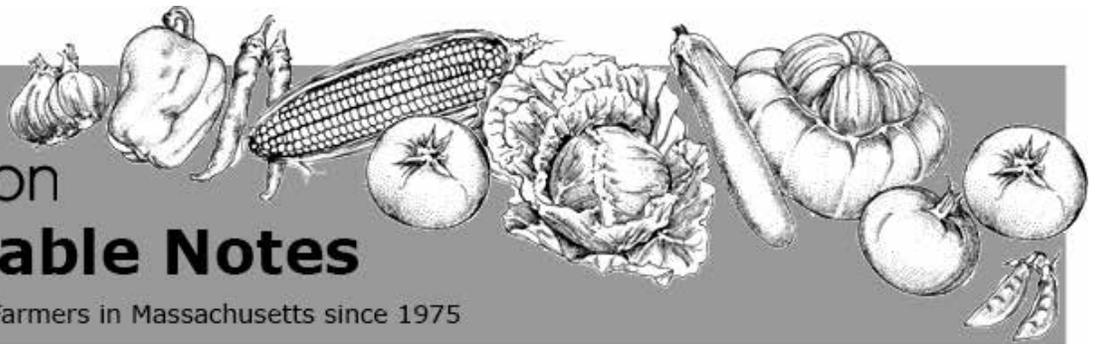




UMass  
Extension

# Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



Volume 32, Number 24

September 3, 2020

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*A true sign of fall: blue hubbards emerging like small whales from the sea of squash foliage at Ward's Berry Farm in Sharon, MA.  
Photo: S.B. Scheufele*

roots and a dry rot may appear in storage. *Phoma lingam* can survive for up to four years in seed and three years in infected crop debris. The pathogen infects seedlings, and forms tiny structures called pycnidia. Abundant amounts of spores are exuded from pycnidia in long coils and are splashed to nearby plants to initiate new infections. The disease is favored by wet, rainy weather. To manage black leg: Avoid working in fields when they are wet; prompt-

## **CROP CONDITIONS**

Fall crops are continuing to trickle (or pour?) in—potatoes, winter squash, sweet potatoes, root crops—alongside tomatoes, peppers, and zukes, cukes, and summer squash from the latest cucurbit plantings. The storm this weekend brought much-needed rain to some parts of the state, potentially helping to germinate fast-growing direct seeded crops like salad greens, as well as cover crops. If you're thinking about what and when to plant for fall cover crops, VT Extension held a webinar last week on this topic and it is now available here, <http://www.uvm.edu/vtvegandberry/Webinars2020.html>, along with talks on other interesting topics. Despite the relief some places got with the recent rain, the drought continues to have serious impacts on many farms in the state. MDAR is encouraging farms struggling with drought to apply to the [Food Security Infrastructure Grant Program](#)—this versatile grant program is designed to support the MA food system by providing funds for a wide range of infrastructure projects on farms, including drought mitigation infrastructure. Application deadline is coming up on September 15.

With water, or the lack of it, on everyone's mind, we seem to have planned our Agricultural Water Twilight Series at an appropriate time. The first webinar in the series is coming up soon in two weeks on September 16. Join us to learn about water use regulations in New England, moisture monitoring, and irrigation efficiency, and to hear from Tim Wilcox from Kitchen Garden Farm in Sunderland, MA about their experience with tile drainage, wells, and irrigation equipment. See the Events section of this issue to register and for information on the other webinars in the series. We hope to see and hear from many of you there!

## **PEST ALERTS**

### **Brassicas**

**Black leg** is being reported on brassicas in the region, causing dark-purple to black lesions on stems. Diseased plants often wilt, lodge, and die. On root crops, symptoms occur in the form of cankers on the fleshy



*Black leg on kale.  
Photo: C. Ocamb, OSU*

ly incorporate plant debris after harvest; use 3- to 4-year crop rotation; start with certified, disease-free seed; remove and destroy infected seedlings in seedbeds; improve soil drainage and air circulation; and eliminate brassica weeds.

**Club root** has been observed on a few farms across the region, causing infected roots to enlarge and form galls. On crops with fleshy roots such as radish and turnip, galls may form on both the taproot and secondary roots. Crops with fibrous roots such as cabbage and broccoli produce club-like, spindle-shaped swellings on individual roots. This mysterious soil-dwelling organism is not widespread, so care should be taken not to spread the disease around by moving infested soil. Symptoms will be much reduced and plants can survive infection if pH is maintained at or above 7.0. Some crops and cultivars are more resistant than others. There are some labeled fungicides with efficacy that can be applied to transplants and/or soil including: Blocker (PCNB), Omega, and Ranman.



*Club root on broccoli.  
Photo: R. L. Wick*

Foliar diseases like **Alternaria leaf spot**, **black rot**, and **downy mildew** continue to spread through brassica plantings, spurred by the recent rain and dew. See [last week's Veg Notes issue](#) for fungicide recommendations for Alternaria.

### Cucurbits

**Downy mildew**, which has been present in MA since early August, is continuing to spread across more Northern parts of New England in cucumbers. Downy mildew has been reported on squash and pumpkins in the Southeast and Great Lakes region, putting squash and pumpkins that still have a lot of healthy foliage at risk in MA. If these crops are still more than a week away from harvest, a spray may still be warranted.



*Bacterial leaf spot of pepper. Photo: R. L. Wick*

**Fruit rots** on harvested squash and pumpkins are being reported—see article this issue for descriptions and management tips. One disease that seems to occur widely year after year is **black rot**. Our colleague from Cornell, Meg McGrath, suggests that spraying can be effective in reducing severity of the foliar phase, known as **gummy stem blight**, as well as the fruit rot stage, known as black rot. Controlling powdery mildew—either with chemicals or resistant varieties—also helps control gummy stem blight. Materials that will control both diseases include: Aprovia Top, Inspire Super, Luna Experience, Miravis Prime, Proline, Rhyme. Take care to check labels for restrictions on the number of sprays allowed, resistance rotations, and more. If you need help dialing in your spray program send us an email at [umassveg@umass.edu](mailto:umassveg@umass.edu) or give us a call at 413-577-3976.

### Solanaceous

**Late blight** : We've heard very little about late blight this season. Until last week, the disease had not been reported north of North Carolina, but last week it was reported in western NY. There is very little threat of the disease spreading to our region from there this season.

**Bacterial leaf spot** was reported this week in MA on several varieties of sweet and hot peppers. The disease can also affect tomato. At least six strains of the bacteria exist, and pepper varieties vary in their tolerance to the disease, with some being quite susceptible and others being wholly resistant to certain strains, so symptoms can appear differently between varieties in one field. On leaves, the spots are generally brown, circular, and watersoaked. When conditions are optimal for disease development, spots can coalesce to form long, dark streaks. A general yellowing may appear on foliage with many lesions giving the plants a scorched appearance, and the plants may exhibit severe epinasty. On pepper, ripe fruit is affected and lesions may be scab-like or sunken. Copper is the best chemical control option. Bacterial diseases can be spread very efficiently by air-blast sprayers.

### Sweet Corn

Last week's storm brought up flushes of CEW and FAW into some areas of MA, putting most farms on a 4- to 5-day spray schedule based on CEW trap counts.

**Table 1. Sweetcorn pest trap captures for August 28 - September 3, 2020**

Location	GDD (base 50°F)	ECB NY	ECB IA	FAW	CEW	CEW Spray Interval
<b>Western MA</b>						
Sheffield	-	1	0	N/A	-	-
Southwick	2476	2	0	12	12	4 days
Whately	2480	1	0	N/A	3	6 days
<b>Central MA</b>						
Bolton	2346	0	0	3	0	no spray
Leominster	2310	-	-	-	-	-
Spencer	2286	0	0	5	5	5 days
<b>Eastern MA</b>						
Ipswich	2160	0	0	3	0	
Concord	2295	0	0	5	5	5 days
Millis	2533	0	2	N/A	8	4 days
Sharon		-	-	N/A	-	-
Seekonk	2605	0	0	20	15	4 days
Swansea		3	0	3	4	5 days
- no numbers reported for this trap						
N/A this site does not trap for this pest						
*GDDs are reported from the nearest weather station to the trapping site						

**Table 2. Spray intervals for corn earworm based on Heliothis net trap captures**

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	no spray
0.2 - 0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 - 7	5 days
1 - 13	7 - 91	4 days
Over 13	Over 91	3 days

**CONTACT US:**

Contact the UMass Extension Vegetable Program with your farm-related questions, any time of the year. We always do our best to respond to all inquiries. **Office phone:** (413) 577-3976 *We are currently working remotely but checking these messages daily, so please leave us a message!* **Email:** [umassveg@umass.edu](mailto:umassveg@umass.edu)

**Home Gardeners:** Please contact the UMass GreenInfo Help Line with home gardening and homesteading questions, at [greeninfo@umext.umass.edu](mailto:greeninfo@umext.umass.edu).

**The [UMass Plant Diagnostic Lab](#) and the [UMass Soil & Tissue Testing Lab](#) are both now open.**

## WHEN TO STOP SPRAYING

*--Written by Dan Egel, Extension Plant Pathologist, Purdue University.  
Published in Purdue Vegetable Crops Hotline, Issue 681, August 27, 2020*

This is an update of the article *When to Stop Spraying Fungicide* published in [Purdue Vegetable Crops Hotline] issue 666 on Sep. 12, 2019.

Many vegetable growers are closing in on the final harvest. Several growers have asked me about fungicide applications late in the season. In this article, I want to address when to stop. To limit the scope of this article, I will concentrate on tomato, cantaloupe and watermelon crops. These are crops where the fruit is consumed, not the foliage.

For most vegetable crops, there is no need to apply a fungicide shortly before the final harvest. Foliage needs to be protected to preserve fruit quality. A plant with reduced foliage will produce a smaller fruit and/or fruit that have fewer sugars and other desirable compounds. I don't know how much foliage needs to be reduced to affect fruit size or quality. However, I do know that for many foliar diseases, symptoms will not be obvious for a week to 10 days. It will take even longer for the foliar disease to significantly reduce foliage. Therefore, for many diseases, it doesn't make much sense to spend good money for a fungicide on a crop that is 2 to 3 weeks before the final harvest.

Examples of diseases that affect foliage, but not fruit directly include: powdery mildew of cantaloupe or tomato, early blight of tomato, Septoria leaf blight of tomato, gummy stem blight of watermelon or cantaloupe, Alternaria leaf blight of cantaloupe and downy mildew of cucurbits. With some rare exceptions, these diseases reduce yield or fruit quality by affecting foliage, not by attacking fruit directly. Alternaria leaf blight of cantaloupe and downy mildew of cucurbits affect leaves only—not even the stems.

Diseases that affect fruit directly may need fungicide applications closer to harvest. A disease that can cause a lesion

directly on a fruit can ruin the marketability of the fruit or even cause the fruit to begin to rot in transit. However, most fungicides will remain active in or on the plant for 6 to 7 days even during the most conducive weather. Therefore, an application of a fungicide to protect fruit from direct infection from disease is probably not necessary within 7 days of the final harvest.

Examples of diseases that may affect fruit directly include:

- Anthracnose of watermelon: This disease can cause loss of foliage, but also lesions on the fruit. An infection on the day before harvest could, theoretically, cause a lesion in transit. During weather that is conducive to disease, it makes sense to keep a fungicide on the plant surfaces during the last several days before harvest. Growers that are using the MELCAST system will be able better judge when the weather is conducive for anthracnose.
- Phytophthora blight: This disease affects foliage as well as fruit. As with anthracnose above, a lesion that develops before harvest could start to rot the fruit in transit. Specialized fungicides applied 7 to 10 days before final harvest should protect the fruit.
- Bacterial spot or speck of tomato: Lesions of these diseases that occur on the fruit can ruin marketability. Applications of a copper product should help to protect the fruit during the last week or so. Warm, wet weather shortens the disease cycle and increases the likelihood of infection.
- Bacterial spot of pumpkin: This disease can cause pimple-like lesions that may ruin marketability. However, the disease affects fruit during the first 14 days or so after pollination. After this period, infection is much less likely due to changes in fruit maturity. Therefore, copper applications during the last weeks before harvest make little sense.

Another factor to consider in late fungicide applications is the amount of the disease in the field. Fungicides work to protect green healthy tissue. Fungicides will not cause lesions to disappear. Therefore, when deciding whether to make a late season fungicide application, realize that one is attempting to protect the green, healthy portions of the field.

**Pre-Harvest Interval (PHI):** When applying fungicides close to the final harvest or any harvest keep in mind the PHI. Often growers will need to change what fungicide is used when vegetables reach harvest stage. For example, cantaloupe growers may decide to use a fungicide with the active ingredient mancozeb PHI 5 days early in the season (examples include, Dithane®, Manzate®, Penncozeb®, Roper®). As harvest grows near, however, a fungicide with the active ingredient chlorothalonil might be used since it has a 0-day PHI (examples of products with chlorothalonil include Bravo®, Equus®, Initiate®). The PHI for each crop can be found in the fungicide label with the appropriate crop grouping.

Finally, one should be realistic about applying fungicides late in the season. Which fruit have a realistic chance of maturing before the season is over. For many growers, a late season application of a fungicide is not useful.

## **FRUIT ROTS OF PUMPKINS & WINTER SQUASH**

Many types of pathogens—fungi, bacteria, and viruses—can cause fruit rots, spots, and other abnormalities in pumpkins and winter squash that render them unmarketable. The most common rots, which happen to be caused by fungi, will be discussed below. Other less common fruit rots include bacterial leaf spot (*Xanthomonas campestris* pv. *cucurbitae*) and angular leaf spot (*Pseudomonas syringae* pv. *lachrymans*), both caused by bacteria, and other fungal diseases such as Alternaria rot (*Alternaria alternata*), blue mold (*Penicillium* spp.), crater rot (*Myrothecium roridum*), cottony leak (*Pythium* spp.), and Rhizopus soft rot (*Rhizopus stolonifera*). Viral diseases usually cause distortions of fruit and/or discolorations or ring-spots rather than fruit spots and rotting. Most of these fruit-rotting pathogens also affect the foliage; therefore controlling the disease on the leaves can reduce the amount of inoculum present to infect fruit later in the season. For descriptions of foliar symptoms and tips for managing these diseases on foliage see [the July 3, 2019 issue of Veg Notes](#), and for chemical recommendations see the pumpkin and squash disease section of the [New England Vegetable Management Guide](#).

**Phytophthora Blight (*Phytophthora capsici*, an oomycete pathogen):** This is perhaps the most serious fruit rot of pumpkins and winter squash in wet years. Infection with *P. capsici* begins as a water-soaked or depressed spot, most often occurring where the fruit contacts the soil, since the pathogen comes from the soil. As the rot develops, a mass of powdery white sporangia will develop in the water-soaked spot and will continue to spread, eventually covering the entire fruit. The pathogen survives in the soil for many years—the exact duration is not known, but a reasonable estimate is 8-10

years. Disease can develop and spread rapidly when soil moisture is high and temperatures are between 80-90°F. Entire fields may be destroyed very quickly.

**Tips for Managing Phytophthora Blight:** Manage soil moisture by sub-soiling, avoiding over-irrigating, selecting well-drained fields, and avoiding areas of fields that do not drain well. Destroying diseased areas at the start of an outbreak can be effective in slowing the spread of disease, taking care to thoroughly clean equipment afterward to avoid spreading the pathogen to other parts of your farm. Planting pumpkins into cover crop mulch (e.g. no-till) or following the biofumigant cover crop ‘Caliente’ mustard has been shown to reduce severity of outbreaks in research trials. Pumpkins with hard, gourd-like rinds are less susceptible to Phytophthora blight: ‘Lil’ Ironsides’, ‘Apprentice,’ ‘IronMan,’ ‘Rockafellow,’ and ‘CannonBall’ have been reported as moderately-resistant, and ‘IronMan,’ ‘CannonBall,’ and ‘Rockafellow’ also have resistance to powdery mildew. Newer oomycete-specific fungicides can be effective in reducing severity of Phytophthora blight in squash and other hosts such as peppers and tomatoes.



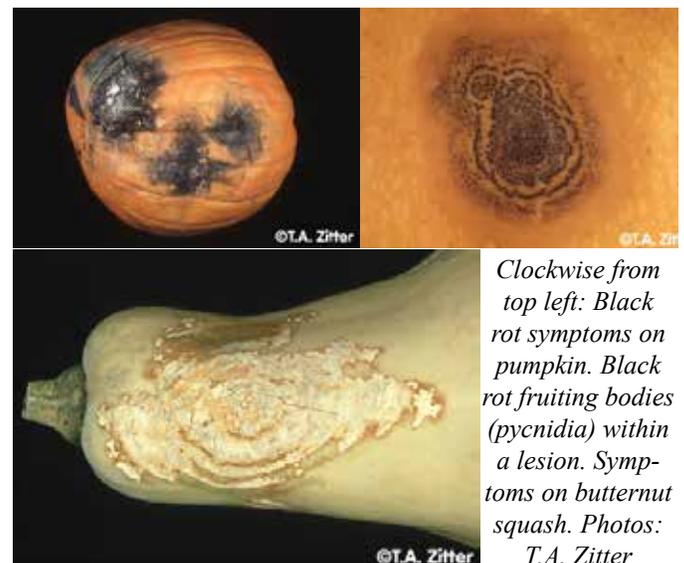
Early *Phytophthora* lesion (left, Photo: M.T. McGrath) and more advanced rot, showing sporulation (above, Photo: T.A. Zitter).



*Fusarium* on pumpkin. Photos: T.A. Zitter

***Fusarium* Fruit Rot (*Fusarium solani* f.sp. *cucurbitae*):**

*Fusarium* is another soil-borne pathogen that attacks squash and pumpkin fruits at the soil line. Surfaces of fruit that are in contact with the soil develop tan to brown, firm, dry, sunken lesions which may occur in concentric rings. These lesions will remain firm unless invaded by secondary fungi or bacteria. Severity of infection varies with soil moisture and the age of the rind when infection occurs. *Fusarium* can survive in seed but does not affect the germination or viability of the seed. *Fusarium* produces abundant overwintering structures (chlamydo-spores) that survive in the soil, but these only persist for 2-3 years. Cultivars vary in their resistance, with larger pumpkins generally being more susceptible.



Clockwise from top left: Black rot symptoms on pumpkin. Black rot fruiting bodies (pycnidia) within a lesion. Symptoms on butternut squash. Photos: T.A. Zitter

**Black Rot (*Didymella bryoniae*):** This pathogen can also infect pumpkin and squash foliage and stems; it is called black rot when it infects fruit, and gummy stem blight when it infects other plant parts. On fruit, this pathogen produces a distinctive black decay. Initially, a brown to pink, water-soaked area develops, in which numerous, black fruiting bodies (pycnidia) are embedded. Black rot on butternut may appear as a superficial, hardened, tan to white area which can develop concentric rings. Large Halloween pumpkins are more susceptible to black rot than smaller pie types. The pathogen is soil- and seed-borne and can overwinter in infected crop debris as dormant mycelium or chlamydo-spores. Wounding is not required for disease initiation, but wounding by striped cucumber beetles, aphid feeding, and powdery mildew infection all lead to increased susceptibility.

**Anthracnose (*Colletotrichum orbiculare*):** Cucurbit anthracnose is common on the fruit and foliage of watermelons, squash, melons, and cucumbers in humid



Sunken lesions on kabocha squash, caused by anthracnose. Photo: K. Campbell-Nelson

environmental conditions. Young fruit may turn black and die if their pedicels are infected, while older fruit develop circular, noticeably sunken, dark-green to black lesions which may produce a salmon-colored exudate under moist conditions. In addition to the lesions, infected fruit may have a bitter or off-taste. Infected fruits can deteriorate quickly due to the invasion of secondary rot organisms. *C. orbiculare* can be seed-borne and also survives between crops in infected crop debris, volunteer plants, and weeds in the cucurbit family and is spread by splashing water, workers, and tools in warm, humid weather.

**Scab (*Cladosporium cucumerinum*):** Scab can affect all parts of cucurbit plants, but is a concern primarily because of the disfiguring scabby lesions that develop on fruit. The disease is favored by heavy fog, heavy dews, or light rains, and temperatures at or below 70°F. The spores are produced in long chains and are easily dislodged and spread long distances by wind. On foliage, the first sign of the disease is pale-green, water-soaked lesions which turn gray and become angular as they are contained by leaf veins. On fruit, spots first appear as small sunken areas which can be mistaken for insect injury. The spots may ooze a sticky liquid and become crater-like as they darken with age. Dark green, velvety layers of spores may appear in the cavities and secondary soft-rotting bacteria can invade. Severity of symptoms varies with the age of the fruit when it becomes infected. *C. cucumerinum* overwinters in infected crop debris and soil, and may also be seed-borne. Spores produced in the spring can infect in as little as 9 hours, produce spots within 3 days, and produce a new crop of spores within 4 days.



*Scab on pumpkin. Photo: T.A. Zitter*

**Plectosporium Blight (*Plectosporium tabacinum*):** Plectosporium blight affects many plant parts but is most damaging when it affects cucurbit fruit. Pumpkins, yellow squash, and zucchini are the most susceptible. Lens to diamond shaped, white to tan, lesions occur on stems, leaf veins, petioles, and peduncles, while fruit lesions are more rounded. Severe stem and petiole infections cause leaves to become brittle and can result in death of leaves and defoliation. On fruit, the pathogen causes white, tan, or silvery russetting; individual lesions can coalesce to form a continuous scabby layer. Plectosporium blight is favored by wet weather; in wet years, crop losses in no-spray and low-spray fields can range from 50 to 100%. No resistant cultivar of pumpkins has been reported and it is not known to be seed-borne.



*Plectosporium on pumpkin. Photo: T.A. Zitter*

### Management of Fungal Fruit Rots:

- Start with disease-free seed or use fungicide-treated seed.
- Do not save your own seed if disease is present in the field.
- Select well-drained fields with good air circulation to promote rapid drying of foliage and fruit.
- Rotate out of cucurbits for 2 or more years.
- Fungicide sprays can reduce diseases which start in the foliage and then splash on the fruit e.g. Plectosporium, scab, anthracnose.
- Spraying copper can reduce infection of fruit by the foliar diseases angular leaf spot and bacterial leaf spot.
- Destroy and plow crop residues promptly after harvest to prevent their spreading and hasten their breakdown in the soil.
- Controlling powdery mildew can significantly reduce black rot infection of pumpkins. For recommendations for chemical control of powdery mildew, see the [June 11, 2020 issue of Veg Notes](#).
- Avoid chilling injury to winter squash and pumpkins in storage, as this can allow for spread of some diseases in storage. Store fruit at 50-55°F and ~60% relative humidity. For information on curing and storage conditions for pumpkins and winter squash, see [last week's issue of Veg Notes](#).

—Written by M. Bess Dicklow, UMass Plant Diagnostic Lab (retired)

## **SWEET POTATO HARVEST & STORAGE**

Temperatures are dropping, the first leaves are starting to turn color, and farmers are starting to pull the first sweet potatoes of the season out of the ground. Sweet potatoes can be harvested whenever they reach a marketable size, but if you are looking to maximize yields, they should be dug as late as possible in the fall, according to research done by Becky Sideman at UNH Extension. While vines can tolerate a light frost, the roots should come out before a hard freeze sets in. For more information on Becky's research, including a list of varieties trialed in New Hampshire, see the full reports: [Growing Sweet Potatoes in New Hampshire](#) and [Sweet potato early harvest study, 2014](#). Sweet potatoes require different storage conditions than other common New England root crops. Once harvest is completed—generally by early to mid-October—curing and storage considerations continue to be important.



*Sweet potatoes are coming in now! Photo: R. Santizo*

**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. At that point, it is imperative to harvest as quickly as possible regardless of root size. Chilling injury can occur if soil temperatures drop below 55°F. 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. Take care when harvesting. Unlike tubers such as white potatoes, which form thickened, protective skins that bind tightly to the underlying tissue, sweet potatoes have thin skins that can be easily damaged by equipment or rough handling.

**Curing.** Any abrasions or wounds created at harvest 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 pathogens and limits water loss. To cure sweet potatoes, keep roots at 82-86°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<sub>2</sub> and replenish O<sub>2</sub>. 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 caused 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.

*--Written by R. Hazzard, UMass Vegetable Program (retired) and updated for 2020 by L. McKeag*

# CALCIUM AND BORON DEFICIENCIES IN BRASSICA CROPS

--Written by Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)  
Published in the University of Delaware Weekly Crop Update, Volume 28, Issue 23, August 21, 2020

## Calcium Deficiency

Calcium deficiency is most commonly seen as tipburn of cauliflower, cabbage, and Brussels sprouts. Chinese cabbage (Napa cabbage) is also susceptible to tipburn. This problem can cause severe economic losses. Tipburn is a breakdown of plant tissue inside the head of cabbage and Chinese cabbage, individual sprouts in Brussels sprouts, and on the inner wrapper leaves of cauliflower. It is a physiological disorder which is associated with an inadequate supply of calcium in the affected leaves, causing a collapse of the tissue and death of the cells. Calcium deficiency may occur where the soil calcium is low or where there is an imbalance of nutrients in the soil along with certain weather and soil nutrient conditions, such as high humidity, low soil moisture, high potash or high nitrogen all of which can reduce calcium availability. Secondary rot caused by bacteria can follow tipburn and heads of cauliflower can be severely affected. Some cabbage and cauliflower cultivars are relatively free of tipburn problems. Green cabbage varieties with good resistance to tipburn include Blue Vantage, Bobcat, Cecile, Emblem, Platinum Dynasty, Quick Start, Royal Vantage, Solid Blue 780, Superstar, Thunderhead, Vantage Point and Viceroy. Red cabbage is less susceptible to tipburn. Check with your seed supplier for tipburn ratings for other varieties.



Severe tip burn in cabbage. Photo: D. Langston, Univ. of GA, Bugwood.org

Controlling tipburn starts with managing liming so that soil pH is above 6.0. Limit ammonium forms of nitrogen, and ensure an adequate and even supply of water. Adjust planting date so that head maturation occurs during cooler temperatures. Plant a cultivar that is less susceptible to the disorder. In general, calcium foliar sprays have not been shown to be effective for controlling tipburn incidence.

## Boron Deficiency

Cole crops have a high boron requirement. Symptoms of boron deficiency vary with the cole crop. Cabbage heads may simply be small and yellow. Most cole crops develop cracked and corky stems, petioles and midribs. The stems of broccoli, cabbage and cauliflower can be hollow and are sometimes discolored. Cauliflower curds become brown and leaves may roll and curl. It is important to note that cole crops are also sensitive to boron toxicity if boron is over-applied. Toxicity symptoms appear as scorching on the margins of older leaves.



Boron deficiency in broccoli causing hollow stem. Photo: G. Holmes, CA Polytechnic State Univ. at San Luis Obispo, Bugwood.org

It is recommended in broccoli and kale to apply 1.5-3 pounds of boron (B) per acre in mixed fertilizer prior to planting. In Brussels sprouts, cabbage, collards and cauliflower, boron and molybdenum are recommended. Apply 1.5-3 pounds of boron (B) per acre and 0.2 pound molybdenum (Mo) applied as 0.5 pound sodium molybdate per acre with broadcast fertilizer. Boron may also be applied as a foliar treatment to cole crops if soil applications were not made. The recommended rate is 0.2-0.3 lb/acre of actual boron (1.0 to 1.5 lbs of Solubor 20.5%) in sufficient water (30 or more gallons) for coverage. Apply foliar boron prior to heading of cole crops.

## NEWS

### URBAN AGRICULTURE SURVEY

**What do you need from your local Cooperative Extension?** UMass Extension is collaborating with land-grant schools across the Northeast U.S. to gather your experiences and thoughts about **urban agriculture and the kind of support urban growers need to be successful**. As budgets get tight, we want to be able to demonstrate to current and

future funding sources that it is critically important to invest in urban agriculture.

Please fill out [this survey](#) to help us get a better understanding of what urban agriculture looks like and the important role that Extension plays!

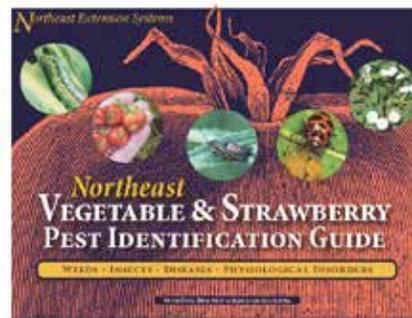
The survey should take less than 30 minutes to complete. It is open to all individuals who are at least 18 years old and grow food plants or engage in other agriculture in urban areas in the Northeast U.S.

The survey is available online at this link: [https://udc.iad1.qualtrics.com/jfe/form/SV\\_3t0bgrmjwRG0WTH](https://udc.iad1.qualtrics.com/jfe/form/SV_3t0bgrmjwRG0WTH)

This research has been approved by the University of Maryland Institutional Review Board (project # 1013685-4). If you have any questions, please contact Neith Little at [nglittle@umd.edu](mailto:nglittle@umd.edu) and Dr. Matthew Richardson at [matthew.richardson@udc.edu](mailto:matthew.richardson@udc.edu)

## NEW ENGLAND VEGETABLE MANAGEMENT GUIDE AND NORTHEAST VEGETABLE AND STRAWBERRY PEST ID GUIDES AVAILABLE FROM THE UMASS EXTENSION BOOKSTORE

Sales of both Guides were suspended in March because of the COVID-related campus closure, but the UMass Extension Bookstore is once again selling hard copies of these important resources. The Guides and other Extension publications can be purchased from the online bookstore at <https://umassextension-bookstore.com>. The searchable online version of the Vegetable Guide as well as a pdf version of the Pest ID Guide can always be accessed here: <https://nevegetable.org/>.



## NORTHEAST SARE FARMER GRANT APPLICATIONS DUE NOVEMBER 7

Northeast SARE's Farmer Grant Program provides research funds directly to farmers who have an innovative idea they want to test using a field trial, on-farm demonstration, marketing initiative, or other technique. Farmer Grant projects should seek new knowledge other farmers can use and address questions that are directly linked to improved profits, better stewardship, and stronger rural communities.

A technical advisor—often an extension agent, crop consultant, other service professional or farmer with advanced expertise—must also be involved.

Projects should seek results other farmers can use, and all projects must have the potential to add to our knowledge about effective sustainable practices.

Grants are capped at \$15,000 and projects can run up to two years.

Online submission system opens October 1, and applications are due November 7. For more information, please visit the [Northeast SARE Farmer Grant Program website](#).

## 2020 GRANTS & INCENTIVES FOR NORTHEAST AGRICULTURE

[Farm Credit East](#) has created a report which contains grants and other incentives available in the Northeast states of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York and Rhode Island. The listings include grant programs, tax incentives and loan programs from various funding sources available to agricultural producers and other entities involved in agriculture or related industries. Please note that as grant programs often change, this list should not be viewed as a comprehensive compilation of all grant opportunities.

Please visit [link for Report](#), as well the [grant writing page](#) for more information on Farm Credit East's grant writing services.

## **IMPORTANT REMINDERS FOR FEDERAL CROP INSURANCE POLICYHOLDERS & NONINSURED CROP DISASTER ASSISTANCE (NAP) PARTICIPANTS**

Loss Reporting: 2020 has presented farmers with challenging weather conditions and producers covered by a Federal Crop Insurance policy are reminded to monitor their crops for insurable damage throughout the growing 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. Three other important reminders:

- Check with your Federal Crop Insurance agent to review any prevented planting options.
- Direct marketed crops must have a yield appraisal before harvest, if a loss is anticipated.
- **Do not destroy** any crop evidence needed to support your claim without clear direction in writing from the insurance adjuster.

Producers having NAP coverage have similar loss reporting requirements and should contact their local FSA Office to report losses and review any prevented planting options.

Remember, if ever in doubt about filing a notice of loss, always contact your agent or FSA!

Losses on Crops Not Insured under Federal Crop Insurance nor Covered under NAP or Physical Losses: Even if you suffer losses on noninsured crops or crops not covered by NAP or physical losses such as building, equipment, etc., you should still notify your local FSA Office about the loss(es). FSA is responsible for monitoring crop conditions for disaster designation purposes and also may have other programs that could provide assistance. UMass Extension works in partnership with the USDA National Institute of Food and Agriculture and the Northeast Extension Risk Management Education Center to educate Massachusetts producers about Federal Crop Insurance and USDA Disaster Assistance Programs. For more information, please contact UMass Risk Management Specialists Paul Russell at [pmrussell@umass.edu](mailto:pmrussell@umass.edu) or Tom Smiarowski at [tsmiarowski@umass.edu](mailto:tsmiarowski@umass.edu).

## **EVENTS**

### **UMASS VEGETABLE PROGRAM: AGRICULTURAL WATER TWILIGHT SERIES**

The UMass Extension Vegetable Program is offering a series of online twilight meetings all about water! We will welcome Extension specialists and farmers from Massachusetts and beyond to cover a range of water-related topics.

#### **Part I: Water Use Regulations, Water Monitoring Tools, and Efficient Irrigation**

**Wednesday, September 16, 2020 - 6:00pm to 7:30pm**

Speakers:

- Rachel Schattman, UMaine Agroecology Lab - Water use regulations in New England
- Joshua Faulkner, UVM Extension – Moisture monitoring technologies and irrigation efficiency
- Tim Wilcox, Kitchen Garden Farm, Sunderland, MA – Tile drainage, wells, and irrigation equipment

**Register here:** <https://umass-amherst.zoom.us/meeting/register/tJcud-mgpzovGdejLQO66TRpmx3yyBITJ1V-%C2%A0>

#### **Part II: Water System Mapping and Water Testing for FSMA**

**Wednesday, September 23, 2020 - 6:00pm to 7:30pm**

Speakers:

- Massachusetts Department of Agricultural Resources Produce Safety Inspection Program - Massachusetts' draft produce safety regulations and update on water testing rules
- Scott Monroe, Purdue Extension - Water sampling, understanding risks to source water and understanding water test results
- Phil Tocco, MSU Extension - Water distribution system mapping and inspections

**Register here:** <https://umass-amherst.zoom.us/meeting/register/tJMvde2hrDspHtIxtBWDdBc75aHup0t6Z4aR-%C2%A0>

#### **Part III: Post-harvest Water Quality and Sanitizer Use**

**Wednesday, September 30, 2020 - 6:00pm to 7:30pm**

Speakers:

- Amanda Deering, Purdue Extension - Background on the different sanitizer materials available or practical for small-medium scale growers and how to measure and monitor them
- Phil Tocco, MSU Extension – Sanitizer use demonstration

*\*\* 1 pesticide recertification credit is available for this program \*\**

Register here: <https://umass-amherst.zoom.us/meeting/register/tJErcOCqrTwiGNuUN7Sn79DyZEg0zMUi6tma%C2%A0>

## **TONIGHT! VIRTUAL PANEL ON ROOTING OUT STRUCTURAL RACISM IN AMERICAN AGRICULTURE**

The Vermont Law School [Center for Agriculture and Food Systems](#) is hosting a virtual panel discussion on structural racism in American agriculture. This event will bring together lawyers fighting structural racism in agricultural law and policy: Monica Armster Rainge, Esq., Director of Land Retention and Advocacy at the [Federation of Southern Cooperatives/Land Assistance Fund](#); Stephen Carpenter, Deputy Director and Senior Staff Attorney at [Farmers' Legal Action Group](#); and Sherri White-Williamson, Environmental Justice Policy Director at [North Carolina Conservation Network](#). The panel will discuss Black land loss, the connection between agriculture and environmental justice, and the role of law and policy professionals in rooting out racism in the food system. The event is free and no registration is required.

**When:** Thursday, September 3, 6-8 p.m. ET

**Where:** [vermontlaw.edu/live](http://vermontlaw.edu/live)

## **PREVENTIVE CONTROLS WEBINAR FOR SMALL AND MEDIUM FOOD PROCESSORS**

Is your business a small or medium food processor? If yes, have you ever thought about what food safety laws you should be following, and what the possible consequences are for not doing so? This 1-hour webinar is the first in a series of three specifically designed for small and medium sized processors affected by the Food Safety Modernization Act's Preventive Controls for Human Foods Rule. The webinar will give you an easy-to-understand overview of the FDA Preventive Controls Rule and will help you learn what it means to be in compliance with these laws. This webinar is the first in a series of opportunities to learn about and receive subsidized training and technical assistance to bring your business into compliance with the Preventive Controls Rule – more details on future programs to come.

**When:** Thursday, September 10, 7-8pm

**Registration:** [Click here to register for this workshop.](#)

Please contact us at [valueaddedfood@umass.edu](mailto:valueaddedfood@umass.edu) for information regarding this series of events.

## **UNH LUNCH & LEARN WEBINAR: CROP STORAGE: HOLD ON TO WHAT YOU'VE GOT**

**When:** Wednesday, September 9, 12-1pm

**Registration:** [Click here to register for this webinar.](#)

For years Lunch and Learns were a staple of Coos County Cooperative Extension's connection with the community. We will be bringing back the Lunch and Learns as a way for people to get together as we continue to practice social distancing. Do your part for society by eating lunch in front of your computer! These occur monthly on various topics and hope everybody can learn something new and interesting. Learn more and register at the link above.

## **MIDWEST MECHANICAL WEED CONTROL FIELD DAY**

The 4th Annual Midwest Mechanical Weed Control Field Day will be virtual this year, giving Northeast growers an opportunity to attend! Organizer Sam Hitchcock Tilton and participating farmers will share tips and insight into mechanical cultivation

**When:** This event will include three episodes. September 11, 18, and 25, 1:30-2:15pm EST

[Click here for more information about each episode and for registration.](#)

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*Vegetable Notes. Genevieve Higgins, Lisa McKeag, Susan Scheufele, co-editors. All photos in this publication are credited to the UMass Extension Vegetable Program unless otherwise noted.*

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