UMass Extension
Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

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In this issue:

Harvested, no-till squash field during heavy rain on Tuesday. Note that there is no standing water, no erosion, and that the cover crop is already establishing. Photo: K. Parson, NRCS.

Crop conditions

Many were out harvesting pumpkins, winter squash, potatoes, and sweet potatoes on Monday, before the remnants of Hurricane Florence hit the state on Tuesday. If you are concerned about standing water in fields and the effect it may have on your sweet potatoes still in the ground, consider that ½ the nation's sweet potatoes are grown in North Carolina and they certainly took a big hit. Our thoughts are with farmers in North Carolina this week. Rich Bonanno, our former weed specialist and now Director of Extension in North Carolina, will have his hands full for quite a while.

In addition to continuing to harvest broccoli, cabbage, carrots, beets and other fall staples this week, many farms were also out pulling plastic from fields where crops are done for the season, like melons, cucumbers, and tomatoes. While tomatoes suffered this year from early blight and other bacterial diseases, we made it through the season without any signs of the dreaded late blight!

This is a challenging time of year for many growers who have to train new workers to help them finish end-of-season tasks after student employees have gone back to school. Remember, all workers on your farm must be trained in Worker Protection Standards. This regulation applies to any farm where any pesticide with a label that includes an "Agricultural Use Requirements" box is used—this includes nearly all conventional and organic, general- and restricted-use pesticides used in the indoor or outdoor production of agricultural plants on an agricultural establishment. We will be offering train-the-trainer programs throughout the state this winter—stay tuned for dates. In the meantime, please see the most recent WPS manual from the EPA.

Here at UMass Extension we are busy planning educational programs for winter, so stay tuned for Vegetable Winter School classes, Produce Safety Trainings and other workshops we will be hosting or presenting at, like those on cover cropping and high tunnel production listed in the events section at the end of this issue.

Pest alerts

Alliums:

Allium leaf miner was confirmed for the first time in MA this spring, in Berkshire Co. In other states where this pest has been active, a second generation emerges in late-September, so growers in MA and especially in the Berkshires should be on the lookout this year. Leeks are particularly at risk from the second generation; row covers applied now may protect crops. Adult flies have a characteristic orange head and oviposition marks are easily seen in neat white rows (photo). Please keep an eye out for this pest and let us know if you find it so we can alert other growers (umassvegetable@umass.edu).

Allium leaf miner adult and oviposition marks.
Photo: Barringer et al *2018*

Fusarium bulb rot was diagnosed in garlic this week. As you sort garlic in preparation for planting, be sure to discard any rotten bulbs.

Cucurbits:

Squash vine borer (SVB): Most locations in MA had only one generation of SVB this year, which began in mid-June. If there were a second generation of SVB on your farm, you would be seeing larvae in fruit now. Only one farm in MA had a small second flight, beginning in mid- August. The first generation was significant and all farms who with traps reached thea spray threshold of 12 moths per trap for vining crops or 5 moths per trap for non- vining, thick -stemmed cucurbits by mid-July (Fig. 3).

Sweet Corn:

Corn earworm, European corn borer, fall armyworm, and western bean cutworm traps were all deployed across the state this year as part of our pest monitoring network—please see the end of season review below, compiled by our summer scout and Stockbridge School of Ag Student, Annalisa Flynn.

Corn earworm (CEW) was definitely the lepidopteran pest driving sweet corn pesticide applications this year. New Hampshire, New York, and Massachusetts Extension Educators and crop consultants all report that 2018 CEW trap captures were higher than they've seen since 2012 (Fig 1). One farm in MA regularly caught over 200 CEW per week from August 1 to September 5.

Fig. 1. Average CEW on 12 Farms across MA in 2018

Fig. 2. Average ECB (13 farms) and FAW (7 farms) across MA in 2018

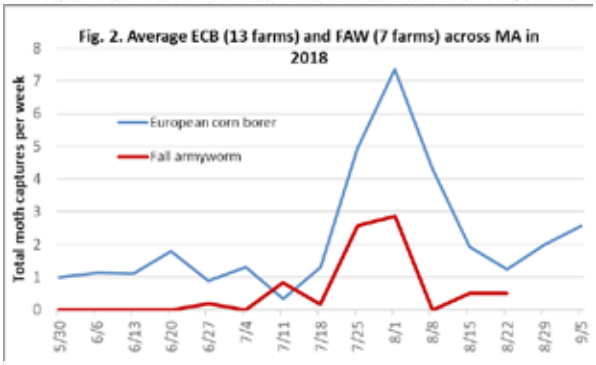


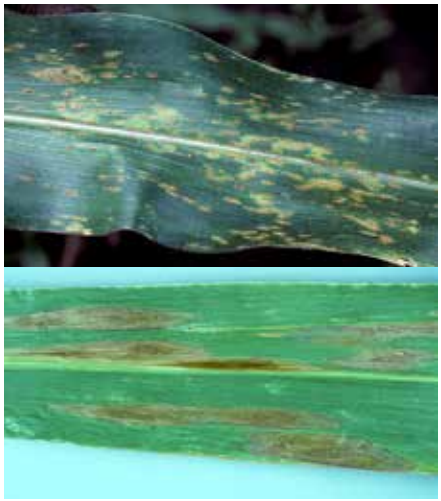
Fig. 3. Average MA SVB counts 2018

European corn borer (ECB) numbers were quite low again this year, the new normal for this pest. Most farms in MA were well below threshold (7 per trap) for release of *Trichogramma ostriniae* to control ECB in pepper. Sweet corn studies conducted by Cornell from the late '90s demonstrated that even under low ECB infestation rates, release of *Trichogramma* resulted in 65-100% parasitism of ECB egg masses. *Trichogramma* can therefore lower an already low ECB population in your field, if you decide it's worth the cost. Continue trapping for ECB on your farms next year, especially if you've had a history of the pest, but if populations remain low, as they have in the past few years, you may no longer need to release *Trichogramma*, especially for control of ECB in pepper (Fig. 2).

Fall armyworm (FAW) was also a minor pest of sweet corn in MA this year, with an average of less than 3 FAW per trap at the peak, except in one location where 13 FAW were caught in one week (Fig. 2)

Western bean cutworm (WBC): Only 3 MA farms trapped for WBC this year, 2 in sweet corn and 1 in field corn. Trap captures were highest in the location with field corn, but were low overall.

Common rust, caused by the fungus *Puccinia sorghi*, and Northern corn leaf blight (NCLB), caused by the fungus *Exserohilum turcicum*, were both diagnosed on 'Allure' and 'Utopia' sweet corn in Bristol, Co., MA last week. Both varieties should have some resistance to common rust, and 'Allure' should also have some resistance to NCLB. These two diseases have become common in southeastern MA over the last few years. It was fairly dry there this season, so it is not a surprise that reports did not come in until later in the season. While it is too late to control these diseases in the field now, take stock of which varieties had the worst symptoms and avoid growing those again if possible. There are several races of *E. turcicum*, and different corn varieties are susceptible to different races. Race 0 is believed to be most prevalent in the US at the mo-



Rusty pustules of common rust (above) and elongated, boat-shaped lesions of NCLB (below). Photos: R.L. Wick

ment, but Race 1 is expected to increase in prevalence. Resistant corn hybrids are available for both common rust and NCLB but vary in their degree of resistance. Consult your seed company representative for more information. Other control strategies for both diseases include plowing under crop debris, or in no-till systems, following a 2-year rotation and planting in ways to encourage air flow.

IDENTIFYING DISEASES OF CARROTS

Carrot are becoming a more important crop for many growers, as folks look to increase winter sales in expanding year-round markets. Carrots can be affected by many bacteria, fungi and nematodes in the field and in storage. Foliar diseases may cause lower yields due to loss of photosynthetic ability, difficulty in harvest if the tops are weakened, and lower marketability if the carrots cannot be sold in bunches. Root diseases can lower yields of fresh eating carrots and can spread in storage, drastically reducing yields sold through later markets. Root diseases are caused by soil-dwelling organisms and therefore their incidence may vary considerably from farm to farm or even from one side of the field to the other. Proper disease identification will help you to prevent future outbreaks by adjusting crop rotations accordingly, and prevent moving infested soil from field to field. Some of the major carrot disease symptoms are described below. If you are noticing foliar or root symptoms like those described, send a sample to your state diagnostic lab to confirm, and take steps to protect current and future crops. See the UMass Diagnostic Lab website for their sample submission instructions.

Alternaria leaf blight. Photo: R. L. Wick

Bacterial leaf blight. Photo: R. L. Wick

Foliar Diseases

Alternaria Leaf Blight (*Alternaria dauci* and *A. radicina*) symptoms first appear along leaflet margins as greenish-brown, water-soaked lesions which enlarge, turn brown to black, and often develop a yellow halo. Older leaves are more susceptible to infection. When about 40% of the leaf is infected, the leaf yellows, collapses, and dies. Lesions on petioles are also common and can quickly kill entire leaves. *A. radicina* can also produce a dry, mealy, black decay known as black rot on carrot roots held in storage.

Bacterial Leaf Blight (*Xanthomonas campestris* pv. *carotae*) symptoms appear primarily on leaf margins as small, yellow, angular leaf spots which expand, turn brown to black with a yellow halo, and become dry and brittle. Leaflets may become distorted and curled. Symptoms can extend into petioles where they produce a yellow-brown, gummy exudate, and may also occur on flower stalks. Infected umbels can be completely blighted and seed infection can occur—use treated seed to prevent introducing this disease.

Root Diseases

Root Knot Nematode (*Meloidagyne hapla*) forms galls or root thickenings of various sizes and shapes. Growth of infected carrots is patchy and uneven and severely infected carrots exhibit forking, galls, excessive hairiness, and stubby roots. Where soil populations of *M. hapla* are high, symptoms include stunted plants, uneven stands, premature leaf death, and branches and swellings on both lateral and tap roots. Marketable yield is reduced by deformities, size reduction, branches, and knobs. *M. hapla* persists in the soil and has a very wide host range so rotation can be difficult, but grasses are non-hosts so small grains and corn and bean can be grown in rotations to reduce the size of the population.

Black Root Rot (*Thielaviopsis basicola*) occurs primarily in storage when conditions are not ideal and temperature and humidity are too high. The fungus causes superficial, irregular black lesions which occur in a random pattern. The discoloration, caused by masses of dark brown to black chlamydospores, is limited to the skin. The pathogen rapidly invades wounded tissue and is favored by long post-harvest periods without cooling, so careful harvest and immediate cooling (< 41°F) and storage can minimize disease impact.

White Mold (*Sclerotinia sclerotiorum*) affects many vegetable crops but carrots are particularly susceptible, especially late in the season and during storage. The fungus may be present in soil, storage areas, or containers. Symptoms include characteristic white mycelial growth and hard, black sclerotia (long-term survival structures), which may be seen on the crown of infected carrots. In storage, the disease is characterized by a soft, watery rot with fluffy white mycelia and black sclerotia present. Sclerotia can persist in soil for many years and the fungus has a very wide host

range, making this disease difficult to manage. Grasses and onions are non-hosts that can be used in rotations, and a commercially available biocontrol product, Contans, has been shown to be effective in parasitizing overwintering sclerotia. Contans should be incorporated into infested soils in the fall to give the biocontrol fungus time to infect the sclerotia.

Cavity Spot and Root Dieback (*Pythium* spp.). Infections from *Pythium* spp. can occur during early root development and are favored by moist soil conditions. Root dieback symptoms appear as rusty-brown lateral root formation, or forking and stunting; symptoms that can be easily confused with damage from nematodes, soil compaction or soil drainage problems. Cavity spot often shows up later in the season near harvest. Horizontal, sunken lesions varying in size from 1 to 10 mm appear on the surface of the root and can provide an ingress for secondary fungal or bacterial infections.

Crown Rot (*Rhizoctonia carotae*). Early symptoms are horizontal dark brown lesions around the root crown. As the crop matures the tops may die in patches in the field and as the disease progresses lesions join to form large, deep, rotten areas on the crown of the root. *R. carotae* can also cause crater rot and violet root rot, but these diseases are less common in MA. Crown rot is favored by moist conditions, so planting on raised beds and/or in well-drained fields can minimize disease incidence.

Scab (*Streptomyces* spp.) can cause both raised and sunken, dry, corky lesions on the carrot root. This disease is less common and when it does occur symptoms are rarely severe enough to cause major losses in yield or marketability. Avoid planting carrots in alkaline soils, which are known to favor the incidence of scab, or in potato fields with high incidence of scab, as the disease can be caused by the same organism in carrots.

Bacterial Soft Rot (*Pectobacterium carotovorum* subsp. *carotovorum*) is a common disease in storage where it infects roots that previously wounded or diseased. It occurs in the field only rarely, under extremely wet soil conditions. Symptoms start as small water-soaked lesions that quickly spread and cause affected areas to become mushy, though the skin may remain intact over the liquefied flesh underneath. To avoid problems in storage, avoid wounding carrots during harvest and washing and maintain proper temperature (32-34F) and humidity (90-100%) for storage.

To avoid losses in storage, try to achieve optimum storage conditions of 32 to 34°F (essential to minimize decay and sprouting during storage) and high relative humidity (required to prevent desiccation and loss of crispness). Mature topped carrots can be stored for 7 to 9 months at 32 °F with 98 to 100% RH. Those ideal conditions are difficult to achieve and topped carrots are often successfully stored for 5 to 6 months at 32 to 41 °F with 90 to 95% RH. Prompt cooling of harvested carrots (< 41°F) also helps maintain crispiness. Carrots produce very little ethylene (a byproduct of respiration) themselves but are sensitive to ethylene produced by other crops in storage and exposure causes production of the bitter compound isocoumarin, which is greatest in the peel—peeled carrots are not affected. Unless outside temperatures are very low or very high, ventilation is an inexpensive method of reducing ethylene levels. Ethylene can also be absorbed on commercially available potassium permanganate pellets.

Root knot nematode. Photo: R. L. Wick

Black root rot. Photo: R. L. Wick

White mold. Photo: W. Brown

Cavity spot. Photo: S. Livingston

Scab. Photo: R. L. Wick

-Written by Susan B. Scheufele, UMass Extension

CLEANING AND DISINFECTING THE GREENHOUSE

If you have had re-occurring problems with diseases such as damping off or insects such as fungus gnats, perhaps your greenhouse and potting areas need a good cleaning. Vegetable growers are now done using their greenhouses for fall transplants, and if they are not being used to cure root crops, now is a good time to clean the houses well before next season's big rush. Some growers wait until the week before opening a greenhouse before cleaning debris from the previous growing season, but it is better to clean up as early as possible to eliminate over-wintering sites for pests and to reduce their populations prior to the spring growing season—pests are much easier to prevent than to cure.

Cleaning. Cleaning involves physically removing weeds, debris and soil, and is the first step prior to disinfecting greenhouse surfaces and equipment. Some growers use a "Shop Vac" on concrete and covered floors to remove debris. Soil and organic residues from plants and growing media reduce the effectiveness of disinfectants. There are some cleaners specifically developed for greenhouse use, for example "Strip-It", which is a combination of sulfuric acid and wetting agents formulated to remove algae, dirt and hard water deposits. High pressure power washing with soap and water is also an option. Soap is especially useful in removing greasy deposits, however, thorough rinsing is needed because soap residues can inactivate certain disinfectants such as the Q-salts.

Begin at the top and work your way down. Sweep down walls and internal structures and clean the floor of soil, organic matter and weeds. Disease causing organisms can be lodged on rafters, window ledges, tops of overhead piping and folds in plastic. Extra care is needed to clean these areas as well as textured surfaces such as concrete and wood, which can hide many kinds of pests.

Install physical weed mat barriers if floors are bare dirt or gravel and repair existing mats to prevent weeds and make it easier to manage algae. Avoid using stone on top of the weed mat, as soil and moisture will then get trapped, creating an ideal environment for weeds, diseases, insects and algae.

Irrigation filters should also be cleaned to remove dirt and microbial buildup (or biofilm) at the end of the growing season. Growers often use products labeled for cleaning irrigation systems such as sulfuric acid plus wetting agent (e.g. Strip-It) or sanitizers containing hydrogen peroxide and peroxyacetic acid (e.g. SaniDate) to flush out slime and debris.

Disinfecting. Many pathogens can be managed to some degree, by the use of disinfectants. For example, dust particles from fallen growing medium or pots can contain bacteria or fungi such as Rhizoctonia or Pythium. Disinfectants will help control these pathogens. In addition to plant pathogens, some disinfectants are also labeled for managing algae which is a breeding ground for fungus gnats and shore flies.

Greenhouse Benches and Work Tables. If possible, use benches made of wire or other non-porous materials such as a laminate that can be easily disinfected. Wood benches can be a source for root rot diseases and insect infestations. Algae tend to grow on the surface of the wood creating an ideal environment for fungus gnats and shore flies, and plant pathogens can grow within the wood. Plants rooting through containers into the wood will develop root rot if conditions are favorable for pathogen activity. Disinfect benches between crop cycles with one of the labeled products listed below. Keep in mind that disinfectants are not protectants—they may eradicate certain pathogens, but will have little residual activity.

A greenhouse table with a non-porous surface. Photo: T. Smith

Cleaning Containers. Plant pathogens such as Pythium, Rhizoctonia and Thielaviopsis can survive in root debris or soil particles on greenhouse surfaces. If a crop had a disease problem, then avoid re-using containers. Containers to be re-used should be washed thoroughly to remove soil particles and plant debris before being treated with a disinfectant, even if there is no evidence of disease in the crop. Debris and organic matter can protect pathogens from coming in contact with the disinfectant solution and can also reduce efficacy of certain disinfectants.

Disinfectants for Greenhouses. If possible, disinfectants should be used on a routine basis both as part of a pre-crop clean-up program and during the cropping cycle. There are several different types of disinfectants that are currently used in the greenhouse for plant pathogen and algae control listed here:

- **Quaternary ammonium chloride salts (Green-Shield®, Physan 20®, KleenGrow™)**. Q-salt products, commonly used by growers are quite stable and work well when used according to label instructions. Q-salts are labeled for fungal, bacterial and viral plant pathogens, and algae. They can be applied to floors, walls, benches, tools, pots and flats as disinfectants. Physan 20® is also labeled for use on seeds, cut flowers and plants. Carefully read and follow label instructions. Recommendations may vary according to the intended use of the product. For example, the Green-Shield® label recommends that objects to be sanitized should be soaked for 10 minutes, and walkways for an hour or more. Instructions recommend that surfaces be air-dried after treatment except for cutting tools. The label recommends soaking cutting tools for 10 minutes before use, then using the wet tool on plants. One way to do this is by having two cutting tools, one pair to use while the other is soaking. KleenGrow has higher organic tolerances and longer residual activity on hard surfaces.

  Q-salts are not protectants. They may eradicate certain pathogens, but will have little residual activity. Contact with any type of organic matter will inactivate them. Therefore, pre-clean objects to dislodge organic matter prior to application. Because it is difficult to tell when they become inactive, prepare fresh solutions frequently (twice a day if in constant use). The products tend to foam a bit when they are active. When foaming stops, it is a sign they are no longer effective. No rinsing with water is needed.

- **Hydrogen dioxide and pyeroxyacetic acid (ZeroTol® 2.0, OxiDate® 2.0, SaniDate®12.0).** Hydrogen dioxide kills bacteria, fungus, algae and their spores immediately on contact. It is labeled as a disinfectant for use on greenhouse surfaces, equipment, benches, pots, trays and tools, and for use on plants. Label recommendations state that all surfaces should be wetted thoroughly before treatment. Several precautions are noted. Hydrogen dioxide has strong oxidizing action and should not be mixed with any other pesticides or fertilizers. When applied directly to plants, phytotoxicity may occur for some crops, especially if applied above labeled rates or if plants are under stress. Hydrogen dioxide can be applied through an irrigation system. As a concentrate it is corrosive and causes eye and skin damage or irritation. Carefully read and follow label precautions. Note that OxiDate® and SaniDate are organic products. Hydrogen Peroxide, Peroxyacetic Acid and Octanoic Acid (X™-3) is a strong oxidizing agent used as an algecide on greenhouse structures and floor and is labeled for use in chemigation. Follow label rates and precautions.
- **Sodium carbonate peroxyhydrate (GreenClean Pro Granular Algaecide®)** is a granular and activated with water. Upon activation, sodium carbonate peroxhydrate breaks down into sodium carbonate and hydrogen peroxide. GreenClean is labeled for managing algae in any non-food water or surfaces. Non-target plants suffer contact burn if undiluted granules are accidentally spilled on them.
- **Chlorine bleach.** There are more stable products than bleach to use for disinfecting greenhouse surfaces. Chlorine bleach may be used for pots or flats, but is not recommended for application to walls, benches or flooring. When used properly, chlorine is an effective disinfectant and has been used for many years by growers. A solution of chlorine bleach and water is short-lived and the half-life (time required for 50 percent reduction in strength) of a chlorine solution is only two hours. After two hours, only one-half as much chlorine is present as was present at first. After four hours, only one-fourth is there, and so on. To ensure the effectiveness of chlorine solutions, it should be prepared fresh just before each use. The concentration normally used is one part of household bleach (5.25 percent sodium hypochlorite) to nine parts of water, giving a final strength of 0.5 percent. Chlorine is corrosive. Repeated use of chlorine solutions may be harmful to plastics or metals. Objects to be sanitized with chlorine require 30 minutes of soaking and then should be rinsed with water. Some would say that rinsing is not necessary. Bleach should be used in a well-ventilated area. It should also be noted that bleach is phytotoxic to some plants, such as poinsettias.
- **Alcohol (70%)** is a very effective sanitizer that acts almost immediately upon contact. It is not practical as a soaking material because of its flammability. However, it can be used as a dip or swipe treatment on knives or cutting tools. No rinsing with water is needed. Alcohol, although not used as a general disinfectant is mentioned here because it is used by growers to disinfect propagation tools.
- **OMRI-listed organicic disinfectants** include OxiDate 2.0, SaniDate 12.0 and PERpose Plus. Ethyl or isopropyl alcohol is used to disinfect tools. Organic growers should always check with their certifying organization before using any material new in their growing practices. For list of products, visit the OMRI website.

This information is supplied with the understanding that no discrimination is intended and no endorsement implied. Due to constantly changing regulations, we assume no liability for suggestions. If any information in this article is inconsistent with the label, follow the label.

Managing Algae. Algae are a diverse grouping of plants that occur in a wide range of environments. Algae growth on walks, water pipes, equipment, greenhouse coverings, on or under benches and in pots is an ongoing problem for growers. Algae form an impermeable layer on the media surface that prevents wetting of the media below and can clog irrigation misting lines, and emitters. It is a food source for insect pests like shore flies, and causes slippery walkways that can be a liability risk for workers and customers. Recent studies have shown that algae are brought into the greenhouse through water supplies and from peat in growing media. In a warm, moist environment with fertilizer, the algae flourish.

Proper water management and fertilizing can help to slow algal growth. Avoid over-watering slow-growing plants and especially crops early in the production cycle. Allow the surface of the media to dry out between watering. Avoid excessive fertilizer runoff and puddling water on floors, benches, and greenhouse surfaces. The greenhouse floor should be level and drain properly to prevent the pooling of water prior to installing a physical weed mat barrier. Algae management involves an integrated approach involving sanitation, environmental modification and frequent use of disinfectants.

-Prepared by Tina Smith, UMass Extension Educator, Greenhouse Crops and Floriculture Program. Updated 2012. For refreences and resources, see the online version of this article here.

SWEET POTATO HARVEST & STORAGE

Sweet potato acreage is steadily increasing in New England as it becomes clear that this crop can yield well, store well, and has a strong market. Many growers have started harvesting sweet potatoes, either for early markets or to add variety where other crops have come up short. Research done by Becky Sideman at UNH Extension has shown that, when possible, sweet potatoes should be dug as late as possible in the fall to maximize yields, though frost and cool soil temperatures are also a consideration—for more information, see Becky's full reports on Growing Sweet Potatoes in New Hampshire and Sweetpotato early harvest study, 2014. Once harvested, sweet potato's storage needs differ from other common New England root crops. Once harvest is completed—generally by early to mid-October—curing and storage considerations continue to be important.

Harvesting. Sweet potato roots continue to grow until the leaves are killed by frost or until soil temperatures fall consistently below 65°F, whichever comes first. Check current soil temperatures here: http://newa.cornell.edu/index.php?page=soil-temperature-map. Time of harvest is often determined by digging up a few representative plants and assessing the percentage of roots in different size classes—the crop can be harvested whenever the majority of the roots are the desired size. If a hard frost occurs the tops of the plants turn black, then it is imperative to harvest as quickly as possible regardless of root size. Chilling injury can occur if soil temperatures drop to 55°F or below. It is also important to avoid holding sweet potatoes in saturated, low-oxygen soil conditions prior to harvest, as this promotes rapid decay in storage.

Curing. Sweet potatoes are very susceptible to damage at harvest, as the roots do not have a thick protective outer layer like potato tubers do, and abrasions and wounds can lead to rot in storage. Curing immediately after harvest is recommended when sweet potatoes will be held in storage for later sales. Curing minimizes damage and loss during storage by healing harvest wounds. During the curing process, a corky periderm layer is formed below damaged areas, which prevents invasion by pathogen and limits water loss. To cure sweet potatoes, keep roots at 82°F to 86°F and high relative humidity (90-97% RH) for 4 to 7 days. Respiration rate is high during curing, so ventilation is important to remove CO_2 and replenish O_2. A greenhouse can provide good curing conditions.

A freshly harvested sweet potato is more starchy than it is sweet. During curing and storage, starches in the sweet potato are converted to sugars, improving flavor. The change in sugars is measurable within one week, but it is recommended to wait at least three weeks after harvest before consuming sweet potatoes to allow for more conversion of starches to sugars and maximum eating quality.

Storage. Sweet potatoes can maintain excellent quality for up to a year if proper storage conditions are achieved. The ideal storage conditions for sweet potato are the same as for winter squash; moderately warm (55-60°F) and 60-75% relative humidity. Like winter squash, sweet potato suffers chilling injury at temperatures below 55°F and injury increases

with lower temperatures or longer periods of exposure. Signs of chilling injury include shriveled, sunken, dark areas on the tuber surface, and blackening of tubers when cut open. 'Hardcore' is a physiological disorder cause by chilling, in which areas of the tuber become hard—the condition is not apparent in fresh roots but appears after cooking. Because chilling injury is irreversible and makes tubers unmarketable, growers should take particular care to avoid field, curing, or storage conditions that dip below 55°F.

-by R. Hazzard and updated for 2018 by S.B. Scheufele

News

Reminder to Report Crop Damages Promptly

Producers covered by a Federal Crop Insurance Policy are reminded to monitor their crops for insurable damage throughout the growing and harvesting season. If you notice damage contact your crop insurance agent within 72 hours of discovery, 15 days before harvesting begins and within 15 days after harvesting is completed on the insurance unit. Two other important reminders:

- Direct marketed crops must have a yield appraisal before they are harvested, if loss is anticipated.
- Do not destroy crop evidence that is needed to support your claim without clear direction, in writing, from the insurance adjuster.

Producers having coverage under the Noninsured Crop Disaster Assistance Program (NAP) administered by the USDA - Farm Service Agency have similar loss reporting requirements. NAP producers should contact the FSA Office that serves their farming operation to report losses.

UMass Extension works in partnership with the USDA Risk Management Agency (RMA) and various agricultural organizations to educate and inform Massachusetts producers about Federal Crop Insurance and Risk Management Programs. For more information, please visit www.rma.usda.gov *or contact UMass Extension Risk Management Specialists Paul Russell at* pmrrussell@umext.umass.edu *or Tom Smiarowski at* tsmiarowski@umext.umass.edu *or check out our website:* https://ag.umass.edu/risk-management

Northeast SARE Invites Farmer Grant Applications

The Northeast Sustainable Agriculture Research and Education (SARE) Program has released the call for applications for 2019 Farmer Grants. Proposals are due online by **Tuesday, November 27, 2018 at 11:59 p.m. E.T.** Funded projects will be announced in **late February 2019**, and projects may begin in the spring.

Northeast SARE Farmer Grants are intended for farm business owners and managers who would like to explore new sustainable production and marketing practices, often through an experiment, trial or on-farm demonstration. Reviewers look for innovation, potential for improved sustainability and results that will be useful to other farmers.

Application materials, including detailed instructions and supporting documents, are posted on the Northeast SARE website at www.northeastsare.org/FarmerGrant. Questions about the grant program should be directed to northeastsare@uvm.edu.

Farmer Grant projects must be conducted in Connecticut, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia or Washington, D.C. Awards are capped at $15,000 and projects may address the wide range of issues that affect farming in the Northeast. To search topics that SARE has previously funded, please access the national database of projects at projects.sare.org/search-projects.

Applicants must work with a technical advisor—typically a Cooperative Extension educator, Natural Resources Conservation Service staff, nonprofit organization employee, private crop consultant, veterinarian or other service provider—who provides support and advice to the farmer applicant.

Northeast SARE will host a **Farmer Grant webinar on Oct. 10 from 12:30 to 1:30 p.m.** Carol Delaney, grant program coordinator, will provide information on program eligibility, how to apply, types of projects SARE funds,

allowable expenses and more. The webinar is free. To register, visit http://go.uvm.edu/farmergrant19. To request a disability-related accommodation to participate, contact Debra Heleba at (802) 651-8335, ext. 552, by Oct. 3.

If you have questions about applying for a farmer grant in Massachusetts, contact your state Coordinator: Katie Campbell-Nelson, UMass Extension Vegetable Program, kcampbel@umass.edu or 413-545-1051.

-- Debra Heleba, NESARE Communications Specialist (Debra.Heleba@uvm.edu)

Northeast SARE, which is funded by the U.S. Department of Agriculture's National Institute of Food and Agriculture, offers competitive grants and sustainable agriculture education.

Events

Cover Crop Workshop for Vegetable Growers

Get ready to weatherproof your soils from the droughts to deluges! Join us for a full day focused on cover crops, utiliznig both conventional and no-till methods. Suitable for farmers and field staff interested in planting and managing cover crop monocultures and mixtures to address a variety of resource concerns. Includes an afternoon field visit to Davidian Brothers Farm in Northborough, MA. UMass Extension Educator Katie Campbell-Nelson will present her on-farm research on using cover crops to grow your own nitrogen.

When: Thursday, October 11, 2018, 9am-3pm

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

Registration: http://worcesterconservation.org/workshops/

Northeast Greenhouse Conference and Expo

The biennial Northeast Greenhouse Conference & Expo is co-sponsored by New England Floriculture, Inc. - a group of grower representatives from the Northeast, augmented by University and Cooperative Extension staff in each state who specialize in greenhouse crops and management. Don't miss this great opportunity to learn, share and connect with other industry professionals! Pesticide credits are available for this event. For a list of presentations and pesticide credit information, visit the website linked above.

When: November 7 & 8, 2018

Where: Boxboro Regency Hotel, 242 Adams Pl., Boxborough, MA 01719

Registration: https://www.negreenhouse.org/registration.html

High Tunnel Production Conference

Save the date! This conference is for high tunnel growers and agricultural service providers of all experience levels. There will be plenty of opportunities to share expertise and learn from one another. Additional details, and registration information, are coming soon. UMass Extension Educator Katie Campbell-Nelson will be there offering one-on-one support to interpret UMass soil tests for high tunnels.

When: December 3-4, 2018

Where: Manchester Downtown Hotel, 700 Elm St., Manchester, NH 03101

THANK YOU TO OUR SPONSORS:

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