UMass Extension
# Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

Volume 28, Number 22 September 15, 2016

## IN THIS ISSUE:



*Ominous clouds threatened yesterday's twilight meeting at the UMass Research Farm, but only amounted to a quick 0.02 inches of rain before passing on.*

## CROP CONDITIONS

Many parts of the state got intermittent rain showers this weekend which helped cover crops germinate, though the US Drought Monitor now puts over 50% of Massachusetts in an 'Extreme Drought'. The dry year was excellent for winter squash--much of it coming in early--and it is now curing in many covered barns and shaded high tunnels around the state. One farm that has cured onions in the field in the past had a curing fiasco this year. The drought-stressed onions were burned on one side on the black plastic when it was hot and dry several weeks ago, leaving a large portion of the crop flattened on one side and unmarketable. Many potatoes are about ready for storage also (see article this issue). With so much coming out of the fields now for storage, the perennial question arises: where will all these crops go?! Some have developed stacked wire racking systems for curing alliums and even run fans to keep air flowing.

Yesterday, between 2 rain showers, we hosted a twilight meeting at the South Deerfield research farm to a smattering of farmers, industry reps and other agricultural service providers. Student farmers and researchers presented on the development of a mobile wash station and efficacy of sanitizers for produce wash water (some results were published in the last issue of Veg Notes). Many were also intrigued by the cucurbit downy mildew resistant cucumber varieties and Vitalis tomato variety trial--tromping right through the experiments, inspecting the crops and tasting them too!

## PEST ALERTS

This will be our last Pest Alert of the season. Thank you to Extension staff from CT, MA, ME, NH, NY, and VT who contributed scouting data and recommendations this season. Also, special thanks to the following Massachusetts farms and IPM scout who trapped and provided scouting data to us all season for sweetcorn and squash vine borer: Brookfield Farm (Amherst), Nicewicz Family Farm (Bolton), Bars Farm (Deerfield), Outlook Farm (Westhampton), Langwater Farm (Easton), Gove Farm (Leominster), Tangerini Farm (Millis), Four Town Farm (Seekonk), Ward's Berry Farm (Sharon), Howden Farm (Sheffield), UMass Crop and Animal Research Farm (South Deerfield), Pray Farms (Swansea), Golonka Farm (Whately), and Jim Mussoni (IPM Consultant). This network of Extension staff, consultants and farmers continues to provide a valuable resource for over 2,500 readers of Vegetable Notes! Thank you!

*Ben Jankowski, UMass Extension scout and Stockbridge student disassembles a* Heliothis *trap used to trap corn earworm, European corn borer and squash vine borer this season.*

**Allium:** Bulb mite was diagnosed on seed garlic in MA this past week. Several mite species can cause damage in garlic. On bulbs, symptoms can look like Fusarium

*Brassica Downy Mildew sporangia can easily seen with a hand lens on the underside of leaves. photo: A. Madeiras*

basal rot with poor root structure on the basal plate. Feeding can continue in storage, increasing the spread of diseases like Fusarium basal rot or white rot. If mite infestations are severe, once planted in the field, germination can be poor with twisted leaves coming up in the spring. This is a growing problem among garlic growers nationwide. Be sure to plant clean garlic by getting symptomatic bulbs tested before using as seed.

| Accumulated Growing Degree Days (°F): 1/1/16 - 9/14/16 | |
|---|---|
| **Location** | **GDD (base 50F)** |
| **Western, MA** | |
| Ashfield | 2228.6 |
| South Deerfield | 2536.1 |
| Pittsfield | 2145 |
| **Central, MA** | |
| Bolton | 2569.3 |
| Northbridge | 2397.4 |
| Phillipston | 2228.8 |
| **Eastern, MA** | |
| Ipswich | 2369.9 |
| Sharon | 2709.9 |
| Waltham | 2652 |
| Seekonk | 2754.7 |
| **Hollis, NH** | 2445 |
| **Burlington, VT** | 2621.1 |
| **Newport, RI** | 2520.2 |

**Brassicas:** Brassica downy mildew was diagnosed on arugula and 'Arcadia' broccoli this past week in Hampshire Co., MA. Cool nights have been conducive to spread of this disease. Irregular yellow patches form on the leaf surface. White fluffy patches of sporangia (photo) are visible on the undersides of infected leaves when it is cool and damp. Oospores (overwintering structures) can form allowing this pathogen to survive in the soil several years in the absence of a host. See article this issue for more information.

Celery (Anthracnose) Leaf Curl: caused by *Colletoctrichum acutatum* was seen in a field in Hampshire Co., MA this week. This disease has been found every year since it was first diagnosed in MA in 2013. It is a fairly new disease of celery, but has a wide host range including pepper and strawberry. It is unclear whether the same strain affects all crops or if it can be seed borne. See article this issue for more information and photos.

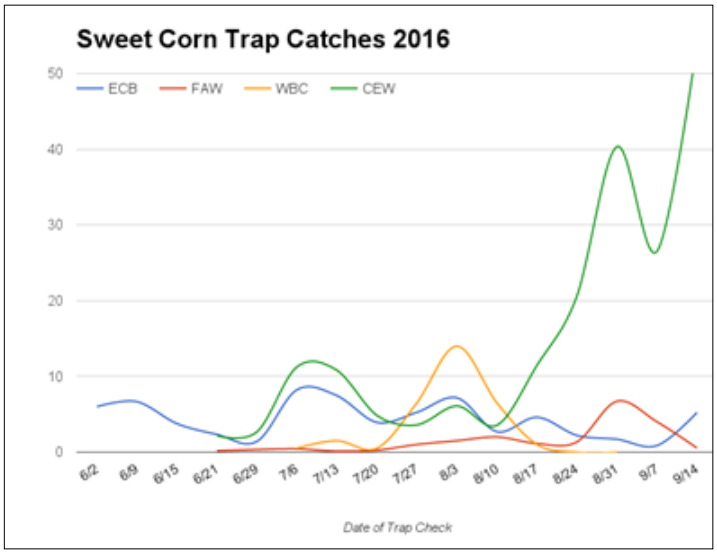
**Cucurbits:** The second generation of squash vine borer has tapered off and only a few moths are being captured now in the most heavily infested fields in NH. If fruit is being found with boring, be sure to till in the crop deeply to destroy overwintering populations.

Table 1. Week of 9/8/16-9/15/16 Sweet corn pheromone trap captures.

| Location | ECB | FAW | CEW | Spray Interval for CEW |
|---|---|---|---|---|
| **Western, MA** | | | | |
| Sheffield | 2 | 2 | 34 | *4 days* |
| **Central, MA** | | | | |
| Bolton | 2 | 3 | 2 | *6 days* |
| **Eastern, MA** | | | | |
| Concord | 0 | 15 | 31 | *4 days* |
| Haverhill | 1 | 1 | 3 | *6 days* |
| Sharon | 0 | - | 7 | 4 days |
| Ipswich | 1 | 10 | 0 | *No sprays* |
| Seekonk | 0 | - | 315 | *3 days* |
| Swansea | 4 | 3 | 39 | *4 days* |
| **NH** | | | | |
| Litchfield | 0 | 55 | 25 | *4 days* |
| Hollis | 0 | 65 | 13 | *4 days* |
| **Cortland Co., NY** | 0 | - | - | *No Spray* |

European corn borer (ECB), Fall armyworm (FAW), Western bean cutworm (WBC), Corn earwom (CEW)

**Solanaceous:** Bacterial canker was diagnosed on 'Gourmet' orange bell pepper plants in Franklin Co., MA this week. Normally a disease of tomato, we have only diagnosed this pathogen on pepper this year. It can spread rapidly, causing leaves to scorch



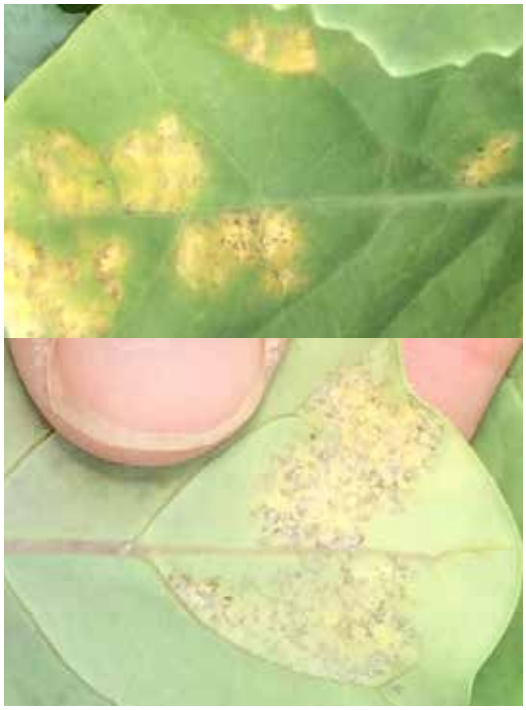

*Corn earwom (green line) trap catches reached a high point this week in MA. Figure: B. Jankowski*

from the margins and drop prematurely, leaving fruit susceptible to sun scald. Do not harvest while the crop is damp to avoid spreading this bacterial disease. Copper may be used as a protectant to keep the disease from spreading, but cannot be used curatively. Hot water seed treatment is effective at eradicating seed-borne infections. **Septoria**, **Early blight** and **Phoma leaf spots** were all diagnosed on the same tomato crop this week which had received overhead irrigation this season. Many tomato fields have multiple diseases at this point, and plants have collapsed, leaving fruit to ripen on fairly bare vines, increasing potential for sun scald. Rapid crop declines have left growers wondering if **late blight** was the culprit, however, late blight still has not been diagnosed in MA.

**Sweet corn:** Some growers have finished picking for the season, and traps are being taken down. However, for those still trapping, **Corn earworm** and **Fall armyworm** trap captures have continued to go up. In NH, FAW captures are high enough to recommend weekly sprays.

## Downy mildew of brassicas

With cool nights and cooler daytime weather on the horizon, incidence of brassica downy mildew (*Hyaloperonospora parasitica*) may start to increase. We see the most damage from this pathogen in spring and fall when conditions are cool, and have seen a few samples come into the lab over the past few weeks. Occurrence of this disease seems to be increasing, perhaps in part because unlike other downy mildews, the pathogen produces oospores and can therefore survive in the soil without a host present--other downy mildews do not produce oospores and cannot persist in soil without a host.



*Symptoms of brassica downy mildew on seedling leaf top and bottom. Photo: S.B. Scheufele*

Brassica downy mildew affects nearly all cultivated brassicas and brassica weeds. It affects all plant parts, including foliage, stems, heads, and roots, and may become seed-borne. Plants can be infected at any stage of growth. Disease development is favored by cool, moist conditions, whether moisture is from rain, dew, or fog. Infections that occur early in a crop life cycle may be latent or dormant, only showing symptoms later in the season when conditions in the field are again favorable.

**Symptoms:** On seedlings, bright yellow, irregularly shaped spots appear on leaves. These yellow lesions have networks of black spots or lines throughout, looking almost like a web. Under cool, moist conditions you may see white cottony growth on the undersides of leaves. Yellowed leaves may drop. On older plants, these irregular yellow spots will become tan or gray papery patches. In cauliflower, dark gray spots may appear on the curd and, when cut open, gray streaking is noticeable on the branches beneath the florets. In broccoli, there may be no spots on the head but gray streaks may form beneath the beads, running all the way back to the main stem. In cabbage, black spots may be evident on the exterior of the head, or internal darkening and purplish spots may occur if the infection becomes systemic and the pathogen is able to move from the lower leaves into the stem and head. Turnip or radish roots may develop internal, irregularly shaped brown or black discoloration extending from the crown downward. In advanced stages, the skin becomes rough and the root may split open, which can be confused with symptoms of Rhizoctonia root rot. Disease can spread in storage and also may allow for entry of secondary rot pathogens.

**Disease Cycle:** Downy mildew overwinters as thick-walled resting spores, called oospores, in crop and weed residues or in the soil. The pathogen may also overwinter in winter-sown host crops. When infested seed is planted, the plants may be systemically infected. The pathogen may survive in a latent state within these asymptomatic, systemically infected plants and become active when environmental conditions favor disease development. Secondary spread of the pathogen occurs by asexual spores (sporangia), which are produced when there is abundant moisture on leaves provided by dew, drizzling rain, or heavy fog. Sporangia carried on air currents and on wind-blown rain germinate on leaves and produce new infections. Sporulation, germination, and reinfection can occur in as few as four to five days.

**Management:** Destroy infested crop residue as soon as possible after harvest. A two-year rotation away from brassicas is an important management step, and be careful to keep brassica weeds out of infested fields during that time as well. Start

with disease free seed--ask your seed supplier if the lot has been tested for downy mildew or hot water treat your seeds. Scout seedlings in the greenhouse and try to maintain low humidity. In the field, lower leaf wetness periods and humidity in the plant canopy by increasing spacing, controlling weeds, planting in the direction of prevailing winds, and planting in areas that get full sun. Chemical control of downy mildew is possible; research by Chris Smart and Holly Lange of Cornell University has shown that chlorothalonil, mancozeb, fluopicolide, and copper can be effective, while plant defense-inducing products such as acibenzolar-S-methyl were not effective in downy mildew control. Some crops and cultivars are more susceptible than others, though the relative susceptibilities of crops and varieties has not been studied. Many universities and seed companies report that introduction of resistant cultivars is imminent, but none are currently available.

*-S.B. Scheufele, M.B. Dicklow, R. Hazzard, UMass Extension*

## POTATO STORAGE

Whether you're planning to store potatoes for one month or six, it's important to try to provide the best combination of conditions for maintaining optimum quality. This can be tricky; every crop is different, as are each fall's weather and harvest conditions. Whether you are storing in pallet bins, grain sacks, or bulk piles, it's important to know what conditions you are aiming for, even if you can't always achieve them in practice. Fortunately, vegetables in general and potatoes in particular are somewhat forgiving in their tolerance to less than 'ideal' conditions. Light, temperature, humidity and ventilation all need adjustment in potato storage, and achieving the desired conditions in these areas is covered in this article.

*Paul and Kevin Jekanowski and crew are loading up their storage facility in Hadley, MA*

**Light:** Darkness is key**.** Even modest amounts of low light cause greening. If potatoes are in a multi-purpose storage where lights are on often, or the room is not fully darkened most of the time, cover the bins or pile to keep out light, without cutting off ventilation. One solution is to use bulk bins with open bottoms, with black pallet wrap around the sides, and punched plastic row cover or burlap on top.

**Temperature:** After harvesting and curing potatoes for storage (see August 18, 2016 issue of Vegetable Notes), tubers should be cooled down to the holding temperature. Ideally, the potatoes should be cooled slowly, ½ to 1° F per day, or a maximum of 4 to 5° F per week. It's helpful to place a temperature sensor in the center and on top of the pile or bin to monitor tuber temperature, in addition to monitoring air temperature in the storage and outdoors.

Potatoes are most commonly cooled using outdoor air, but this should be managed carefully. For the best use of outdoor air, place temperature sensors inside and outside the storage, with thermostats and switches wired in series to bring air in with fans only if inside temperature is above, and outside temperature is below your desired set point. Use outdoor air that is no lower than 3 to 5° F below the tuber temperature. Through-the-pile (or through-the-bin) ventilation achieves rapid cooling, but may cause dehydration unless a humidifier is used.

*Use a thermometer to monitor air temperature in pile storage.*

Tubers whose temperatures fluctuate along with outdoor cool and warm spells may have reduced storage life and quality. Fluctuations in temperature may also lead to condensation in the pile. If the temperatures in the top and center of the pile are above the outside air temperature, then ventilate the storage. When night temperatures are warm (in the 50's and lower 60's) and there is not enough ventilation through the pile, the temperature in the pile can get into the 70's or even 80's. Heating is generally not needed in potato storage due to the heat of respiration from the potatoes, though insulation in walls and ceiling is important. Significant heat can also be lost through leakage around doors, windows and open doors during use.

The holding temperature should be suited to your market goals and to achieve the desired balance among respiration rates, sprouting, disease development, and transformation of

starch into sugars such as glucose. Respiration rates are lowest at 36 to 37°F (2 to 3°C); however at temperatures below 45°F, conversion of starch to sugar increases. Tuber rots increase greatly above 50°F. References and grower experiences don't all agree on the ideal temperatures for different uses, but the recommendations below are found in several reliable sources.

- **Tablestock (no sprout inhibitor) and seed stock:** 38 to 40°F. This is the optimum temperature range for inhibiting sprouting. Some growers report that they can hold at 36°F for fresh market sales during the winter months. For diversified farms, this may allow them to store other root crops and cabbage in the same storage room as potatoes, if infrastructure is limited.

- **Tablestock (with sprout inhibitor):** 40 to 45°F. If the humidity is kept high and sprout inhibitors are used, potatoes stored at 45°F will maintain quality similar to those stored at 40°F.

- **Seed potatoes:** 38 to 40°F. For seed, tubers need to be kept dormant and in a sound, viable condition.

- **Processing:** 45 to 55°F is recommended for processing potatoes, to prevent accumulation of sugars which darken the potato during cooking. Fifty to 55°F is recommended for chipping, although this varies with cultivar. High sugar levels can be lowered if the temperature is slowly elevated to 55 to 65°F for one to four weeks, a process known as reconditioning.

**Managing Relative Humidity**

Humidity should be maintained at 90 to 95% throughout storage life to prevent dehydration and shrinkage and reduce pressure bruising. Given high relative humidity (RH) inside and low RH and temperature outside during the winter months, adequate insulation in walls and roof is important to avoid condensation. Below are two options for adding humidity.

**A humidifier** with a capacity to deliver about one gallon of water per 1,000 cubic feet per minute (CFM) is usually adequate. Centrifugal and misting humidifiers introduce water into the atmosphere in small particles. These small water particles are easily absorbed by the cool air and effectively increase RH. These systems are the most reliable and effective, however they are also the most expensive. There are several models and sizes available to fit individuals' specific needs.

Chris Callahan at UVM Extension developed a simple DIY auto-fill humidifier using a five gallon bucket, a tank deicer for heat, and a fan. Details on this humidification system can be found at Callahan's blog.

**Introducing water** into the storage area is another option for increasing relative humidity. It is the cheapest but also the most unreliable and inconsistent, and can lead to unsanitary conditions. Methods for spreading water on the floor can be simple or fancy. One example is to use the condensate from the evaporator coil and direct it via tube to the floor, and spread evenly using drip tape as with trickle irrigation. Other options are to pour water on the floor, wet burlap bags, or use overhead greenhouse irrigation to spray water. Again these are the cheapest methods but are not ideal due to sanitary issues and their inconsistency.

**Measuring Relative Humidity**

Digital hygrometers are the easiest tools for measuring relative humidity. They are easy to read, and tend to be precise. However, they can be out of calibration or give false readings, especially at higher relative humidity levels (>90%) like those needed in potato storages. Sling psychrometers are simpler mechanical hygrometers. They use two thermometers to measure dry-bulb and wet-bulb temperatures; the difference between these temperatures is used to determine the specific relative humidity of the atmosphere. Digital hygrometers should be checked against a sling psychrometer to measure their accuracy. If a digital hygrometer were off by 5%, you will know this by calibrating it against a sling psychrometer and have a better idea of the actual RH of the storage.

*A combination hygrometer and thermometer*

**Ventilation**

The ventilation system is the heart of the storage, controlling temperature and humidity by ventilating, recirculating and blending air. These systems range from manual to totally automatic. Convection currents cause heat to rise through the pile or bins. An exhaust fan is placed so that it removes warm air from the top of the stor-

age. Intake fans and openings should be adjustable to control the amount of air being drawn in. It is important that air is allowed to flow around and through the potatoes, whether they are stored in bulk or in bins. For bulk storage, air should be directed from the bottom of the pile towards the top, which requires a ventilation system that is built into the floor or laid down during piling. For storage in bins, the air should be directed to flow through the bins either from bottom to top or side to side (see Belyea presentation, below, for details on how a bottom-to-top system can be designed). This allows for consistent temperatures and relative humidity throughout the storage and thus consistent tuber conditions.

*Charlie Tangerini in his storage facility with insulation and ventilation overhead in Millis, MA*

**Further Reading:**

1) See Chris Callahan's blog at the UVM Extension website for further information and tools on calculating exhaust needs and fan exhaust system specifications.

2) For an excellent review of storage design with a lot of detail in terms that non-engineers can understand, see the presentation by Stephen Belyea, storage engineer with the Maine Dept. of Agriculture, Food and Rural Resources.

3) The UMass Vegetable Program website on winter production and storage includes a view into storages built by several growers and other presentations and fact sheets.

*- By Ruth Hazzard and Luke Doody, UMass Extension. Resources include Dale Moyer's (Suffolk Co CES, Riverhead, NY) chapter on Potato Storage Management in Potato Production in the Northeast, edited by C Hollingsworth, D. Ferro and W. Coli 1986; USDA Handbook 66; and potato growers including Paul and Kevin Jekanowski, Jekanowski Farm, Hadley MA, and Rob Johanson, Goranson Farm, Dresden ME.*

## CELERY LEAF CURL

We are seeing celery leaf curl caused by *Colletotrichum acutatum* in fields now and have seen it every year since it was first diagnosed in 2013. The disease was detected in Michigan and Pennsylvania in 2010 and has also been reported in CT, NJ, NY, VA, Canada and Australia. *C. acutatum* has a broad host range infecting pepper, tomato, bean, spinach, strawberry, apple, peach, blueberry, lupine, zinnia, cowpea, safflower, numerous weeds and more. It is not known if strains of the fungus infecting different hosts can infect celery and vice versa. The pathogen is most important on strawberry, and may become more important on pepper in Massachusetts because it infects even green pepper fruit and is very aggressive unlike the more common anthracnose pathogen, *C. coccodes.* See Pepper Diseases from July 31, 2014 issue of Vegetable Notes for more on *C. acutatum* in pepper.

**Symptoms** on celery include curled leaves, occasional discoloration of leaf margins, twisted petioles, and lesions on petioles. Leaves remain green but often appear fan-like and curl downward. Leaf curl is often the most prominent symptom observed and can resemble injury from growth regulator type (i.e. 2,4-D) herbicides. Infected plants are stunted with small, malformed, cupped leaves which become brittle and crack. The fungus advances into the stalks which become twisted with reddish to light brown lesions developing on the outside and inside of the stalks or inside the crown. Advanced symptoms of collapsed and rotting centers may easily be confused with Black heart, a physiological condition of celery

*From above, leaf curl may resemble 2,4-D herbicide (such as Atrazine) injury. photo: S.B. Scheufele*

*When the disease develops in the humid center of a celery plant, symptoms may be confused with the physiological disorder, Balck Heart. photo: S.B. Scheufele*

related to poor calcium assimilation and fluctuating water levels. Celery may become infected at any stage of growth in both the greenhouse and field, and plants become disfigured and unmarketable.

**Life Cycle:** *C. acutatum* is known to overwinter in the soil, in association with plant debris, or in infected weeds in several plant families. The fungus can remain for long periods in dead plant material on the surface or buried in the soil. It can penetrate through all plant parts, but the crown is often preferred due to the relatively humid conditions there. Conidia (spores) are easily spread in splashing water from overhead irrigation and wind driven rain leading to rapidly developing infections.. The pathogen grows best at warm temperatures (> 77°F), but can be active from 59°-86° F. Leaf wetness period of greater than 12 hours results in the most severe disease, although infection can occur with shorter leaf wetness periods.

**Management:** *C. acutatum* can be carried from the greenhouse into the field and symptoms may be latent at first, causing outbreaks later on. Start with clean flats and growth medium. Scout plants twice a week for symptoms; remove and destroy affected plants. In the greenhouse, provide good ventilation with horizontal fans, heating and venting, especially when warm days are followed by cool nights. Use irrigation practices that promote rapid drying and make sure water does not pool anywhere in the greenhouse. In the field, removal of crop debris after harvest and plowing under crop residue will limit pathogen carryover from year to year. A 3-4 year crop rotation with non-host plants should be followed. Avoid working the fields when the plants are wet, work in fields with a history of the disease last, and power wash equipment between fields. Celery seed continues to be screened for this pathogen at PennState, however it has not been found to be seed borne yet. A similar pathogen of celery, *C. nymphaeae,* causing celery stunt anthracnose has been detected in seed by researchers in Japan, and seed treatment at 122°F for 30 minutes has been recommended.

Several research trials have shown that the Group 11 strobilurin fungicides are most effective (i.e. Quadris, Quadris Top, Cabrio, Reason). These fungicides have developed resistance in other pathogens and should be rotated with a protectant fungicide; chlorothalonil, mancozeb, and copper are registered on celery and another targeted fungicide such as Group 3 propiconazole (Tilt). See the New England Vegetable Management Guide for more information.

*- by M.B. Dicklow, UMass Extension. Updated by K. Campbell-Nelson, 2016*

# News

**Massachusetts Drought Emergency Loan Fund**
***Rick LeBlanc, MDAR***

New fund will provide affordable working capital to family farms and other small businesses impacted by historic drought conditions.

The Baker-Polito Administration has announced the launch of the Massachusetts Drought Emergency Loan Fund, which has the capacity to provide up to $1 million in micro-loans to family farms and other small businesses affected by widespread drought conditions in Massachusetts. The Drought Emergency Loan Fund is part of the Baker-Polito Administration's coordinated response to five consecutive months of abnormally dry weather across the Commonwealth.

"Small businesses are the bedrock of the Massachusetts economy, and our administration is deeply committed to maintaining the health and vibrancy of family-owned businesses," said Governor Charlie Baker. "Like the emergency loan fund we launched following record snowstorms, this Drought Emergency Loan Fund will provide affordable working capital to small businesses grappling with the aftermath of extreme weather."

"Massachusetts family-owned farms play an integral role in our state's broader economy, by providing jobs, driving regional tourism, and conserving land," said Lieutenant Governor Karyn Polito. "This new loan fund is one important component of our comprehensive effort to help family farms and other agriculture-related small businesses recover from this summer's prolonged drought."

"Farms around the Commonwealth are a vital part of our state's economy, and continue to ensure residents have access to healthy, locally-grown culinary products," said Massachusetts Department of Agricultural Resources Commissioner John Lebeaux. "The Massachusetts Drought Emergency Loan Fund will allow Massachusetts' farmers to seek financial relief during this period of prolonged dry weather as they continue to offer fresh, nutritious products to consumers."

"We are pleased to offer this support to struggling family farms and related businesses hit hard by the drought," said Larry Andrews, President of MGCC. "Our team will provide prompt review of each application and work to help local farmers in need."

"This affordable, flexible loan program will help agricultural businesses regain financial stability and recover quickly from lost revenue due to the drought," said Assistant Secretary of Business Development Nam Pham.

For more information about the loan fund, and to access an **online application**, visit www.massgcc.com.

Link to this release: http://www.mass.gov/governor/press-office/press-releases/fy2017/administration-launches-drought-emergency-loan-fund.html

**Northeast SARE Grant Webinars**

Did you miss the recent SARE webinars about applying for a Farmer Grant or Partnership Grant? Never fear! Recordings of those webinars are here: http://www.nesare.org/Dig-Deeper/Grant-Workshop-PowerPoints-and-Webinars. The deadline for **2017 Partnership Grants is October 25, 2016** and the deadline for **2017 Farmer Grants is November 29, 2016**. Applications materials are available here: http://www.nesare.org/Grants/Get-a-Grant

**Webinar: Lessons Learned in Food Safety Coordination and Collaboration**

When: Monday, September 19 from 2 to 3pm

The Food Safety Modernization Act's (FSMA) Produce Safety (PS) Rule is impacting fresh fruit and vegetable growers in a variety of ways. While many growers will be exempt from PS compliance, there is increased market demand for growers to have a food safety plan in place. Both Massachusetts and Maryland have established state recognized certification programs that include food safety that help to reduce risks on-farm and increase market access for local production.

This webinar is geared toward food safety educators and regulators, and will share lessons learned from these states related to providing food safety education, technical support, and regulatory guidance to growers.

*Speakers:*

NECAFS Intro:

- Chris Callahan, UVM Extension Ag Engineering, NECAFS Lead.

Massachusetts:

- Amanda Kinchla, UMass Extension Specialist;
- Michael Botelho, Massachusetts Department of Agriculture, Commonwealth Quality Program Coordinator.

Maryland:

- Christopher Walsh, UMD Professor;
- Justine Beaulieu, UMD GAP Educator;
- Deanna Baldwin: Maryland Dept of Agriculture.

*Event Details:*

- There is no registration required. You can sign in to the webinar by clicking here! Password is Produce2016
- Instructions for joining the meeting via WebEx are available online. Please share, this webinar is open to all with interest.

To join the Northeast Center to Advance Food Safety e-Newsletter send an email request to listserv@list.uvm.edu.

# Events

## Managing Phosphorus in Organic Residuals Applied to Soils

**When:** Wednesday, November 2, 2016 from 8:45-4pm

**Where:** Holiday Inn, 265 Lakeside Ave.Marlborough, MA 01752

How do we develop a balanced system for use of organic residuals, with all their benefits, without adding to negative environmental impacts caused by phosphorus (P) leaching and runoff? This symposium will provide technical, research-based information and dialogue on the presence, forms, dynamics, transport, and fates of P applied to soils in organic residuals such as composts, biosolids, manures, and digestates from anaerobic digestion. This symposium is intended to help in developing guidelines for the use of P-containing organic residuals in accordance with nutrient management regulations.

Approval has been requested for the following professional certifications: CGCS, CSFM, MCH, MCLP, and AOLCP.

**Event Website:** https://www.regonline.com/phosphorus

**Contact:** Kelly Kraemer, 413-545-5221, kkraemer@umass.edu

## Northeast Greenhouse Conference and Expo

**When:** Wednesday and Thursday November 9th and 10th all day

**Where:** Holiday Inn, 242 Adams Pl, Boxborough, MA

With the increased interest in growing greenhouse and hydroponic vegetables, four educational sessions will be offered on Thursday November 10th.

- 9-9:50 am - Tom Manning, from Rutgers University will be speaking on Yield Response to Carbon Dioxide Enrichment
- 10:30 to 11:20 am - Celina Gómez from the University of Florida will be speaking on Yield Responses to Supplemental Lighting including the current research on different types of supplemental light for greenhouse-grown vegetables from.
- 1:30-2:20 pm - Chris Currey from Iowa State University will discuss Growing Basil from Start to Finish. Come learn more about selecting cultivars, and managing light, temperature and nutrient solutions when growing basil hydroponically.
- 2:30-3:30 pm - Neil Mattson from Cornell University will discuss Managing Nutrient Solutions for Hydroponic Leafy Greens and Herbs. Learn strategies for managing pH and EC, formulating nutrient solutions, and identifying the common nutrient disorders on leafy greens and herbs.

The Northeast Greenhouse Conference and Expo is sponsored by the Extension programs of the six New England State Universities and New York State, and the New England Floriculture, Inc.

**Event Website:** www.negreenhouse.org

## Vegetable Winter School

**When:** Tuesdays, January 10th, 2017 – February 21st, 2017 from 9am – 3:30pm

**Where:** Brigham Hill Community Farm, 37 Wheeler Rd. North Grafton, MA

Save the dates for this course designed to provide growers with regulatory certainty in a time of many regulatory changes. Leave winter school ready for a Commonwealth Quality Program (CQP) audit and the peace of mind that you are prepared to handle the requirements of: the Food Safety Modernization Act (FSMA), EPA Worker Protection Standards (WPS), Nutrient Management Regulations, and changes in Employment Law. Get up to date on research and IPM practices important to vegetable growers and gain a competitive advantage in a heavily regulated market. Each farm will get detailed support in developing food safety and nutrient management plans, training employees in WPS, developing standard operating procedures compliant with regulations, and preparing an employee handbook

and a whole farm IPM plan. Twelve contact hours available for the vegetable pesticide license category. This course is designed for farm owners, managers and employees.

**Registration coming soon!**

- Jan 11th – Food Safety Produce Rule (Day 1). Instructors: Lisa McKeag (UMass Extension Vegetable Program) and Michael Botelho (MDAR Commonwealth Quality Program)
- Jan 17th – Food Safety Produce Rule (Day 2). Instructors: Lisa McKeag (UMass Extension Vegetable Program), Michael Botelho (MDAR Commonwealth Quality Program), and Amanda Kinchla (UMass Food Science Extension Faculty)
- Jan 24th – Soil and Nutrient Management. Instructors: Katie Campbell-Nelson (UMass Extension Vegetable Program) and TBD
- Jan 31st – EPA Worker Protection Standards. Instructors: Natalia Clifton (UMass Extension Pesticide Education) and TBD
- Feb 7th – Advanced Topics in Integrated Pest Management. Instructors: Angie Madeiras (UMass Extension Plant Diagnostician), Sue Scheufele (UMass Extension Vegetable Program)
- Feb 14th – Employee Management and Labor Laws. Instructors: TBD
- Feb 21st – Incentive Programs (NRCS, MDAR, SARE) and Risk Management. Instructors: Tom Smiarowski and Paul Russell (UMass Extension Risk Management Specialists)
- Feb 28th – Snow Date.

**Contact:** Katie Campbell-Nelson, kcampbel@umass.edu, 413-545-1051

## Sponsors

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

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