St, Boston, MA 01233

How big is agriculture in Massachusetts? Approximately $492 million dollars of revenue is generated annually, and Commonwealth farmers are responsible for maintaining almost 525,000 acres of open space! Please join us for Ag Day when farmers and agriculture officials from across the state come together to visit their legislators to discuss issues and legislation which affects their farms and local communities.

The day's events include a program of speakers, presentation of "Agriculture Day" awards, informational exhibits and a hotly anticipated reception featuring Massachusetts' farm and specialty food products. We invite you to join us in recognizing Massachusetts' agriculture specialists and learn more about their efforts to maintain the long-term viability of Massachusetts agriculture.

Read more about Ag Day and see the Ag Day White Paper – the list of legislative and funding priorities developed by the MA Farm Bureau in coordination with the Ag Promo Board and a group of about 40 agricultural organizations, to be presented to legislators – in the Farm Bureau newsletter.

Retail Greenhouse Pest Management Using Biological Control: "Retailer to Retailer"

When: Tuesday April 7, 2015 from 1:00 pm to 3:30 pm

Where: Volante Farms, 292 Forest St, Needham, MA 02492

Do you purchase plants from wholesale growers who use biocontrol to manage pests? Learn to continue the practice of managing pests using biological control in retail greenhouses. Limited space for this demonstration program, registration on a first come first serve basis. *Sponsored by the UMass Extension Greenhouse Crops and Floriculture Program*

3 pesticide credits category 26
Printable program and registration form

EPA Worker Protection Standard Train-the-Trainer Course for Organic and Non-certified Pesticide Users

Offered at three locations in Massachusetts:

When: Tuesday, April 14 from 9am to 1pm
Where: Appleton Farm, 219 County Road, Ipswich, MA 01938

When: Tuesday, April 21 from 9am to 1pm
Where: Brigham Hill Community Farm, 37 Wheeler Rd, North Grafton, MA 01536

When: Tuesday, April 28 from 9am to 1pm
Where: Brookfield Farm, 24 Hulst Road, Amherst, MA 01002

All farm workers should be trained in the EPA Worker Protection Standards (WPS). If your farm uses any pesticides, including those approved for Organic production, all employees MUST be trained in WPS by Federal law. This training must be delivered by someone who either has a license to apply *restricted-use* pesticides *OR* has completed a WPS train-the-trainer program.

UMass Extension is offering 3 half-day **formal WPS Train-the-Trainer courses** this spring. These programs are geared toward organic producers and other farmers who are not certified pesticide applicators, and may be unfamiliar with regulations and procedures for safe pesticide use and record-keeping.

After you leave this training, you will have the ability *and* authority to conduct both handler and worker trainings for your employees, as required by the EPA.

Contact Lisa McKeag at 413-577-3976 or lmckeag@umext.umass.edu for more information.

Vegetable Notes. Ruth Hazzard, Katie Campbell-Nelson, Lisa McKeag, Susan Scheufele, co-editors.