UMass Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975

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In this issue:

Crop conditions

Growers have again been waiting to see how much rain today's storm will bring, and if it will be enough to make up for otherwise dry conditions. Across MA, the rainfall so far ranges from 0.25 to 2.5 inches and may top 3.0 inches in some places by the time all the rain has fallen. Longer dry spells dotted with large rain events (>2.0 inches) is the new normal in the Northeast, as our climate is changing. Steps should be taken to keep soil covered with cover crops when there are gaps between plantings to prevent soil erosion and soak up excess water during washout rain events. The forecast calls for extreme heat and more dry conditions following today's rains, a sharp change from summer weather so far, which may be hard on plants and people—be prepared to irrigate crops next week despite today's rains, and keep yourselves hydrated too!

At Monday's twilight meeting, Carl Hills of Kimball Fruit Farm in Pepperell, MA showed his hydroponic greenhouse. Photo: L. McKeag

The first (unheated) greenhouse tomatoes are starting to be picked and field tomatoes are ripening. Corn is starting to silk, summer squash and zucchini are on a roll, cucumbers are coming in, fresh onions are being bunched, and napa cabbage and snap peas are bringing the crunch! With longer harvests and constant seeding and transplanting underway, it's easy for pests to go unnoticed and multiply quickly. This is especially true for weeds right now—with today's rain and sunshine to come, small weeds today are ready to take off and turn almost overnight into monster weeds, competing with your crops for light, nutrients, and water—let's get ready to kill some weeds next week!

Pest alerts

Alliums:

Dark brown lesions with fluffy gray sporulation, characteristic of allium downy mildew. Photo: K. Campbell-Nelson

Downy mildew is being reported on overwintered 'Bridger' onions in several locations around the region. While overwintering crops can provide some very valuable early-to-market crops, it also can provide a 'green bridge' between seasons for pests to carry over. The cool temperatures and humid conditions in late winter and under covers provide a favorable environment for downy mildews—whether in onions, brassicas, lettuce, or spinach—and consequently we are seeing more of all of these diseases than we have in the past.

Brassicas

Root maggot flies are active again, laying eggs which will hatch quickly in warm weather. This means that larvae will soon start feeding again on plant roots causing collapse of seedlings and tunneling on root crops like salad turnips. Cool, moist soil conditions favor survival of the eggs, and soil temperatures that exceed 95°F in the top 2-3 inches will kill them, so eggs may be killed with next week's higher temperatures. Cultivating around the base of plants can disturb the soil, helping to expose eggs to heat and desiccation, and moderate hilling can help plants put out new roots to compensate for losses from root maggot damage.

Chenopods

Leafminer: The next generation of flies is active now in some parts of the state and a fresh batch of eggs may be seen on beets, spinach and chard. Consult the New England Vegetable Management Guide for recommended chemical controls.

Cucurbits:

Squash vine borer trap captures are still increasing in MA this week (see the map at the end of Pest Alerts) and now is the time to start scouting weekly for eggs near the base of cucurbit stems, especially if you are not trapping. If you are trapping, thresholds for treatment are: 5 per trap for for bush varieties and 12 per trap for vining varieties. If using row cover on new cucurbit successions, keep the cover on during this first flight of the vine borer. We can expect to start seeing damage (wilting of vines and stems) in the next one to two weeks.

Cucurbit downy mildew: No new outbreaks have been reported this week after last week's report in Maryland. Monitor disease progress as the disease moves north at http://cdm.ipmpipe.org/.

Lettuce

Lettuce bottom rot, caused by *Rhizoctonia solani*, was observed in a field in RI where lettuce was grown under row cover. The pathogen is ubiquitous in the environment and causes disease only when conditions become very favorable—warm temperatures and high humidity. The iceberg variety Crispino was hardest hit.

Solanaceous:

Late blight: There are no new reports of late blight this week after last week's reports in New York and Pennsylvania. Growers should be actively scouting their potato and tomato fields for signs of late blight. You can continue assessing the risk of late blight on your farm by using the NEWA Tomato and Potato Disease Forecasts. See the article in this issue for identification of other tomato diseases that we are seeing now in MA and might be confused with late blight.

Flea beetles seem worse than usual this year in MA, with eggplant hit especially hard and even reports of damage on tomatoes in RI. One reason for this impression may be that we are scouting some new (to New England) solanaceous crops like jiló—a small bitter eggplant popular in Brazil and Africa—and managu—a bitter leafy green native to Kenya and sometimes called African nightshade. These two crops are preferred by the solanaceous flea beetles and damage is very high in organically managed fields.

Virus symptoms in Gold Rush potato - mottled chlorosis, or small or puckered leaves. Photo: S. Scheufele

Potato virus Y was confirmed in 'Red Norland' potatoes from Franklin Co., MA. This virus is introduced on contaminated seed and is then spread in the field by aphids. Rogue out virusy-looking plants (see photo) and control aphids. Since aphids spread PVY non-persistently, meaning that the virus does not persist within the aphids for a long time, insecticides are often ineffective and are not considered a valuable control strategy. However, repellents such as horticultural oils (especially early on when aphid populations are low and plants are young) and newer behavior modifying pesticides may be of use, including: Assail, Belay, Admire Pro, Fulfill, Movento, and Platinum.

Potato leafhopper adults and nymphs are active and we are beginning to see the first signs of hopperburn in potatoes, beans, and eggplant. Crop yield is often significantly reduced by feeding damage, which reduces photosynthesis. In potato, the normal number of potatoes may be produced but they will be very small. In beans, pods may develop incompletely or pod production may stop completely once plants are attacked. Damage is exacerbated by drought. For organic and conventional control options please see the New England Vegetable Management Guide.

Fulvia leaf mold and Botrytis gray mold were diagnosed in greenhouse tomatoes this week. See the article in this issue for more info on these and other common tomato diseases.

Sweet Corn

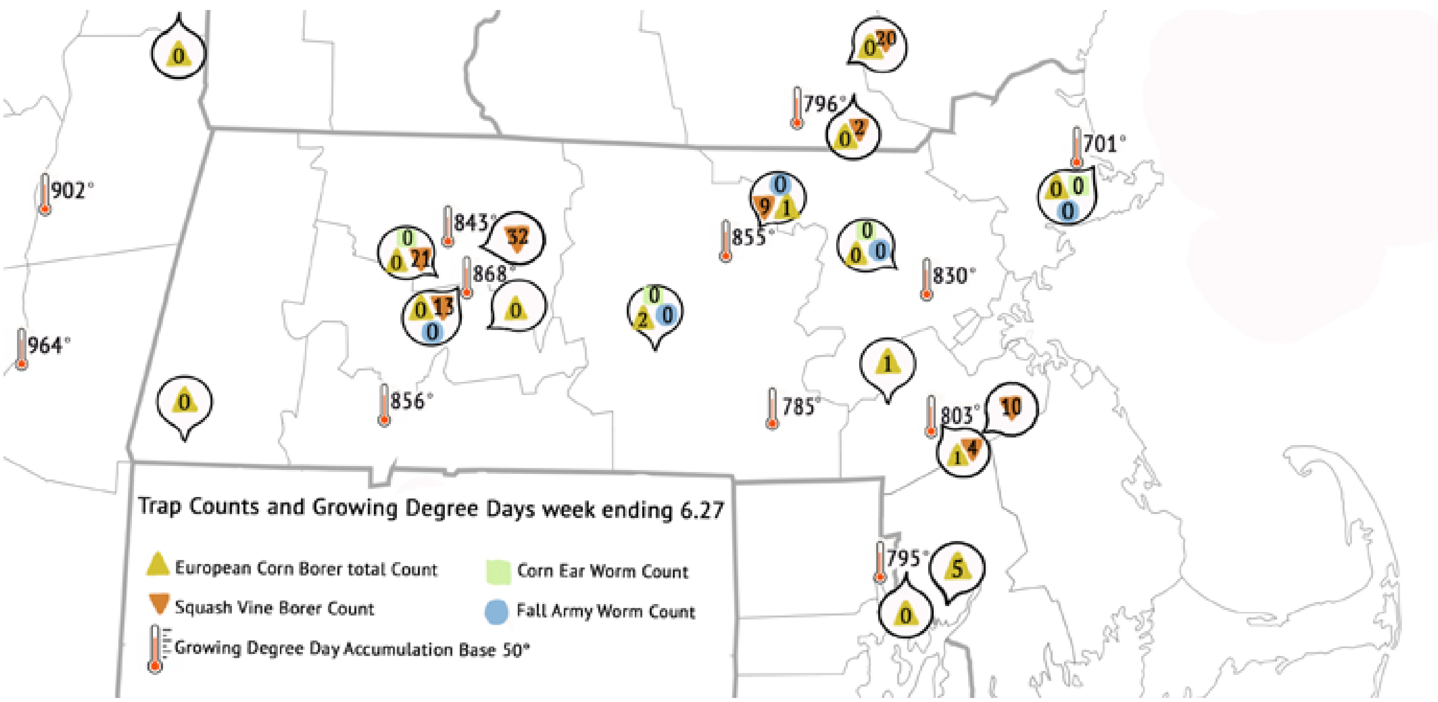
European corn borer (ECB) numbers are still low in MA and little to no damage has been seen in scouted fields. In other areas (NY), damage in fields is higher than expected given low ECB trapping numbers. It is still a good idea to get out and scout your fields to make sure you are below threshold of 15% plants infested. Corn earworm, fall army-worm, and western bean cutworm are not yet present in MA and NH.

Various

Oriental beetles are being seen across the state now. Adults tend not to feed heavily in vegetable crop foliage but show up in many crops and signal the imminent emergence of Japanese beetles, so if the latter are a problem on your farm now is the time to begin scouting.

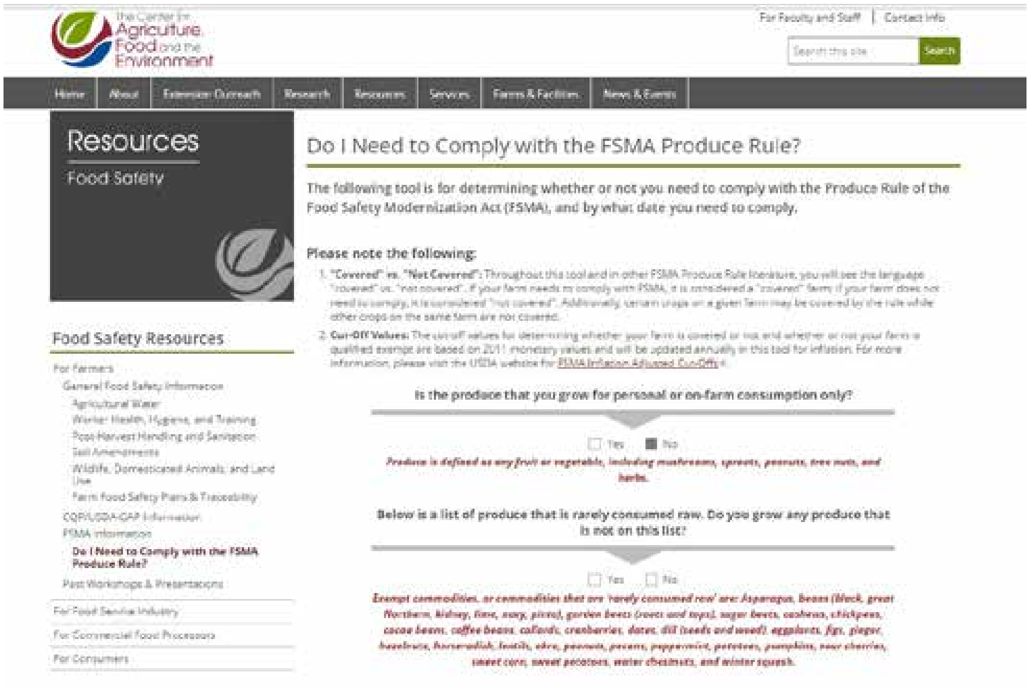
Tarnished plant bug adult.
Photo: Scott Bauer

Tarnished plant bugs have been seen in a variety of crops this year including potato and basil. They are an important pest of strawberry and often cause damage to ribs of Romaine lettuce, but have a very wide host range, including vegetable crops like asparagus, celery, and broccoli, and are especially attracted to buds and flowers. TPB have piercing-sucking mouthparts and while feed-ing, the bugs secrete a toxic substance from their salivary glands that kills cells surrounding the feeding site. Usually the first signs of damage are small brown spots on young leaves. As the tissue grows, healthy tissue expands while dead tissue does not, which results in holes and distorted, malformed leaves, buds, or fruit. Terminal shoots and flowers may be killed. TPB usually do not warrant chemical control in vegetable crops, but if damage is unacceptably high, use insecticide applications. Labeled prod-ucts for TPB on lettuce are listed in the lettuce section of the New England Vegetable Management Guide and include several synthetic pyrethroids and carbamates. Pyganic may be used by organic growers. Avoid applications during bloom periods. Insecticide labels often list “lygus bug” instead of specifically “tarnished plant bug”.



FSMA COMPLIANCE TOOL

Wondering whether or not you need to comply with the Food Safety Modernization Act? Use our new decision-making tool to find out if, and by what date you need to comply, and what requirements apply to your farm. The tool can be found here: https://ag.umass.edu/resources/food-safety/for-farmers/fsma-produce-rule.



While you're there, check out these updated Food Safety for Farmers topic page: Agricultural Water, Postharvest Handling & Sanitation, and the Commonwealth Quality Program—a grower-initiated food safety certification program. We are in the process of updating the rest of our Food Safety for Farmers website to include FSMA-related information, so check back soon for updated pages throughout the rest of the site.

THE 'OTHER BLIGHTS' OF TOMATO

With reports of late blight in nearby states, growers are beginning to scout their tomatoes more carefully and questioning every spotty leaf. Hopefully we can dispel some fears by describing some of the late blight imitators, of which there are several, all caused by fungi. Septoria leaf spot and early blight are seen mostly in the field and less in greenhouses and are usually associated with enough leaf yellowing that they are seldom confused with late blight, but powdery mildew, Fulvia leaf mold, and Botrytis gray mold are common in greenhouses and high tunnels and can resemble late blight under certain conditions. These imposters are described below, but first, here are some key characteristics that distinguish late blight symptoms from those of other diseases:

- Leaf lesions are darker green to gray, and appear water-soaked or greasy
- No leaf yellowing occurs
- Stem lesions are brown and can occur anywhere on stems or petioles
- White sporulation may be seen within or on the edges of lesions on leaves or stems
- Lesions can occur anywhere on the leaf or on the plant, meaning that they don't necessarily start at leaf margins or at the base of the plant but are distributed throughout the canopy

Late blight lesion on tomato foliage. Photo: UMass Extension

Botrytis Gray Mold & Ghost Spot (*Botrytis cinerea*): *Botrytis cinerea* causes leaf spots, stem cankers, fruit rot, and ghost spot on fruit. The pathogen thrives in the greenhouse where humidity is very high, but it has been observed in field tomatoes as well. Leaf lesions are dark gray and have no yellow halo, and therefore are often mistaken for late blight lesions. Under conditions of alternating heat and humidity, the pathogen grows in such a way as to form concentric rings, and for this reason can also be confused with early blight. The way to distinguish Botrytis from early blight is by its characteristic fuzzy brownish-gray sporulation. If you hold the leaf up and look across the lesion you will see fine mycelia sticking up with little tuftlets on the ends that resemble grape clusters. *B. cinerea* primarily feeds on dead tissue and is only weakly pathogenic, therefore, you will likely see this sporulation on senescing tissue including flowers or leaf tips and margins where nutritional disorders have caused tip burn. Spores that land on fruit cause ghost spot, which appears as pale white haloes or ring spots on the green tomato fruit. On ripe fruit, the ringspots may be yellow. Ghost spot develops when the fungus initiates infection, but disease progress is stopped by dry environmental conditions. This spotting may adversely affect market quality. Under favorable conditions ghost spot may lead to fruit rot.

Botrytis leaf spots (above) and characteristic sporulation (below). Photos: S. Scheufele above, David Cappaert below.

Leaf Mold (*Passalora fulva*, previously *Fulvia fulva*): This disease can occur in the field, but is most common in greenhouses, in both soilless and hydroponic systems. Leaf mold infections begin on older leaves and cause pale-green to yellow spots visible on the upper leaf surface, with olive-green to grayish-brown fuzzy sporulation on the underside of the leaf. Heavily infected leaves turn yellow, then brown, and may wither and drop. Occasionally petioles, stems, and fruit may be affected. Infected flowers wither without setting fruit and infected fruit has leathery, black, irregularly shaped lesions. The fungus overwinters in soil on crop residue and as sclerotia (hard, black, long-lived resting structures) and may be introduced on infested seed. Disease development is favored by warm, moist conditions with relative humidity over 85%. The fungus can survive and reproduce between 50-95°F, with optimal infection and growth between 71-75°F. The disease can spread rapidly as spores disperse throughout a greenhouse on air currents, water, rainsplash, insects, and workers.

Upper and lower leaf symptoms of Fulvia leaf mold. Photo: Cornell Extension

Powdery mildew (*Oidium neolycopersici*) of tomato has emerged as an important disease of greenhouse and high-tunnel tomatoes, and is occasionally seen in field tomatoes. Look for white, powdery, circular lesions on the upper and lower leaf surfaces. Unlike other powdery mildews, affected leaves may rapidly wither and die, but remain attached to the stem. There are no symptoms on fruit or stems, but loss of foliage may result in sunscald. The pathogen does not require leaf wetness to germinate and cause disease but it does thrive under humid conditions and a range of temperatures (50-86°F). This pathogen can be very aggressive and lead to reduced yield and poor fruit flavor if untreated.

White sporulation of powdery mildew. Photo: S. Scheufele

Botrytis, Leaf Mold, and Powdery Mildew Management:

- Control weeds and remove infected plant debris.
- Reduce humidity within the canopy, improve air circulation, and reduce leaf wetness by using wider plant spacing, removing suckers, pruning lower leaves, and watering early in the day or using drip irrigation. In the greenhouse, improve horizontal air flow with fans, and reduce humidity by a combination of heating and venting in the evening, particularly when warm days are followed by cool nights.
- Avoid excessive nitrogen fertilization.

- Remove and destroy all diseased plant residue; disinfest the entire greenhouse after pruning and harvest.
- Practice hot water seed treatment for tomatoes as a general rule. The UMass Vegetable Program offers hot water seed treatment services – find out more here: https://ag.umass.edu/services/hot-water-seed-treatment
- Choose resistant varieties. This is especially effective for Fulvia leaf mold management. You can find a list of resistant tomato varieties here: http://vegetablemdonline.ppath.cornell.edu/Tables/TableList.htm
- Please see the New England Vegetable Management Guide for current chemical control recommendations. Always alternate fungicide applications between materials with different modes of action to prevent resistance development.

Septoria leaf spot (*Septoria lycopersici*) usually occurs in the field but can also occur in high tunnels and is one of the most destructive diseases of tomato foliage, resulting in considerable leaf drop that can cause sunscald, failure of fruit to mature properly, and reduced yields. Once infections begin, the disease can spread rapidly from lower leaves to the upper canopy.

Septoria leaf spot.
Photo: Bruce Watt

Symptoms consist of circular, tan to grey lesions with dark brown margins that appear on lower leaves first, after the first fruit set. If conditions are favorable, lesions can enlarge rapidly, turning infected leaves yellow, then brown. *S. lycopersici* forms pycnidia (structures that produce asexual spores) in the center of expanding lesions, which can be seen with a 10X hand lens as tiny black dots. The presence of pycnidia, plus the generally smaller size of the lesions and the absence of target-like circular bands within the lesion, distinguish this disease from early blight.

The pathogen overwinters on infected tomato debris or infected solanaceous weed hosts (jimsonweed, horsenettle, groundcherry, and black nightshade), and can also survive on stakes and other equipment. Tomato seed may be coated in spores. Once established, *Septoria* is spread by splashing water, insects, workers, and equipment. High humidity, long periods of leaf wetness, and temperatures of 60-80°F are conducive to disease development.

Early blight (*Alternaria solani*) occurs on the foliage, stem, and fruit of tomato as well as potato. In tomato, the disease first appears as small brown to black lesions with yellow haloes on older foliage. Under conducive conditions, numerous lesions may occur on each leaf causing entire leaves to turn yellow. As the lesions enlarge, they often develop concentric rings giving them a ‘bull’s eye’ or ‘target-spot’ appearance. As the disease progresses, plants can become defoliated, reducing both fruit quantity and quality. Fruit can become infected either in the green or ripe stage. Infections usually occur through the stem attachment. Fruit lesions appear leathery and may have the same characteristic concentric rings as the foliage. Fruit lesions can become quite large, encompassing the whole fruit.

Lesions with concentric rings, characteristic of early blight.
Photo: IPM Images

On potato, foliar symptoms are quite similar, though complete defoliation rarely results. Tuber lesions are dark, sunken, and circular often bordered by a purple to gray raised tissue. The underlying flesh is dry, leathery, and brown. Lesions can increase in size during storage and tubers become shriveled.

The fungus overwinters on infected crop debris in the soil and can survive there for several years. High humidity and warm temperatures (75-85°F) favor infection and disease development. Production of spores requires long periods of leaf wetness but can occur during alternating periods of wet and dry. Spores are dispersed mainly by wind but also by splashing water or overhead irrigation.

Septoria and Early Blight Management:

- Some tomato and potato varieties with early blight resistance or tolerance are available, however, most tomato cultivars are susceptible to Septoria leaf spot.
- Adequate nitrogen fertility throughout the season can help delay onset of early blight; lower leaves become more sus-

ceptible as the nitrogen demand increases with fruit production and nitrogen is pulled from older leaves.

- Protectant fungicide sprays at regular intervals (depending on weather conditions and disease pressure) will delay the onset of disease.
- Reduce overwintering inoculum by rotating out of tomato crops for at least two years, controlling solanaceous weeds, and incorporating crop debris after harvest.
- Reduce the length of time that tomato foliage is wet by using drip irrigation, using wider plant spacing, and staking. Keep workers and equipment out of wet fields where possible.
- Many fungicides are registered and effective against both early blight and Septoria. Please see the New England Vegetable Guide for recommendations. Use the TOMCAST forecasting model to help with the timing of fungicide applications for early blight and Septoria.

-Bess Dicklow and Susan B. Scheufele, UMass Extension

Boom Sprayer Calibration with George Hamilton

We had a great twilight meeting at Kimball Fruit Farm on Monday evening, where we toured the farm's hydroponic greenhouse, got a spotted wing drosophila update from UMass Extension Fruit Specialist Sonia Schloemann, and learned from UNH Extension's George Hamilton how to calibrate boom sprayers. Calibration, or the process of measuring and adjusting the amount of product being put out by a sprayer over a given area, is a crucial part of applying pesticides—if you don't know exactly how much pesticide is coming out of your sprayer, you can over or under apply, leading to unreliable or uneven pest control in your fields or toxic levels (for the plants or the applicator) of pesticide. Below are George's top ten tips for making sure your boom sprayer is functioning as expected:

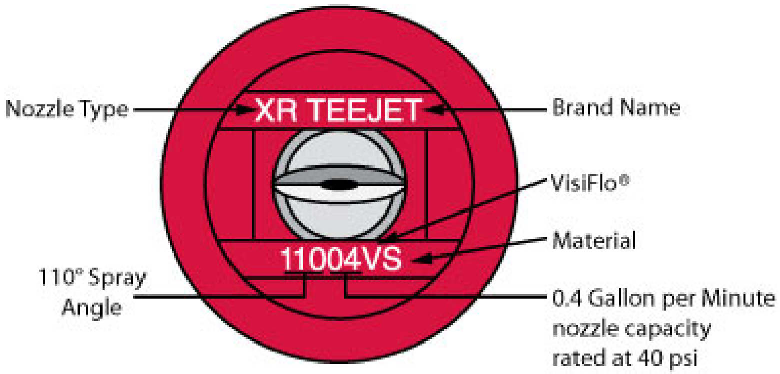
George Hamilton showing nozzle spray patterns at Monday's twilight meeting. Photo: L. McKeag

1. **Every time you fill the tank with water, clean the screens and filters.**
2. **Use a compressed air can**—the kind you use to clean a computer keyboard—to clean out your nozzles. Don't try to blow out dirt or residue with your mouth, and don't use a metal implement, like a paper clip, as this can distort the nozzle opening.
3. **Air induction nozzles reduce drift relative to flat fan nozzles.** Air induction (AI) nozzles incorporate air bubbles into the water droplets, which make the droplets larger. The larger droplets have more mass and won't get blown off course as easily as the smaller droplets produced by flat fan nozzles.
4. **Don't rely on the speedometer reading to determine your speed.** Instead, time how long it takes you to travel a measured distance. Things you may not have thought of can change the speed of the tractor, for example, tire tread heights for the same tire size differ between brands. This will change the distance the tractor travels in a given time.
5. **Re-measure fields periodically.** Fields can get bigger and smaller over time as edges encroach or you plow a little less or farther out each year. Just because your grandfather said the field was 12 acres, it may not be 12 acres now! If you calculate sprays for 600 foot beds, but the beds are actually 540 feet, this will lead to a large over-application of product over a large area.
6. **Change your starting point and the direction in which you spray** to avoid running out of product in the same spot every time or over- or under-applying in any spot. If you spray up a given row this time, spray down that row next time.
7. **Small errors add up over a large area.** Even just a 10% error—for example, trusting that your tank holds 100

gallons when it actually holds 110 gallons—will lead to much larger errors when applied over acres, or compounded with other small errors. This is especially important now as pesticides become more effective at lower rates and are more frequently recommended at ounces rather than pounds per acre.

8. **Pressure gauges are often off and should be checked regularly.** Buy two, make sure they read the same pressure, then use one for your sprayer and check them against each other occasionally.
9. **Boom height will impact your spray pattern.** To find the ideal distance between a given nozzle type and your target, check the information from the manufacturer for that nozzle.
10. **Put sprayer calibration info in every tractor** so that every applicator can make sure they're using the correct settings. This should include what gear and pressure to use, the distance from the boom to the target, and any other relevant information.

There are many different types of sprayer nozzles, with different flow rates, spray angles, droplet sizes, and patterns. Each nozzle is labeled with some of this information, as shown in the diagram below.



Use the steps below, adapted from the [New England Vegetable Management Guide] and the [Agricultural Pocket Pesticide Calibration Guide], to calibrate your boom sprayer:

1. Before calibrating, review and complete the following checklist:
   - Thoroughly clean all nozzles, screens, etc., to ensure proper operation.
   - Check to be sure that all nozzles are the same, are made by one manufacturer, and have the same part number.
   - Check the spray patterns of all nozzles for uniformity by spraying onto pavement or bare ground and watching the drying pattern. The output from each nozzle should dry at the same rate. If you have strips that dry more quickly or slowly, replace nearby nozzles as one is likely worn out.
   - Select an operating speed. Note the tachometer reading or mark the throttle setting. When spraying, be sure to use the same speed as used for calibrating.
   - Select an operating pressure. Adjust pressure to desired psi according to the nozzle manufacturer. Do this while pump is operating at normal speed and water is actually flowing through the nozzles. This pressure should be the same during calibration and field spraying.
2. Measure a course on the same type of surface (sod, plowed, etc.) and same type of terrain (hilly, level, etc.) as that to be sprayed, according to nozzle spacing as shown in the table below. This distance is equivalent to 1/128th of an acre.

Nozzle spacing (in)	16	20	24	28	32	36	40
Course length (ft)	255	204	170	146	127	113	102

3. Time the seconds it takes the sprayer to cover the measured distance at the desired speed in the same field conditions that you are spraying. Average several runs. This is the time required to cover 1/128 acre.
4. With the sprayer standing still, operate at selected pressure and pump speed/engine RPM. Catch the water from each nozzle for the number of seconds measured in step 3. Any 1-quart or larger container, such as a mason jar or measuring cup, if calibrated in fluid ounces, can easily be used following the steps below. A specially designed

calibration jar can be used; if you buy one, follow the manufacturer's instructions. Make accurate speed and pressure readings and jar measurements. Make several checks. Keep in mind that you are collecting less than a quart of liquid to measure an application rate of several gallons per acre for many acres.

5. Determine the average output per nozzle in ounces. If the output from any particular nozzle is more than 5 percent higher or lower than the average, check for clogs, clean the nozzle (with compressed air!), or replace the nozzle. Replace all nozzles if the average output is more than 15% more than a new nozzle's output (from the manufacturer's chart or discharge test). Repeat steps 4 and 5 after cleaning or replacing any nozzles.

The average ounces of output per nozzle equals the application rate in gallons per acre. For example, 1 oz output = 1 gallon per acre.

If you need to change the output rate, you can do any of the following:

a. For small adjustments, change the sprayer pressure. Lowering the pressure will reduce the spray delivered and increasing the pressure will increase the spray delivered. However, it takes a large increase or decrease in pressure to change nozzle output. For example, a 4X increase in pressure will only double the output. Do not operate outside of the pressure range recommended for the nozzles that you use. Keep in mind that increasing pressure can create finer spray droplets that will drift off-target more.

b. Large adjustments can be made by changing the travel speed. Changing speed inversely affects the application rate. For example, decreasing the speed by ½ will double the application rate, and doubling the speed will decrease the application rate by ½.

c. If either of these changes do not produce the desired application rate, then you need to select a different size nozzle tip that will meet your needs.

For more resources on calculating and calibrating your sprayer output, contact George Hamilton at George.Hamilton@unh.edu or (603) 641-6060.

-Compiled by Lisa McKeag and Genevieve Higgins, UMass Extension, and George Hamilton, University of New Hampshire Extension

Events

Twilight Meeting Summer Series

This series of Twilight meetings is an opportunity to learn from fellow farmers and find out what's new in Extension research. A light meal will be provided at each program.

Organic Weed Management

Featuring: Langwater's Kevin O'Dwyer and their flame weeder and leaf mulching techniques. Invited presenters include: Katie Ghantous (UMass Vegetable Weed Technician) with a vinegar weed injector, on-farm trial and information on weed ecology; Sonja Birthisel (UMaine PhD candidate studying Weed Management) with results of her research using occulation and solarization, and farmer Tyson Neukirch with his experiences using silage tarps in a reduced tillage system for weed management.

When: Tuesday, July 24th, 2018 from 4:00 pm to 7:00 pm

Where: Langwater Farm, 209 Washington St., North Easton, MA 02356

CLICK HERE TO REGISTER: https://www.surveymonkey.com/r/X9WLFYS

Click here to request special accommodations for this event.

UMass Extension Vegetable Program Research Tour and Round Table

Featuring: Sue Scheufele's research on cucurbit downy mildew resistance, pollinator protection in butternut squash, effects of different mulches on broccoli pests, and natural predators of cabbage aphid. Also, Madelaine Bartlett's research on corn genetics and the importance of genetics in crop development and improvement, Omid Zandvakili's research on lettuce nutrition, Kelly Allen's research on Fusarium wilt of basil, presentations on pollinators & agriculture and solar & agriculture, and more! Research presentations will be followed by dinner and a round table discussion.

When: Tuesday, August 14th, 2018 from 4:00 PM to 7:00 PM (Rain date: August 16th)

Where: UMass Crop and Animal Research and Education Farm, 89-91 River Rd., South Deerfield, MA 01373

CLICK HERE TO REGISTER: https://www.surveymonkey.com/r/X3JYR55

Click here to request special accommodations for this event.

Reduced Tillage and Transplanters for Vegetable Farmers

Featuring: Farmer Jim Ward and his reduced till vegetable cropping systems which he has practiced for over 10 years with the help of an Unverferth Deep Zone Tiller, Davidian Farm's two-row Monosem vacuum precision planter mounted with Dawn Biologic roller crimpers (first ones in the state!), the UMass Research Farm's grain drill and roller crimper, and Brookdale Fruit Farm's new line of no-till transplanters from Checchi-Magli. There will also be demonstrations on Soil Health with Maggie Payne, Soil Scientist at NRCS.

When: Tuesday, August 28th, 2018 from 4:00 PM to 7:00 PM

Where: Ward's Berry Farm, 614 S Main St., Sharon, MA 02067

CLICK HERE TO REGISTER: https://www.surveymonkey.com/r/XF8JQYD

Click here to request special accommodations for this event.

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

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