



UMass
Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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CROP CONDITIONS

The heat and humidity have only started to relent a bit in the last few days, and growers are struggling to keep their crops (and themselves!) hydrated. Even drip irrigated crops are drying out because farmers can't keep up with demand for water across the farm, and high soil temperatures under black plastic aren't helping either. Some growers are starting to switch over late-summer crops to white plastic, which is more expensive but does not radiate so much heat back into the plant canopy and keeps soil temperatures lower. The pattern of hot humid days with dramatic afternoon storms has kept up this week, with maybe our worst storm yet occurring across most of the state on Tuesday. Many areas were pounded with golf ball-sized hail which can cause serious crop damage, making tatters out of leafy crops and pock marking sensitive crops like tomato and peaches and even tougher skinned fruits like zucchini and watermelon. Strong winds took down some staked tomatoes loaded with heavy fruit. Apart from the direct damage to crops, these storms often mean pulling crews off of important tasks like weeding and tractor work to keep them safe or out of wet fields, or having them take time to haul downed branches out of fields or repair broken trellising. The weather has been causing some crops to ripen all at once, like melons, making harvesting and sales a challenge. We are being reminded of that dry spell we had back in May, as many growers are experiencing gaps in ripe sweet corn, or lower than expected yields. In spite of the weather folks seem to be bringing in quite a bounty! Transplanted sweet corn is starting to come in now, and summer squash, zukes, cukes, eggplants, peppers and tomatoes keep pouring in. Many are starting to turn their attention towards winter, putting down the first cover crops and making plans and ordering seeds for winter tunnel production. Time sure flies once you get on that harvesting treadmill!



Bountiful baskets bursting with tomatoes in Leominster, MA.

PEST ALERTS

[Vegetable scouting sheets](#) can be found on the UMass Extension Vegetable Program website. When not given here, refer to the [New England Vegetable Management Guide](#) for scouting thresholds and treatment options.

Allium: Onions are at or close to harvest, and now is the time to inspect the crop for storage quality; see article this issue on harvesting and storing onions.

Onion thrips pressure continues to be high, espe-

cially in untreated fields in MA, RI, and VT. Only treat for this pest if you will not be harvesting in the next week. **Bacterial disease** and neck rots are common in VT and MA fields scouted. If these symptoms are present in the field, harvest early and cut the necks in order to cure these onions more quickly, cutting off the water supply potentially carrying bacteria down the neck. During harvest, separate onions with these leaf symptoms and sell for fresh market or as seconds rather than putting them in storage. **Leek moth:** All plants in a field scouted in Chittenden CO., VT scouted had an average of one pupa per plant and only 3 active larvae were found. It is



Hail damage on peach. credit S. Scheufele

likely that the end of the first generation is occurring now in VT. The second generation is a threat to leeks and fall bulbs.

Brassica: [Cabbage aphid](#) winged adults and nymphs were observed in Franklin, Hampshire (large infestations), and Worcester Cos., MA this week. Cabbage aphids can build up in greenhouses, on long-season crops like Brussels sprouts, or later in the season under row covers of fall brassicas. Monitor for winged adults flying into your fields with yellow sticky cards. This pest is arriving earlier in the season in MA fields, likely due to increased production of overwintered brassica hosts in tunnels. Spraying oil or soap (but not both) preventively can reduce impact on yield and quality, but be careful in this heat to avoid phytotoxicity. For organic growers, when infestations are greater than 10% of a field, apply materials containing neem or azadirachtin and pyganic. Include an adjuvant such as Nu-Film P for better coverage. Conventional growers have not reported severe outbreaks of this pest so far this year. In Washington Co., RI fields scouted were over threshold for [diamondback moth](#) and [imported cabbage worm](#) caterpillars in Brussels sprouts, and in Chittenden Co., VT more diamondback moth pupae were present than larvae. [Brassica downy mildew](#) was confirmed on ‘Arcadia’ broccoli in seedlings in the greenhouse, this disease often begins to show up this time of year. Initial symptoms are irregular splotches of yellow with black lines or mottling throughout, later on leaves may become tan and papery and die. Unlike other downy mildews, this pathogen (*Hyaloperonospora parasitica*) can be seed-borne, and can overwinter in soil, residue, or weeds. Consult the New England Vegetable [management guide](#) for spray recommendations.

Sweet Corn: [European corn borer](#) trap captures and field infestations are lower this week in MA, NH and RI; however, Burlington, VT captured 41 ECB in one field this week. Growers in NH have reported breakdown of control using Warrior (synthetic pyrethroid), other materials showing good to excellent efficacy include: **Radiant** (spinetoram), consistently equivalent efficacy with Warrior in trials - highly effective; **Belt** (flubendiamide), equivalent efficacy to Warrior in some trials, slightly less in others; **Coragen** (chlorantraniliprole), slightly less effective on corn earworm than Warrior but easier on beneficials and people; **Besiege** (a mixture of Coragen + Warrior AI’s, each at lower rates), highly effective, often better than Warrior. [Corn earworm](#) moths are being captured at low numbers except for on the southeastern coastal regions where trap captures were 24 in Swansea, MA over one week and 17 in Scituate, RI over 2 days. Recommended spray intervals range from 3 to 6 days.

[Fall armyworm](#) larvae are being found above threshold in Scituate, RI with 20% infestation, but no moths were captured in traps. Infestation by FAW in other fields scouted in MA and NH were below threshold at 3-6% infestation. [Sap beetles](#) are active and corn and larvae have been observed feeding on kernels in Worcester and Franklin Cos., MA.

Cucurbit: [Squash vine borer](#) trap catches are falling across the region this week, but larvae and feeding were present in two untreated fields in Hampshire Co., MA. Another flight of vine borer moths is expected at the end of August. [Squash bug](#) adults, eggs and nymphs of all stages were found above threshold of 1 nymph per plant at the 5 leaf stage in Hampshire Co., MA this week. Scouts in MA, RI, and VT have been looking carefully for [cucurbit downy mildew](#), but still no reports of infection! [Powdery mildew](#) is now prolific in MA, NH, RI, and VT, but not yet seen in ME. Mow down older successions after harvest and protect younger plants with fungicides; there are many good options for conventional and organic systems including: Torino, Quintec (rated very effective), Group 3 (Procure, Rally, Tebuzol, Folicur, Inspire

Location	FAW	ECB	CEW	Spray Interval for CEW
Western MA				
Hadley	na	2	na	na
South Deerfield	8	3	2	6 days
Whately	0	6	4	5 days
Central & Eastern MA				
Millis	na	0	0	no spray
Sharon	na	0	0	no spray
Swansea	0	6	23	4 days
NH				
Litchfield	14	5	1	no spray
Hollis	17	2	na	na
Mason	0	0	0	no spray
Burlington, VT	0	41	na	na
Scituate, RI	0	3	12	4 days



Brassica downy mildew on upper (top) and lower (bottom) leaf surface of broccoli plant. credit S. Scheufele



*Foliage die-back of winter squash caused by white mold.
credit S. Scheufele*



*White mold sclerotia in winter squash stem.
credit S. Scheufele*



*Water soaked lesion and sclerotia of white mold on spaghetti squash.
credit S. Scheufele*

Super), or Group 7 (Pristine, Fontelis, Luna), Zing!, Milstop, Kaligreen, Sulfur, and Oxidate. **White mold** was confirmed wreaking havoc in cantaloupe, watermelon, and winter squash in Worcester Co., MA. This pathogen causes wilt and dieback of foliage and stems, and can also cause water soaked lesions and rot of fruit. Harvest vine crops and destroy any infested residues as soon as you can and avoid storing

affected fruit; the pathogen can spread from fruit to fruit. Many fruit rots of cucurbit are appearing now including **gummy stem blight** and **plectosporium** on cucumber, **anthracnose** on melon (and cucumber in Washington CO., RI) in Chittenden Co., VT, and **Phytophthora blight** in Hampshire and Worcester Cos., MA. Stay tuned for an article on these diseases next week!

Solanaceous: UMass Extension plant pathologists are collaborating with scientists at Cornell University to begin studying the incidence and severity of **potato virus Y (PVY)** in potato and other solanaceous crops in MA. This viral disease has become a major production challenge for tobacco growers, and new strains of the virus have recently evolved that can cause necrotic ringspots on potato tubers, reducing marketable yield and storage quality of potatoes. The disease is difficult to catch in the field because foliage is not always affected, and because of this, seed stocks are becoming contaminated with the virus, increasing its prevalence throughout the Northeast. We began scouting last week and found infected potato plants in every field we checked, though symptoms were mild and the percentage of the crop affected was low. As aphids begin to move into potato fields, expect this virus to start spreading and symptoms to worsen. Insecticides other than oils should not be used if aphids are present in affected fields—using them may actually increase aphid probing and spread of disease. Look for yellow mosaic on the leaves. Veins of Yukon gold leaves may develop blackened veins. If just a few plants are found with symptoms of virus, you can try roguing them out. **If you think you may have PVY please contact Sue at sscheufele@umext.umass.edu.** **Septoria** has been reported on many cultivars of tomato in Chittenden Co., VT and in MA. Fields continue to be scouted for **late blight** in MA, but still no confirmation of the disease. See the **MA late blight DSS** for preventive spray intervals. **Powdery mildew** and **fulvia leaf mold** are prevalent in field tomatoes and worse in tunnels scouted in Hampshire, Bristol, and Franklin Cos., MA. **Mite** damage in solonaceous crops is being reported all over New England. **Broad mite** was found in tomato and causing russetting on fruit in a high tunnel; this pest is usually more damaging in peppers and eggplant. In MA, VT and RI, **two spotted spider mites** have been found causing damage to tomato foliage in a high tunnels (see article this issue on managing this pest). In RI, **tomato russet mite** is causing damage in a greenhouse (damage from this mite can be severe).



*Symptoms of potato virus Y on potato.
credit S. Scheufele*

PRE-COOLING VEGETABLES FOR SALE AND STORAGE

Produce quality cannot be improved after harvest, only maintained. Peak harvest season is also the time when crops are carrying the most field heat, which needs to be removed in order to achieve good shelf life. Wholesale or large scale farms tend to harvest crops before peak ripeness, while direct retail farms (which tend to grow more specialty varieties that have poor storage qualities) tend to harvest crops close to peak ripeness. Cooling and storage techniques will be slightly different depending on the type of operation and crops grown, but the principles covered in this article are important for all.

Start with these harvesting tips from Trevor Suslow, Vegetable Crops Specialist at UC Davis in California:

- Harvest during the coolest time of day (early morning) to maintain low crop respiration.
- Avoid unnecessary wounding, bruising, crushing, or damage from humans, equipment, or harvest containers.
- Shade the harvested product in the field to keep it cool. By covering harvest bins or totes with a reflective pad or even just some newspaper, you greatly reduce heat gain from the sun, water loss, and premature senescence.
- If possible, move the harvested product into a cold storage facility or postharvest cooling treatment as soon as possible. For some commodities, such as berries, tender greens, and leafy herbs, one hour in the sun is too long.
- Do not compromise high quality product by mingling it with damaged, decayed, or decay-prone product in a bulk or packed unit.
- Only use cleaned and, as necessary, sanitized packing or transport containers.

Once out of the field, pre-cooling is an important step to take before crops are marketed or go into longer term cold storage. This step can also reduce the overall refrigeration needed at peak harvest times. Pre-cooling will extend aesthetics, flavor, and nutritional quality of the crop. Pre-cooling is not an important step for crops that are field-cured such as winter squash, pumpkins, or onions.

What does pre-cooling do?

- Suppresses enzymatic degradation (softening) and respiratory activity (water loss/wilting)
- Slows or inhibits the growth of decay microorganisms such as molds and bacteria
- Reduces the production of ethylene (a ripening agent) or minimizes the crop's reaction to ethylene
- Improves market flexibility by allowing the farmer to hold crops longer.

Five types of Pre-cooling:

Room Cooling – is not really a method of pre-cooling since it is often the final resting place of a crop on the farm in an insulated room or container with refrigeration units such as a [Cool Bot](#). This method tends to be slower at cooling than others. Room cooling may be too slow to prevent wilting, premature ripening, or decay depending on the crop, how it is packed, or arranged. However, for small farms, this may be the only cooling method available.

Forced Air Cooling – adding fans to a room cooling system to push cool air through ventilated produce bins will increase the rate of cooling by 75 to 90%! This is a simple method for farms that already have cooling units. To save energy, use a thermostat placed in the harvest boxes to automatically shut off the fan when the produce reaches the desired temperature. Alternately, Robert Haddad, Vegetable Specialist at Cornell Cooperative Extension has developed a prototype for pre-cooling several boxes of produce before they go into the storage unit (photo). In a cooler, stacking arrangement for increased air flow is important to speed up cooling time. Five percent vent hole space on the sides and ends of the boxes is ideal, and containers should be aligned so that vent holes are lined up on all sides to encourage air flow. Forced air cooling should be done before adding bags, wrappers or dividers to produce as this also slows the rate of air flow through containers. Some crops such as cabbage are very dense and it can take 4-5 hours for a pallet to cool down using this method. Forced air and room cooling usually require the least added infrastructure for cooling vegetables.



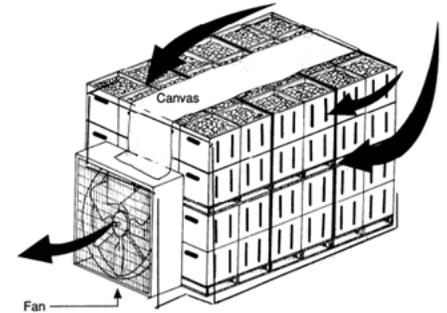
Creative conversion of the Town of Amherst Information Booth into an insulated walk-in cooler powered by a Cool Bot for a road side stand at Sunset Farm in Amherst, MA credit. K. Campbell-Nelson



Haddad produce cooler prototype

Hydro-cooling – uses cold water to remove heat from crops. This can be as simple as dunking crops in a tub of water or rinsing them with a hose on wire mesh benches or as complicated as purchasing a commercial hydro-cooler. In these more expensive systems a pump moves chilled water into contact with warm produce and the warmed water is then re-cooled and recycled. For cooling the water, many hydro-coolers have a vapor-compression refrigeration system similar to an air conditioner or refrigerator, while others use ice to cool the water. There are several different types of hydro-coolers out there, from conveyor belt systems for palletized produce to batch or truck hydro-coolers, which may be more economical for smaller scale and diverse growers. If you are using a hydro-cooling method for pre-cooling produce you can also remove potential pathogens, or prevent introduction of pathogens, from fresh eating crops by adding a sanitizing agent to the hydro-cooling water. See article in the [June 25th, 2015 issue](#) of Vegetable Notes for appropriate wash water sanitizers.

Figure 2. Forced-air Tunnel



In forced air cooling, create a wind tunnel in your cooler to remove field heat from vegetables for several hours before turning off the fan for longer term storage.

Top Icing – is effective for some cold tolerant crops such as broccoli, kale, or green onions. A slurry of liquid ice injected into containers is most effective for covering the crop. More expensive water proof containers are needed for this cooling method, and ice adds to the weight of the product for transportation, however, some grocery stores require this method of produce delivery.

Vacuum cooling – is accomplished by making the crop sweat (evaporative cooling) but at a low pressure (using a vacuum) so that the temperature at which the crop starts to sweat is lowered to 34-36°F. Using this technology you can lower the temperature of leafy greens to 34°F in less than half an hour—this method is very efficient. It is most useful for crops that have a large surface area and a lot of water, since they will lose some in the process. This is the industry standard for cooling lettuce and spinach. Research has found that other crops like cucumber, eggplant, carrot, turnip, broccoli and pepper can also be cooled this way. For these less moist crops, adding water (dunking in a tub or rinsing with a hose) before vacuum cooling is helpful. Crops with a large surface area to mass ratio are most appropriate for this cooling method. Vacuum cooling is the most expensive method described here, requiring high infrastructure investment, but also the most energy efficient for large quantities of crops because it cools only the produce. At least one large greens producer in Massachusetts has a vacuum cooler.

Which of the above method you chose for your farm will depend on the cost to install and operate, the temperature of your crop at harvest, the respiration rate of your harvested crop, your packaging requirements, volume and mix of crops, and market expectations. For example, potatoes have a lower respiration rate than asparagus and sweet corn, making potatoes a better candidate for forced air and room cooling and asparagus and sweet corn better candidates for hydro-cooling and top icing.

-by Katie Campbell-Nelson from the following resources

Resources:

Postharvest Handling and Cooling of Fresh Fruits, Vegetables, and Flowers for Small Farms, L. G. Wilson, Extension Postharvest Horticulturist, NCSU M. D. Boyette, Extension Biological & Agricultural Engineer, NCSU E. A. Estes, Extension Agricultural & Resource Economist, NCSU <http://content.ces.ncsu.edu/part-2-cooling-postharvest-handling-and-cooling-of-fresh-fruits-vegetables-and-flowers-for-smal.pdf>

Postharvest Handling for Organic Crops. 2000. T. Suslow, Vegetable Crops Specialist, UC Davis, CA. ANR Publication 7254.

Precooling Produce Fruits and Vegetables. 1991. K.L.B Gast Extension Post Harvest Specialist and R. Flores, Extension Food Engineering Specialist, Kansas State. <http://university.uog.edu/cals/people/pubs/posthar/precool.pdf>

Effect of Cooling Delays on Fruit and Vegetable Quality. 2001. Perishables Handling Quarterly Issue No. 105. J. Thompson et. al. UC Davis, CA. <http://ucanr.edu/datastoreFiles/234-8.pdf>

WATCH FOR SPIDER MITES IN EGGPLANT, TOMATO AND VINE CROPS

The two-spotted spider mite (TSSM) is the most common mite species that attacks vegetable and fruit crops in New England. Spider mites can occur in a variety of crops, including tomato, eggplant, potato, beans and vine crops such as melons and cucumbers. It is particularly important in eggplant. Spider mites are favored by hot, dry and dusty conditions, which also aggravate mite injury by stressing the plant. Damage is often underestimated since the wounds and the pest are difficult to see without inspecting plants closely, or until the problem becomes widespread. Leaves become blotched with pale yellow, reddish brown spots ranging from small to large areas on both upper and lower leaf surfaces. Feeding injury often gives the top leaf surfaces a mottled or speckled, dull appearance. Leaves then turn yellow and drop. Large populations produce visible webbing that can completely cover the leaves, and is a useful sign to look more closely for mites. Other symptoms include distorted leaves, overall loss of plant vigor, whitening or spotting of leaves, or abnormalities on stems and fruits. On tomato, mites can damage fruit, causing small whitish spots that render fruit unmarketable.



two spotted spider mite damage.
credit: A.Radin.

As with most pests, catching the problem early will mean easier control. Look for spider mites in greenhouses on vegetable transplants. Also scout plants in the field by looking for mites, especially on the undersides of leaves, and crop injury. Adult females are tiny; they can be seen with the naked eye but a 10x hand lens is very helpful. TSSM adults are about 1/50-inch long, slightly orange or pale green in color, with two dark spots on their body.

All mobile life stages can feed on plant tissue. Eggs are laid singly, up to 100 per female, during her 3- to 4-week life span. Eggs hatch into larvae in as few as 3 days. Following a brief larval stage, several nymphal stages occur before adults appear. The egg to adult cycle can be completed in 7-14 days depending on temperature, leading to explosions in mite population and damage.

Outbreaks may be worsened by excess nitrogen fertilization, or by the use of broad-spectrum insecticides that kill naturally occurring mite predators. Overhead irrigation or prolonged periods of rain can help reduce populations. Keep weeds under control.

Controls. Use selective products whenever possible. Selective products which have worked well in the field include: Agrimek (abamectin, derived from a soil bacterium) and Acramite (bifenazate, a long residual nerve poison), and the products Movento (spirotetramat) and Oberon 2SC (spiromesifen) (both Group 23) which mainly affect immature stages. Two other selective products are Kanemite (acequincyl) and Portal (fenpyromixate). OMRI-listed products include insecticidal soap (M-Pede), neem oil (Trilogy), and soybean oil (Golden Pest Spray Oil). See the [New England Vegetable Management](#) Guide for more details, including resistance groups. With most miticides (not bifenazate), use 2 applications approximately 5 to 7 days apart to help control immature mites that were in the egg stage and protected during the first application. Alternate between products after 2 applications to help prevent or delay resistance. Preventative releases of the predatory mite, *Phytoseiulus persimilis*, may suppress TSSM populations in vegetable fields, as they do in strawberry fields. *Amblyseius fallicis* is a predatory mite that is widely used in greenhouses. See the New England Vegetable Guide on biological control in greenhouse bedding plants, [Table 18: Scouting guidelines and biological control options for bedding plants](#).

-- Ruth Hazzard, UMass Extension. Updated August 2015.

ONIONS: HARVEST AND CURING TIPS FOR BEST QUALITY

As onions mature, their dry matter content and pungency increase, with a resulting increase in storage potential. Onions are ready for harvest when at least half the leaves are dead. Tops are beginning to fall in early, direct-seeded onions and many transplanted fields. Pull the bulbs by hand, or use equipment such as a potato digger or under-cutter to cut the roots and lift the bulbs. If you wait until all the leaves are dead and dry, it's likely that the outer skins will be loose rather than

firm. This may not hurt the keeping quality, but the onions will not look as nice. However, pulling when the foliage is too green will make it difficult to cure them well. Harvest when the weather is dry; harvesting after a rainfall or when the humidity is high increases susceptibility to post-harvest disease. There may be instances when leaves are declining in quality due to insect, disease or environmental conditions and the crop is not growing but necks are still green. Or leaves may show symptoms of bacterial infections, in which case it may be advisable to pull onions a little early – before tops have fallen over –to prevent bacteria from traveling down the foliage into bulbs. In these cases, pay special attention to curing under optimum conditions to promote rapid drying down and closing of necks.

For optimum storage quality, onions must be cured soon after harvest. Curing decreases the incidence of neck rot, reduces water loss during storage, prevents microbial infection, and is desirable for development of good scale color. Optimum conditions are 68-86°F and 70% relative humidity for at least 12 to 24 hours. A greenhouse or hoophouse provides a good environment for curing, where temperature, airflow and moisture can be controlled. Be sure to keep the temperature in the house below 85°F, which will probably require turning on fans and/or leaving sides and doors wide open—consider using a black shade curtain over the house to help moderate temperature.

Curing can be done in the field, but it is harder to achieve good conditions for curing in an uncontrolled field setting. Avoid field curing onions if rain is forecast and, if it does rain, let the onions dry fully before handling—don't handle the bulbs when they are wet. If the field is weedy, it may be excessively moist and air circulation may be limited, conditions not suitable for curing. Temperature and sun are also factors to consider—sunshine and temperatures in the 80's will enhance the bronze color in the skins but extremely hot sun, with temperatures in the 90's, can cause sunscald. Onions curing on a sandy soil will get hot more quickly than those curing on a heavier soil. Curing is complete when the neck is completely dry and tight. If the neck remains open, it allows entry of pathogens such as Botrytis neck rot.



The next step is topping. Mechanical onion toppers are essential for larger plantings. These machines can be expensive; for the needs of a small diversified farm, they are probably best obtained second-hand. Onions can also be topped by hand using clippers. Handle gently to avoid bruising. Avoid cutting tops too close to the bulb (leave 2-3 in. of stem), especially if there is any chance of disease entering bulbs from the leaves. Defective onions (i.e. sprouted, insect-damaged, sun-scalded, green, bruised, or soft) should be discarded. Grade for size according to your markets.

To ensure maximum storage life, onions must be promptly stored after curing. Get them out of the sun as exposure to light after curing will induce greening of the outer scales. The optimum temperature for long-term storage of onions is 32°F with 65-70% relative humidity, but it is important to bring them down to this temperature slowly. In fact, holding onions in a barn or garage so that they cool along with the average outdoor temperature in late-summer and fall works quite well. Avoid cooling bulbs to well-below the average daily temperature because they will draw moisture from the warmer air, which can lead to disease. If you are selling the onions within a couple of months, keeping them in an un-insulated barn is fine. An insulated storage room is needed for longer-term storage.

Harvest Tips for Best Quality

- 1) Be sure onions are well-dried and necks are tight (i.e. the tissue does not slide when you roll the neck between your fingers) before topping. Bacterial diseases and Botrytis Neck rot can move through green tissue into the bulbs. These diseases do not move in dry tissue.
- 2) Leave 2-3 inches of neck on the bulb. This increases the distance from the cut surface to the bulb for these pathogens to travel.
- 3) Minimize mechanical injury during harvest & topping. Reduce drops to 6" and pad sharp surfaces. Bruises provide direct entry points for diseases to get started.

4) Grade out damaged onions before putting them into storage. Damaged bulbs give off moisture, which is favorable for development of diseases in storage.

- *John Howell, Andrew Cavanagh, & Ruth Hazzard. Resources: CSU Extension and the University of Saskatchewan Vegetable Program.*

SUPPORT ENTRUST LABEL EXPANSION FOR CONTROL OF CABBAGE ROOT MAGGOT

As you may have read in Veg Notes a few weeks back, UMass Extension's two years of research on cabbage root maggot (CRM) has shown that Entrust SC can be used to effectively reduce damage and increase yield in transplanted brassica crops. We would love to pursue a [label expansion for Entrust](#) so that growers could use the product in this way on their farms—it is not currently labeled for use as a drench treatment in the greenhouse or the field, or for CRM control. The new uses we'd like to have added to the Entrust SC label are soil drench treatments which might be applied in the following ways, as other soil-applied materials: in-furrow at plant, surface band at planting, soil injected, chemigation, and transplant tray drench. In our studies we focused on the transplant tray drench in the greenhouse because it is easier, safer, and more efficient to treat all the transplants at once using a watering can to saturate the soil with water that has been mixed with the appropriate amount of Entrust than it is to drench field soil, which takes a lot of water and time and maybe specialized equipment. The field drenches may be useful for follow up applications and for direct-seeded crops. For the transplant tray drench, the material is applied to the transplants in the greenhouse or cold-frame/hardening off site right before they are transplanted in spring and root maggot flies are active. We used a bottom watering approach to saturate soil but you could very easily use a watering can or backpack sprayer to soak the soil with material. This works because the product gets right there in the root-ball where you need it to protect the root and stem from root maggot feeding, and since Entrust binds loosely to soil particles it sticks around a while, giving you residual protection. We haven't studied using Entrust for direct-seeded crops yet but would also be interested in getting Entrust labeled for soil drenches on transplanted and direct-seeded crops in the field. In order to change the label we need to [demonstrate there is a need for alternative and OMRI-approved products](#) to control root maggot, and that people would use Entrust if it were labeled. Please answer a few quick questions on brassica production on your farm and impacts of root maggot, large or small. We really appreciate it and would love to get a new tool out there for growers who struggle with this pest. Survey link: <https://www.surveymonkey.com/r/3X5F7WS>

SOIL HEALTH EXPERTS TO PRESENT ON SOIL PHOSPHORUS MANAGEMENT

The University of Massachusetts Extension has been funded by a Sustainable Agriculture Research and Education Professional Development Grant (2014-2017) to provide educational opportunities to agricultural service providers and farmers in soil health topics. Presenters at [this event](#), to be held at UMass' Slobody Building at 101 University Drive (next to the Amherst post office), will discuss soil extraction methods and interpreting them for phosphorus management.

Tom Morris, University of Connecticut Professor of Plant Science will present methods of different soil extractions and tests, with a focus on those appropriate for New England soils. With his experience in field research on nitrogen and phosphorous, Tom will present agricultural service providers with a basic understanding of the chemistry of phosphorous in the soil, how it behaves, how best to assess P status of soil in different growing systems, how to assess potential loading from soil applications of fertilizer, compost or manure, and how to mitigate soil with excess phosphorous aside from not adding more (e.g., cover crops or other ways to use up or sequester phosphorous to prevent off site movement or contamination).

Tom Akin, Natural Resource Conservation Service Agronomist will present work on evaluating a new soil extraction method for New England with data from Massachusetts farms. The new Haney Soil Health Test is being tested in Massachusetts to evaluate it's ability to better predict active carbon and other indicators of soil health.

Hotze Winja, a chemist with the Massachusetts Department of Agriculture, will also provide an update on the New Nutrient Management Regulations going into effect on December 5th, 2015.

SEEKING FARMS FOR POST-HARVEST HANDLING VIDEOS!

As part of our continued efforts to help farmers adopt safe and efficient produce handling practices, especially in the packing house, we are working with collaborators at UCONN and UVM to develop a series of at least 4 videos focusing on standard operating procedures including greens washing, and cleaning and sanitizing of harvest and packing facility tools and equipment.

We are looking for growers to help with this process by allowing us to film techniques on their farms. This will likely entail one day of “B” shooting of video with no script, but pictures of farms and facilities related to the video in operation; and one day (perhaps a half day) of “A” shooting of video with the folks reading the script and perhaps showing some of the techniques we are teaching. These are very short videos—2 to 4 minutes at the most, being developed by the UMass Media Relations department.

We would like to involve at least one farm from Massachusetts to help illustrate some of these important best practices.

We are in the early stages of planning, but are looking for possible sites for filming to take place sometime between mid-August through the end of September. We would like to conduct the filming at farms that may be engaged in some of the best practices we hope to address in the videos. This could mean produce washing; development and implementation of standard operating procedures; cleaning and/or sanitizing of harvest tools and bins or packing house equipment including conveyors, bins, tables or wash tubs.

Is this something you would be interested in doing? If so, please contact Amanda Kinchla by email: amanda.kinchla@foodsci.umass.edu or by phone at: 413.545.1017. Thank you for your consideration.

MASSACHUSETTS TOMATO CONTEST TO BE HELD AUGUST 20TH

The 31st Annual Massachusetts Tomato Contest will be held in the KITCHEN at the Boston Public Market on Thursday, August 20th. Tomatoes will be judged by a panel of experts on flavor, firmness/slicing quality, exterior color and shape. Always a lively and fun event, the day is designed to increase awareness of locally grown produce.

Farmers who want to submit entries can bring tomatoes to the market between 9:00 am and 10:45 am on August 20th or drop their entries off with the corresponding registration form to one of several locations around the state on August 19th. These tomatoes will be brought in to Boston on Thursday. For the complete details, including contest criteria and a registration form, go [here](http://www.mass.gov/eea/agencies/agr/markets/farmers-markets/tomato-contest.html) or www.mass.gov/eea/agencies/agr/markets/farmers-markets/tomato-contest.html.

The 31st Annual Tomato Contest is sponsored by the Massachusetts Department of Agricultural Resources, New England Vegetable and Berry Growers Association and Mass Farmers Markets in cooperation with the Boston Public Market.

EVENTS

[IPM Field Walk](#)

When: Tuesday, August 25, 2015 from 3:30pm to 6pm

Where: [Hurricane Flats](#), 975 S. Windsor St. South Royalton, VT

Join us to learn how to scout for disease and insect pests in the field and discuss effective organic control strategies with farmer Geo Honigford, Ann Hazelrigg and Gabriella Maia (UVM Disease Diagnostic Laboratory) and Katie Campbell-Nelson (UMass Extension Vegetable Program). Sponsored by Vermont Vegetable and Berry Growers Association and NOFA-VT. Bring a hand lens if you have one. This series is funded in part by a Northeast IPM Center grant.

[Professional Development Soil Health Workshop Series:](#)

[Soil Tests for New England and Interpreting them for Phosphorous Management](#)

When: Monday, August 17, 2015 from 3:00pm to 5:00pm

Where: Slobody Building, 101 University Drive, Suite C4, Amherst, MA 01003

The University of Massachusetts Extension has been funded by the Sustainable Agriculture Research and Education Professional Development Grant (2014-2017) to provide educational opportunities to Agricultural Service Providers and Farmers in Soil Health topics. Join **Hotze Winja** (MDAR), **Tom Akin** (NRCS), and **Tom Morris** (UConn) for an overview of the new MA Nutrient Regulations, and information on soil phosphorus. For Certified Crop Advisors this event is

approved for 2 CEUs.

[2015 NOFA Summer Conference](#)

When: Friday, August 14 to Sunday, August 16, 2015

Where: UMass Amherst Campus

This year's main conference features 144 individual sessions with 27 different topic areas. Workshops address organic farming, gardening, land care, draft animals, homesteading, sustainability, nutrition, food politics, activism, and more. The theme for this year's Conference is "Healing the Climate, Healing Ourselves: Regeneration through Microbiology".

This year's conference will include sessions with UMass personnel:

- Amanda Brown, Director of the UMass Student Farm; Tour of the UMass Ag Learning Center
- Lisa McKeag, Extension Vegetable Program; Pest Scouting in the Field at Simple Gifts Farm
- Susan Scheufele, Extension Vegetable Program; Integrated Pest Management in Brassicas

THANK YOU TO OUR SPONSORS



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

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