



UMass  
Extension

# Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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*Fall root crops are going into the ground now, and with the right timing, flaming can help reduce the labor of weeding tiny carrot and beet seedlings.*

*Photo: G. Higgins*

parts of MA. Keep an eye out for distorted growing points and blind heads in brassicas, and contact us at [umassveg@umass.edu](mailto:umassveg@umass.edu) if you suspect damage.

### **Cucurbits**

**Bacterial wilt** is continuing to develop in crops that were infested by striped cucumber beetle earlier this season. The bacterium that causes this disease is transmitted by striped cucumber beetle (SCB). It colonizes and clogs the plant's vascular system, causing wilt. Pumpkins, squashes, cucumbers and muskmelons are susceptible, while watermelon is not. Continue controlling for SCB to control the spread of bacterial wilt throughout a crop and to younger successions.

**Gummy stem blight** was diagnosed in cucumber in ME this week, causing leaf spots, stem lesions, and crown dieback. This is the same fungus that causes black rot on cucurbit fruit later in the season. When cucurbit stems are infected, water-soaked lesions form and eventually become tan, often exuding a reddish-brown sticky liquid. Cuke beetle and

## **CROP CONDITIONS**

It's been another busy week on farms across the state! Garlic is being harvested and cured, and summer fruiting crops like watermelons, cantaloupe, tomatoes, peppers, and eggplant are starting to come in; root crops and salad greens are continuing with more going into the ground every week. Corn is coming in, though there is a gap between early plantings on plastic and bare ground corn in many spots, and the next waves of caterpillar pests are starting up now. On top of everything else there is the continual back-and-forth of setting up irrigation and dealing with fallout from heavy storms. The forecast rain from this past weekend's tropical storm skirted much of the state, but strong winds hit most areas, with some locations experiencing sudden, heavy rain and even hail, all of which can spread diseases between and within fields. Now is the time to apply protectant sprays onto crops, if you haven't already. It's a busy time of year but with some more even rain coming in, worries over impacts of the pandemic a bit clearer, strong sales, and high prices, many growers we've heard from say "no complaints!"

## **PEST ALERTS**

### **Brassicas**

**Swede midge** damage is now being reported from more locations in northern New England. The larvae of this tiny fly feed in brassica growing points and then fall to the soil to pupate long before the damage—zippered leaves, multiple growing points or no growing point, stem and petiole scarring—can be seen. Swede midge is well-established in New York and Vermont, and is suspected in parts of New Hampshire and Maine as well, but because of this pest's cryptic nature, we suspect that the range is much wider than currently reported and likely includes some

aphid feeding, as well as infection with powdery mildew, predispose plants to infection by this fungus. The pathogen is seed-borne and can survive in the soil and on crop debris for several years.

**Squash vine borer** damage now being reported in the field. Female moths lay eggs at the base of the plant, and sometimes on petioles and undersides of leaves, and hatching larvae bore into the stem to feed within. Damage results in plants wilting and dying, which can be confused with wilt diseases. Look for entrance holes at the base of the stem, with sawdust-like frass present. Larvae are protected from insecticide applications once they are inside the stem. If caught early enough, larvae can be cut out of stem and wound can be buried with soil to promote new root growth. This pest is very localized, and populations vary dramatically between farms. If you notice significant damage from SVB this year, consider using a pheromone trap to monitor emergence on your own farm next year, in order to optimize spray timing to target hatching larvae. Some selective materials used for other caterpillars in squash, such as spinosyns and *Bacillus thuringiensis* aizawai, have demonstrated efficacy in trials.

Table 1. Squash Vine Borer (SVB) trap captures July 10-16, 2020	
Location	SVB
Deerfield	4
North Easton	15
Westhampton	14
Whately	0
Sharon	8
Leominster	12



*Bacterial wilt.*  
Photo: UMass Vegetable Program



*Symptoms of gummy stem blight on foliage and stems.*  
Photos: J. Brock, Univ. of Georgia, Bugwood.net

## Solanaceous

**Bacterial canker** reports continue to come in from around the state and the region. This disease can take out whole plantings. Sanitation of equipment, greenhouse supplies, tomato stakes and more are critical to preventing carryover of this disease from season to season. The disease can be seed-borne and often gets started in the greenhouse, so purchased transplants can also be a source. Regular sprays of copper in rotation or tank-mixed with Actigard or Regalia can help slow the spread of canker.

**Tomato fruitworm** (CEW) are being occasionally found in green fruit in high tunnel and field tomatoes. From the [Rutgers University Plant & Pest Advisory](#) last week: “While this is typically a late summer occurrence, it is important that growers check plantings that have fruit present for infestations of this pest. High tunnels do not offer protection from CEW or other caterpillar pests of tomato. CEW moths will lay eggs on the uppermost flower clusters. As these eggs hatch, larvae will bore into fruit in the upper and outer canopy (see photo). While infestations at this time may not result in significant fruit loss, actual losses are somewhat unpredictable. If tomato fruitworm infestations are found at 3 or more sites in a 10 site sample in the field, or in more than one site in a 5 site sample (as in a high tunnel), it may be time to apply an insecticide to limit further damage, especially if CEW moths are still being captured in local traps.” A complete list of insecticides for this pest may be found in the [tomato insect section](#) of the New England Vegetable Management Guide. Note that the insecticide Entrust is OMRI approved.



*Bacterial canker.*  
Photo: S.Scheufele



*Tomato fruitworm.* Photo: R. Bessin

**Tomato hornworm** is also being found on high tunnel tomatoes now, where it seems to get an earlier start than in field plantings. These large caterpillars typically appear in small numbers but cause impressive feeding damage on peppers, tomatoes, eggplant, potatoes, and related solanaceous weeds. Scout by searching leaves for damage, frass, or larvae. Often one sees defoliated stalks or the characteristic dark-green droppings (fecal pellets) before the caterpillar is located. There is no set economic threshold for this pest in tomato. Where damage is unacceptable, or if there are high numbers, foliar sprays can be used. Use a selective material that will conserve beneficial insects—those predators and parasites are very likely keeping your aphid populations under control. Insecticides include *Bacillus thuringiensis* (Bt) *kurstaki* or *aizawi* strain (Dipel DF, Agree, or Xentari, etc.), indoxycarb (Avaunt), tebufenozide (Confirm 2F), or spinosad (SpinTor 2SC or Entrust). Several synthetic pyrethroids are also labeled (note: these could result in aphid outbreaks). Although Bt generally works best on small larvae, in this case it will work very well even against large hornworms. In peppers, any controls used for European corn borer should control hornworms.



Leaf mold resistant variety holding up next to non-resistant variety.  
Photo: G.Higgins

**Leaf mold** is developing in more high tunnels across the state, as temperatures and humidity rise. Growing resistant varieties is the best way to manage this disease; we saw an excellent example this week in one tunnel in Hampshire Co., MA of an untouched resistant variety growing side by side with a severely affected susceptible variety.

**Colorado potato beetle:** The 2<sup>nd</sup> generation of CPB is being seen now, with new adults and larvae present in fields. CPB populations do not move around much and are therefore highly susceptible to developing resistance to insecticides; resistance to pyrethroids, neonicotinoids, and spinosad exists in parts of New England. Use a different class of insecticide to control this generation than you used for the 1<sup>st</sup> generation—check IRAC codes and avoid using the same chemistry more than once a year.

**Sweet corn**

The second flight of **European corn borer** is just beginning, with adult moths being captured in some traps now and some caterpillars being found in the field in pre-tassel corn already. This generation can also affect peppers; see article this issue for more info on managing ECB in peppers. **Corn earworm** numbers are increasing after last weekend’s tropical storm, and **fall armyworm** flight is also starting now, with higher numbers in the CT River valley and northeastern shore. Use Table 3 to determine CEW sprays for silking corn. Thresholds for ECB and FAW in silking corn are 3 FAW or 5 ECB per week, and for whorl stage corn spray when scouting indicates 30% or more plants are infested with either pest.

**Table 2. Sweetcorn pest trap captures for July 10-16, 2020**

Location	GDD (base 50°F)	ECB NY	ECB IA	FAW	CEW	CEW Spray Interval
<b>Western MA</b>						
Sheffield		0	0	-	9	4 days
Southwick	1214	0	0	0	3	6 days
Whately	1313	3	0	-	0	no spray
<b>Central MA</b>						
Bolton	1202	25	0	-	1	no spray
Leominster	1206	4	0	-	3	6 days
Spencer	1147	0	0	0	1	no spray
<b>Eastern MA</b>						
Ipswich	1114	0	0	0	1	no spray
Concord	1168	0	0	0	1	no spray
Millis	1289	4	0	N/A	6	5 days
Sharon		2	0	N/A	2	6 days
Seekonk	1306	1	0	2	1	no spray
Swansea		-	-	-	-	-
- 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 3. 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



Hopperburn on bean.  
Photo: UMass Veg Program

## Various

**Hopperburn**, caused by potato leafhopper feeding, is showing up in beans, eggplant, and potatoes. This damage can cause yield reductions in **beans**, **potatoes** and **eggplant**, among other host crops. Leafhoppers will continue to come in from outside the field but can be controlled by continued spraying when scouting data indicates the threshold has been reached. To scout for adults, take a sweep net sample, or brush foliage by hand and look for adults flying away like sparks. Nymphs can be found on undersides of leaves. From 3<sup>rd</sup>-trifoliolate-leaf-stage to bud stage, treat when PLH exceed 1 nymph/leaflet or 5 adults per row foot; repeat application in 7 to 10 days, if necessary. In potatoes, treat if more than 1 adult per sweep is found, or if more than 15 nymphs are found per 50 leaves. An effective treatment for organic fields is pyrethrin mixed with azadiractin. Many effective products are labeled for conventional fields and can be found in the bean insect section of the Guide, and in the potato insect section of the Guide.

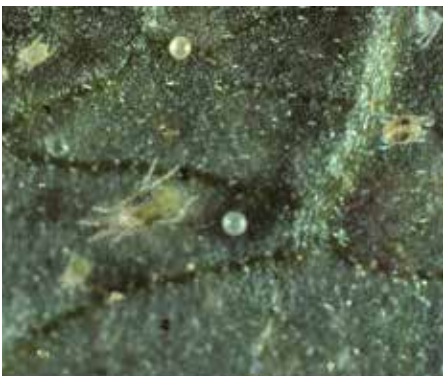


Phytophthora symptoms on pepper and tomato. Photos: S.Scheufele

**Phytophthora blight** is continuing to develop in infested fields, with reports of stem cankers in high tunnel peppers, buckeye rot on tomato fruit, and suspected crown rot on watermelon and cantaloupe coming in this week. This disease can feel like a curse, but there are things you can do now to reduce the impact of this disease on your farm beyond cultural practices and improving soil drainage, like using resistant varieties and choosing effective fungicides. For conventional growers, Orondis Ultra and Orondis Ultra A are rated as excellent, while Tanos, Ranman, Gavel, Omega and Zampro are also highly effective targeted materials. Forum, Presidio and Revus are other good choices but will not work well for the other major oomycete of cucurbits, downy mildew. For organic growers, no OMRI-approved fungicides will be a silver bullet, but *Trichoderma* (e.g. Biotam or Rootshield) and *Bacillus* based (e.g. Serenade or Double Nickel) biofungicides have shown significantly less disease and increased yield in some university trials. Check labels for rates and crop restrictions, and rotate classes to slow development of resistance.

**Scarab beetle** damage is being reported widely throughout the region. The more familiar Japanese and Oriental beetles feed during the day, while Asiatic garden beetles feed at night and take refuge in the soil during the day, leaving mysterious feeding damage in the morning. Scarab beetles feed on a wide variety of crops, commonly including basil and brassicas. Heavy infestations may warrant insecticide applications. Many pyrethroids are labeled, see the applicable crop section of the New England Vegetable Management Guide for a complete list of labeled materials. In small plantings, hand-picking into a bucket of soapy water is effective.

**Two-spotted spider mites** have been seen in field tomatoes, eggplants, and high tunnel cukes this week in MA. These pests can build to high populations quickly and are a particular nuisance in high tunnels. Check 5 leaves from 10 locations in the tunnel or field for the characteristic mite “stippling”, or white spots on the upper surface of the leaf and on the underside of the leaf for the actual mites. Be sure to check field or tunnel edges as this is often where TSSM will enter the planting from. Consider a miticide application if TSSM are found at more than one of 10 locations checked—consult the [tomato insect section](#) of the New England Vegetable Management Guide for recommendations. Check labels for use on vegetable crops grown indoors.



Two-spotted spider mite (above) and damage on eggplant. Photos: J. Boucher

## 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: See the News section of this issue for more info.**

## PEPPERS: WATCH FOR PEPPER MAGGOT & EUROPEAN CORN BORER

There are two larval pests of pepper fruit that we see on farms every year—pepper maggot and European corn borer (ECB). Damage of these two pests can appear similar. We are entering pepper fruiting season, pepper maggot flies should be emerging now, and the second flight of ECB is beginning now. If you've struggled with rotting pepper fruit that reveal caterpillars or maggots when cracked open, start monitoring your crop now to watch for these pests.

**Pepper maggot** (*Zonosemata electa*) adults emerge in mid- to late-July and are active for several weeks. Larval damage is limited to solanaceous plants, including ground cherry, horse nettle, tomato, pepper, and eggplant. Pepper is the preferred host and green bell peppers and cherry peppers are especially susceptible.

The pepper maggot fly is found throughout eastern North America and its range within New England has been creeping northward and now extends into southern New Hampshire and throughout Massachusetts. Activity of this pest is very localized, and varies by farm, region, and year. Many farms never have a problem with this pest. Other farms may have it and not realize it, because it is possible to confuse maggot damage with damage caused by ECB. The best way to detect activity is to look for stings on the fruit, and these are easiest to spot on cherry peppers.

Pepper maggot flies are smaller than a house fly, and are bright yellow with three yellow stripes on the thorax, green eyes, and clear wings with a distinct banding pattern. The pest overwinters as pupae in the soil where last year's host plants were. Flies emerge in mid-July and aggregate in forested field edges to mate, then enter the field during the day to lay their eggs. Females insert eggs directly into immature pepper fruit and leave a small dimple, which is called an ovipositor sting or scar. Eggs hatch after about 10 days and the white maggots then tunnel inside the fruit to feed, especially in the placenta, causing soft spots on the wall of fruit and brown mines within. Maggots reach about ½ inch in length over a period of about two weeks. Maggots do not have a distinct head capsule; this distinguishes them from ECB larvae, which have brown head capsules. When pepper maggots are ready to pupate, they exit the fruit at the blossom end, leaving tiny round exit holes, usually in the end of August or in early-September. These holes allow for the entry of soft rot bacteria into the fruit. Sometimes the oval brown pupae can be found inside the fruit. Often damage is detected only because of premature ripening or decay of the fruit.

**Pepper Maggot Monitoring:** It is possible yet tricky to monitor for pepper maggot flies; to successfully capture the flies, you must place yellow sticky traps baited with a vial of 28% ammonium hydroxide 20 feet up in maple trees along hedgerows. A simpler way to monitor for fly activity is by scouting their preferred crops for oviposition scars—the marks left by egg-laying females. The flies prefer to lay eggs in the small (1-3 cm in diameter) round fruit of cherry peppers, and



*Pepper maggot fly.*  
Photo: S. Scholnick



*Pepper maggot larva (center) and pupa (right) alongside a pepper seed (left). Photo: University of Kentucky*

when these are planted in border rows around a pepper crop they work very well as indicator plants. Oviposition scars appear as depressions or scars and are easy to find on these small, round fruit. By timing insecticide applications with the first occurrence of the stings on the indicator plants' fruit, damage to the main crop can be avoided with minimal spraying. If cherry peppers are not part of your crop mix, look for stings on bell peppers—these are their second favorite type of pepper.

**Pepper Maggot Threshold:** Farms that have never had a problem with this pest generally do not need to be concerned; however, the range of this pest seems to be expanding. If a given farm has a history of pepper maggot activity, then it is recommended that an insecticide be applied as soon as flies are captured in sticky traps or stings are observed. Chemical controls need to target the adult fly because eggs are protected beneath the skin of the fruit and larvae are protected within the fruit itself. As soon as stings are observed on fruit or the first fly is trapped, make 2-3 insecticide applications, 10-14 days apart, with a material labeled for pepper maggot.

When the activity of ECB and pepper maggot fly overlap, use of Orthene at 8-10 day intervals for control of ECB will also provide control of pepper maggots. However, other selective insecticides for ECB will not control pepper maggot. Insecticides labeled for pepper maggot fly include alpha-cypermethrin, dimethoate, malathion, zeta-cypermethrin (e.g. Mustang), and spinosad (GF-120 Naturalyte). GF-120 Naturalyte is allowed for organic production. When using Naturalyte, a large spray droplet size of 4-6 mm is recommended to optimize the duration of this bait's attractiveness to the flies. See the [Pepper Insect Management section of the New England Vegetable Management Guide](#) for more details on using these products.

**Pepper Maggot Cultural Practices:** Since pepper maggot builds up on particular farms or fields rather than spreading out far and wide, you can make an impact on the population size on your farm over time by using cultural practices.

- Disc and plow pepper residue as soon as harvest is complete to kill larvae and pupae.
- Rotate peppers far from last year's crop.
- Control solanaceous weeds, especially horsenettle.
- Cover the pepper crop with insect netting during egg-laying (beginning in mid-/late- July).
- Remove infested and/or rotting fruit from field at each harvest and destroy. This will remove larvae and pupae from the field too.
- Use plastic mulch and/or weedmat as barrier to prevent larvae from reaching the soil to pupate. Instead, they will get cooked on the mulch or mat surface.



*Pepper maggot oviposition scars.  
Photo: OMAFRA.gov*



*Frass surrounding ECB entry holes in pepper calyx. Photo: Ontario Crop IPM*

**European corn borer (ECB)** is a resident pest that has 2 generations per year in southern and central New England and 1 generation in northern New England. This pest prefers sweet corn but can cause damage on a wide range of crops, including bean, potato, garlic, and pepper. ECB generally does not become a pest in peppers until the appearance of the second generation in late-July or early-August (1400 GDD base 50°F). See Table 2 in Pest Alerts for current GDDs across the state. The severity of ECB damage in peppers varies throughout the state. Some farms—typically in areas where farming is less dense and ECB populations have not built up—do not see much damage from this pest. In the Connecticut River Valley and in southeastern MA, an unsprayed pepper field is likely to have anywhere from 10 to 100% of the fruit infested. In some cases, it seems that sweet corn—which ECB prefer over peppers—helps to draw ECB away; in other cases, presence of sweet corn near peppers provides no benefit at all.

**ECB Life Cycle and Damage:** Larvae overwinter in stalks of corn and other host plants and pupate in the spring. Adult moths emerge in late-May or early-June and mate in weedy or grassy areas. The moths are about ¾” long, light brown in color with lighter bands on the wings. Females lay masses of flat, white eggs 3 to 7 days after they emergence (depending on temperature). Eggs hatch in about 5 to 7 days (100 GDDs base 50°F). After the eggs hatch, the newly emerged larvae feed on leaf tissue for a short period and then bore into stems or fruit.



ECB larvae often burrow into the fruit beneath the calyx. In addition to this direct injury, ECB damage also causes premature fruit ripening. Boring holes also allow for the entry of pathogens into the fruit, which can cause fruit rot. Controlling ECB larvae before they reach the pepper fruit is essential to effectively managing this pest. Larvae vary in color from light-gray to pink but always have small, dark spots on each body segment and brown head capsules.



**ECB Thresholds and Control:** ECB emergence is monitored using pheromone traps that attract male moths. Traps at sites across the state are checked weekly and moth counts are reported in the sweet corn section of Pest Alerts. [New York](#) and [New Hampshire](#)

also publish weekly trap counts. Spray timing depends on trap counts. When the crop is fruiting, make the first application 1 week after 7+ moths per week are trapped. Discontinue sprays 1 week after moth counts drop below 21 moths per week. The spray interval depends on the residual period of the insecticide used as well as weather conditions and pest pressure. Use shorter spray intervals during peak flights and when trap captures exceed 150 moths per trap weekly. Choose selective/microbial products such as *Bacillus thuringiensis aizawai* or *kurstaki* strains whenever possible to preserve beneficials and reduce the chance of aphid outbreaks, which can be caused when pyrethroids are used and natural enemies are killed. For other chemical control options see the pepper insect section of the Guide.

*Clockwise from top left: European corn borer adult, egg mass, and larva.  
Photos: D. Ferro; J. Kalisch Univ. of Nebraska Lincoln; and Clemson University, USDA, Bugwood.net*

**Using *Trichogramma* wasps for biological control of ECB in pepper.** Sweet corn is not the only crop where ECB can be controlled with the parasitic wasp, *Trichogramma ostrinia*. ECB will invade pepper fruits that are > ½ inch across, and *T. ostrinia* attacks only the egg stage, so timing is critical. We recommend that you begin releases the week that flight begins and continue weekly releases for a total of 4 weeks. Release 90,000 to 120,000 wasps per acre and spread the cards out throughout your pepper block. Higher rates are needed in peppers compared to sweet corn because the tolerance for damage is virtually zero and ECB larvae attack the fruit directly. Four releases are needed because the egg-laying period for the second generation is longer than for the first generation of ECB. Fortunately, peppers are also a higher value crop and worth the extra cost. After four releases, *Trichogramma* will have reproduced in the field and biocontrol should continue. Wasps can be ordered from IPM Laboratories, at [www.ipmlabs.com](http://www.ipmlabs.com) or by phone, 315-497-2063. Wasps can also be used in combination with insecticides, but choose a selective material (see above) that will not kill wasps.

*--Written by R. Hazzard, UMass Extension. Reviewed 2020.*

## **CLEANING TIPS FOR WASHING MACHINE GREENS SPINNERS**

Routine cleaning and sanitizing in a fruit or vegetable pack house is key to managing food safety risks and preserving product quality. Some surfaces, like tables and sinks, are pretty straightforward to clean, at least in terms of being able to access them. Other equipment, such as brush and barrel washers



*Click on the picture above for the UVM Ag Engineering spinner cleaning video series. Photo: UVM Ag Engineering*



*Basket insert for a greens spinner.  
Photo: UVM Ag Engineering*

or greens spinners, with lots of enclosed areas and hidden spaces, present a bigger challenge. Many growers are using retrofitted washing machines to spin leafy greens dry. These machines can be particularly challenging since they were not originally designed for food use, though some relatively simple modifications can make them both more efficient to use and easier to clean. [The University of Vermont Extension's Ag Engineering team](#) has been working on recommendations for these retrofits and has some good tips about what to look for if you plan to buy a new machine to turn into a spinner. While a retrofit is probably a winter project, if you are already working with a washing machine, [the UVM team has also just released some tips and a series of videos on how to clean](#) them, both for daily end-of-day protocols and the occasional deeper clean. They also provide a couple of routine maintenance tips.

Their retrofit recommendations include starting with a new machine—older, used washers may be harder to clean and have histories that make them inappropriate for use with food. They also suggest using a basket insert instead of putting the greens directly into the drum, making the removable basket the food contact surface. This can then be more easily washed and sanitized outside of the washing machine.

To clean the machine, first disconnect the power. Whether you use a basket insert or put greens directly inside, rinse the inside of the drum to wash any loose leaves and dirt into the machine's drain. The inside and outside of the washing machine can be cleaned with water and detergent—dish detergent or an all-purpose household cleaner works well—using a sponge or scrub brush to loosen any stuck-on debris. Pay attention to any harborage points inside the drum or around the top of the machine where leaves might tend to get stuck. Depending on your machine, you may need to use a small bottle or sponge brush to get into harder-to-reach crevices. Cleaning should be followed by a spray or wipe-down with a sanitizer. Follow the instructions for whichever surface sanitizer you're using in terms of rate and wet time for the product. You can find a sample SOP for a washing machine spinner in a previous UVM Extension blog post, [here](#).

The UVM videos demonstrate how to wash inside the drum and also how to remove and clean underneath it—it sits inside of a catch basin that should also be cleaned periodically. There are a few tricks to getting some of the pieces of the machine apart. You will likely need to get to know the quirks of your own machine, but the video demonstration will give you a sense of what to look out for and what tools you might need. When the drum is out, be sure to clean the outside and bottom of it before putting it back in. Finally, lay the machine down so you can get any residues off of the bottom of it as well, being careful to keep the motor dry!

To verify that the relatively simple cleaning protocols described above and demonstrated in the UVM videos are sufficient to protect food safety, the UMass Food Science research team has retrofitted a few of their own washing machines and is [conducting a study](#) on the risk of pathogen survival and transfer onto produce from converted spinners. Their results will help to build on current best practices—we'll keep you posted!



*It's best to start with a new machine; older washers may have residues from past usage and be hard to clean.*

*Photo: L. McKeag*

## **MA PESTICIDE LICENSE INFO: LICENSES, STUDY MANUALS, & EXAMS**

**Pesticide License Exams** - The MA Dept. of Agricultural Resources (MDAR) has begun opening dates to hold exams for new exam applicants. Individuals will be able to begin signing up for new exams beginning July 9, 2020. The exams will be held at the Colonial Inn in Gardener under a covered tent. Safety precautions will be sent to the examinees ahead of time so that they can be prepared when coming to the exam site. Please be aware that space is still limited, but MDAR is continuing to work on an online exam process, and will be adding some additional dates for the beginning of August. Safety of examinees and MDAR employees has been their priority when organizing this. To register, go to <https://www>.



[mass.gov/pesticide-examination-and-licensing](https://www.mass.gov/pesticide-examination-and-licensing).

**Pesticide Exam Preparation Workshops** - The UMass Extension Pesticide Education Program is offering these workshops to help applicants prepare to take the Massachusetts Pesticide Applicator's License exam. Topics covered: Pest Identification, Pesticide Types and Formulations, Pesticides and Human Health, Pesticide Label, Pesticides and the Environment, Integrated Pest Management, Pesticide Laws and Regulations, and Practice Exam. For more information, go to [https://www.umass.edu/pested/training\\_workshops/registration\\_form13.htm](https://www.umass.edu/pested/training_workshops/registration_form13.htm).

**Pesticide Manuals** - To order a copy to study prior to taking the exam, go to [https://www.umass.edu/pested/study\\_materials/index.htm](https://www.umass.edu/pested/study_materials/index.htm).

**Recertification Credits** - UMass Extension's Pesticide Education Program will resume offering online workshops in the fall that offer recertification credits. For info on how to register for these, go to [https://www.umass.edu/pested/recertification/current\\_workshops.htm](https://www.umass.edu/pested/recertification/current_workshops.htm)

For holders of Massachusetts pesticide licenses whose current three-year retraining or recertification cycle ends on July 1, 2020, the MDAR Pesticide Program has extended the time permitted to earn credits to December 31, 2020 as well as the number of computer-based or online credits that are acceptable for these specific individuals. This means that individuals with a three-year retraining cycle ending on July 1, 2020 may obtain any portion or all of the needed training credits from online sources and have until December 31, 2020 to do it. For more information, go to <https://www.mass.gov/doc/pesticide-license-recertification-processes-and-related-impacts-from-covid-19/download>

**Temporary Licenses** - If your pesticide license has expired and you are unable to re-take the pesticide exam in 2020, the Mass. Dept. of Agricultural Resources will issue temporary pesticide licenses, without an exam, if certain criteria are met. For an individual with an expired license who wants to obtain a temporary Massachusetts Pesticide Applicator License, the license must have an expiration date of December 31, 2017 or after; the license was in good-standing when it expired; and the applicator has not had a pesticide violation within the past three (3) years; among other criteria. This significantly impacts pest control services; especially, seasonal businesses such as lawn care and mosquito and tick services. For more info on this update, go to <https://www.mass.gov/guides/covid-19-resources-for-agriculture> under Addressing COVID-19 Impacts, Bulletins and Guidance. You can find the specific bulletin at <https://www.mass.gov/doc/mdar-bulletin-17-temporary-pesticide-license/download>. These temporary licenses will expire on December 31, 2020. If you will want to be licensed in 2021, you will be required to take the pesticide exam.

## NEWS

### NATIONAL TOMATO BROWN RUGOSE FRUIT VIRUS (TOBRFV) GREENHOUSE SURVEY

As a follow up to the initial find of ToBRFV in Florida in December 2020, the USDA is now requiring an emergency survey for ToBRFV in all states. As a result, the Massachusetts Department of Agricultural resources (MDAR) is seeking to determine the location of commercially grown tomato, pepper, or eggplant, at high yields, under a structure (not field grown) in MA. Plants can be either fruiting or not yet fruiting hosts (not just for seedlings as before), and includes plants intended for local distribution as well as non-local. These sites will need to be surveyed by MDAR staff as soon as possible.

Growers should contact Joanne Klein directly at [joanne.klein@mass.gov](mailto:joanne.klein@mass.gov) or call/text at 857-324-3404.

For more information on Tomato Brown Rugose Fruit Virus, refer to: <http://ag.umass.edu/greenhouse-floriculture/factsheets/tomato-brown-rugose-fruit-virus-tobrfv>

### WOMEN'S COMMUNITY & LEADERSHIP SURVEY FROM ANNIE'S PROJECT

Annie's Project, in collaborating with Farm Credit, is conducting a survey to gather data to better understand the community and leadership roles of women farmers, ranchers, growers and agriculturalists. Results will be used to help design educational programs to expand women's involvement in their communities and agricultural organizations.

Annie's Project empowers farm and ranch women and growers to be better business partners through networks and by managing and organizing critical information. Farm Credit is a nationwide network of 72 customer-owned financial institutions.

“Our interest is to strengthen rural and agricultural communities by tapping into the talents of the women living and working there”, says Doris Mold, Annie’s Project Co-CEO. Dr. Karisha Devlin, Annie’s Project Co-CEO adds, “It is critical for us to also develop an understanding of the tools that they need to become more effective leaders in their communities.”

Anyone with an interest in women’s agricultural leadership is encouraged to take the survey. The survey is open through August 20 and may be found using the following link: [https://umn.qualtrics.com/jfe/form/SV\\_bpVDm-VIC9jGz4mp](https://umn.qualtrics.com/jfe/form/SV_bpVDm-VIC9jGz4mp)

The survey will take approximately 10 minutes and all responses are anonymous

## **UMASS SOIL & PLANT NUTRIENT TESTING LAB UPDATE**

The UMass Soil & Plant Nutrient Testing Lab will be accepting new orders for ROUTINE SOIL ANALYSIS and PARTICLE SIZE ANALYSIS orders ONLY, beginning Monday, July 13, 2020. *Please do not send orders for other types of analyses at this time.* At this time, we can accept mail-in samples only; walk-in samples cannot be accepted at this time and the lab office will remain closed to the general public until further notice. Processing time will be longer than usual since we are operating with reduced staff and staggered shifts. Thank you for your patience and understanding. For updates and information about available services, please visit: [www.ag.umass.edu/services/soil-plant-nutrient-testing-laboratory](http://www.ag.umass.edu/services/soil-plant-nutrient-testing-laboratory).

The UMass Plant Diagnostic Lab is also now receiving mail-in samples. For more information, please visit their website at [www.ag.umass.edu/services/plant-diagnostics-laboratory](http://www.ag.umass.edu/services/plant-diagnostics-laboratory).

## **PAYCHECK PROTECTION PROGRAM (PPP) UPDATES**

The Paycheck Protection Program (PPP) has reopened the application period until August 8, 2020. The PPP original application period closed on June 30, 2020.

As a recap, PPP is a program administered by the U.S. Small Business Administration (SBA) with applications being processed through an SBA-approved lending institution. While PPP is a loan, an important point to note is that the loan will be fully forgiven if the funds are used for payroll costs, interest on mortgages, rent, and utilities (at least 60% of the forgiven amount must have been used for payroll). Forgiveness is based on the employer maintaining or quickly rehiring employees and maintaining salary levels. Forgiveness will be reduced if full-time headcount declines, or if salaries and wages decrease. The period used to cover eligible costs and expenses has also increased from 8 weeks to 24 weeks from loan disbursement, making it easier for PPP recipients to meet the 60% payroll requirement. Special consideration under PPP is provided for seasonal businesses such as farming operations.

More detailed information, including a list of SBA-approved lending institutions that process PPP applications can be found at: <https://www.sba.gov/funding-programs/loans/coronavirus-relief-options/paycheck-protection-program>

PPP is a program you should definitely look into if you employ agricultural workers on your farming operation!

## **OPEN APPLICATION PERIOD FOR FOOD SECURITY INFRASTRUCTURE GRANT PROGRAM**

The Executive Office of Energy & Environmental Affairs (EOEEA) is accepting online applications for The Food Security Infrastructure Grant Program (FSIG) on a rolling basis now through September 15th, 2020.

The goal of the Food Security Infrastructure Grant Program is to ensure that individuals and families throughout the Commonwealth have access to food, with a special focus on food that is produced locally, and equitable access to food. The Program also seeks to ensure that farmers, fisherman, and other local food producers are better connected to a strong, resilient food system to help mitigate future food supply and distribution disruption. Participants selected to participate in the Program will be provided with reimbursement grants broken into three funding categories: \$0 to \$10,000; \$10,000 to \$75,000; or \$75,000 to \$500,000.

Eligible projects include: (i) information technology needs; (ii) facility adaptation to new safety guidelines; (iii) storage, processing, and delivery equipment, and (iv) other strategies that connect local food production with food insecure communities and residents. Project categories are broken into three funding sections.

Examples of eligible projects for agricultural operations include:

- Signage & Handwashing Stations

- Equipment for Remote Ordering & Payment
- Food Storage, Processing, and Delivery Equipment
- Food Safety Equipment (i.e. coolers and thermometers)
- Food Processing, Washing & Packing, and/or Cleaning & Sanitation Equipment
- Season Extension (i.e. greenhouses, cold storage)
- Food Processing Facilities
- Distribution Vehicles
- Infrastructure

For more information, or to submit an online application go to: [www.mass.gov/service-details/food-security-infrastructure-grant-program](http://www.mass.gov/service-details/food-security-infrastructure-grant-program). Please refer to the Request for Response (RFR) available on this website for full Program details. To apply online please review the RFR and then click on the 'Food Security Application Questions' to submit your application.

## **EVENTS**

### **UMASS EXTENSION FRUIT TEAM AND MASSACHUSETTS FRUIT GROWERS ASSOCIATION 2020 ANNUAL SUMMER MEETING**

**Where:** Online

**When:** Thursday, July 23, 5:30 pm Eastern Time

**Dr. Tracy Leskey**, *Director of the USDA Innovative Fruit Production, Improvement and Protection Entomology Lab* in Kearneysville, WV will share details of her latest research on Spotted Lantern Fly and Brown Marmorated Stink Bug.

**Dr. Jaime Piñero**, *UMass Extension*, will share information on his latest research into the pests that “bug” you the most.

Also, take a **virtual orchard tour** of current research at the UMass Orchard YouTube channel: [2020 UMass Extension Fruit Team Virtual Summer Tour](#) playlist

Plus, **include your address when registering** for the annual meeting to receive 2 laminated IPM posters for your farmstand.

**Registration:** Please register in advance for this meeting here:

<https://umass-amherst.zoom.us/meeting/register/tJckfu6orzIoE9Rh5avES0Fj2JXOs2ZW1hBZ>

### **SUCCESSFUL FOOD PRODUCT DEVELOPMENT FOR NEW FOOD BUSINESSES: MANAGING FOOD QUALITY & SAFETY**

**Where:** Online

**When:** Tuesday, July 21 **AND** Thursday, July 23, 9am to 4pm

This course is a 2-day program designed specifically to address product development and food safety issues faced by small processors. Throughout the course, we will introduce the food science basics, important considerations when developing a new food product, share key elements required for product labeling, and provide an overview of key regulatory requirements for small and emerging food businesses, such as entrepreneurs and local food processors.

**Registration Fee:** This program is sponsored in part by USDA-NIFA, so the program will be offered at a reduced cost of \$50, which will provide participants with a key for the online self-paced version of this course (accessible in fall of 2020). Participants will also receive a \$50 stipend upon completion of course and all program evaluations. **Registration Deadline:** Monday, July 20<sup>th</sup>

**Register here:** <https://umasscafe.irisregistration.com/Home/Site?code=SFPDV>

Contact Christopher Von Achen, [cvonachen@umass.edu](mailto:cvonachen@umass.edu), for more information

### **UPCOMING WEBINARS FROM UNH EXTENSION:**

- **Wednesday, July 22. 6:30-8:30pm. [Low-Risk Pesticides Webinar #2: Sprayers & Foggers for Small Scale Operations.](#)** In two zoom workshops, we will cover best practices for making the most of low-risk insecticides in small farm operations. Free to attend. Register at the link above. Free to attend - 2 NHDAM&F - DPC Pesticide Applicators Credits pending, must attend the live Zoom event to earn credit. Learn more and register at the link above.
- **Wednesday, July 29, 5-7pm. [Managing Humidity & Condensation in Coolers.](#)** Please join us for a virtual twilight meeting on how to manage humidity and condensation in coolers to increase shelf life and prevent food-borne illness. Our speakers will include Chris Callahan and Andy Chamberlain from UVM's Ag Engineering program, Mary Chaote from UNH Extension's Food Safety Team, and Paul Franklin from Riverview Farm in Plainfield, NH.

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*Vegetable Notes. Genevieve Higgins, Lisa McKeag, Susan Scheufele, co-editors.*

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