UMass Extension
Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

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In this issue:

Crop conditions

Bulk harvests are in full swing now and crews are digging potatoes and sweet potatoes, windrowing winter squash, and filling bins of cabbage. We have been harvesting squash from research plots in South Deerfield and have been noticing a lot of squash vine borers in the fruits—they make about a ¼inch hole with sawdust-like material coming out of it. Be on the look out for those when harvesting so you don't get any grossed-out customers or rotten squash in storage. We have been hearing from many growers that it has been a good growing season, though crops have been ripening late and everything seems to be ready for harvest now, after all the summer help has gone. Last week there were several frosts reported across the Northeast in NY, NH, and ME and one from a weather station in Ashfield, MA. Although we didn't get a frost, western MA had a low of 35°F on September 2nd. Fall must be here! Fall is a good time to get your soils tested so you can make fertility plans over the winter—the UMass soil lab is now located in Paige Hall (161 Holdsworth Way, Amherst, MA, 01003) and the hours are 8am-4pm. Check out their website for sampling instructions, forms, and shipping address, and read the article below for tips on fall soil testing. Thanks to all who came to our Twilight Meeting and Research Tour on Tuesday!! We had a great turnout, with growers and extension educators from throughout New England, nice weather, and lots of good conversations! Several growers vowed to plant downy mildew resistant cucumbers (resistant varieties include: Bristol, Diamondback, DMR 401, NY264, Python, and SV4719CS) in their later season plantings next year after seeing results from Sue Scheufele's trial. We have another twilight meeting on produce wash stations coming up on September 26th at Atlas Farm in Deerfield; be sure to join us!!

A roundtable discussion at the UMass Vegetable Program Twilight Meeting on Tuesday this week at the Crop and Animal Research and Education Farm in South Deerfield, MA led by Angie Madeiras (Plant Diagnostician) focused on topics ranging from celery anthracnose, to tarnished plant bug, to corn rust.

Pest alerts

Brassicas:

Cabbage loopers have just been spotted in the past several weeks on cabbage in Franklin and Hampshire Cos., MA. They are not an overwintering pest here. Cabbage loopers can also infest beans, celery, lettuce, mesculun mix, parsley, spinach, and tomato, but are only significant pests in leafy crops and heading brassicas. Keep an eye out in your fall crops. In the Northeast, there is generally no need to treat young plants unless weather conditions delay plant development and at least 35% of them are infested. Treat plants between the start of heading and harvest if 20% or more of the plants are infested. Use a 10-15% threshold throughout the season for kale, collards, and mustard. The most critical time to scout and apply

Cabbage looper on celery. Photo: K. Campbell-Nelson

controls is just prior to head formation. Do not use less than 50 gal spray material/A; higher volumes provide better coverage. Better coverage of lower leaf surfaces can be achieved by using drop nozzles. Use a spreader-sticker.

Imported cabbage worm pupa. photo: K.Campbell-Nelson

Imported cabbageworm: In nearby cabbage fields, ICW are at different life stages: eggs are actively being laid in Franklin Co., MA while pupae (photo) are just hatching in a Hampshire Co., MA field. Eggs hatch 3-4 days after being laid and larvae feed for 2-3 weeks before pupating. Adults emerge from pupae after about 11 days and live about 3 weeks, laying 300-400 eggs each! Scout and combine thresholds with cabbage looper and diamond back moth (see thresholds above).

Sue counting syrphid fly and parasitic wasp visits on calendula. Photo: K.Campbell-Nelson

Cabbage aphid populations are building in several Brussels sprout and cabbage crops across the state and in VT while others remain unaffected. This year, this pest was first observed on June 1st in MA. Typically a fall pest, they are establishing earlier and earlier in the season, possibly due to over-wintered brassicas being grown under cover or left in fields over the winter. Parasitism by the wasp *Diaeretiella rapae* is about 20% in a cabbage field near a beneficial insectary planting at the research farm in South Deerfield, MA with phacelia, calendula, buckwheat, and alyssum all in bloom (photo). In this study, phacelia and buckwheat have attracted the most syrphid flies and wasps responsible for predation and parasitism of cabbage aphids.

Cucurbits:

Squash vine borer is being found inside delicata being harvested now in Franklin Co., MA. Pumpkins were slow to color this year and softer rinds may be more susceptible to SVB, so inspect fruit carefully during harvest. This infestation is likely due to a small second generation flight of SVB seen here in MA (starting in late August (Figure 1)) but not further north in NH this year. Pupae or larvae overwinter in soil. Destroy vines soon after harvest to destroy larvae still in stems. Plow crops to bury residue deeply. Rotate fields to non-cucurbit hosts.

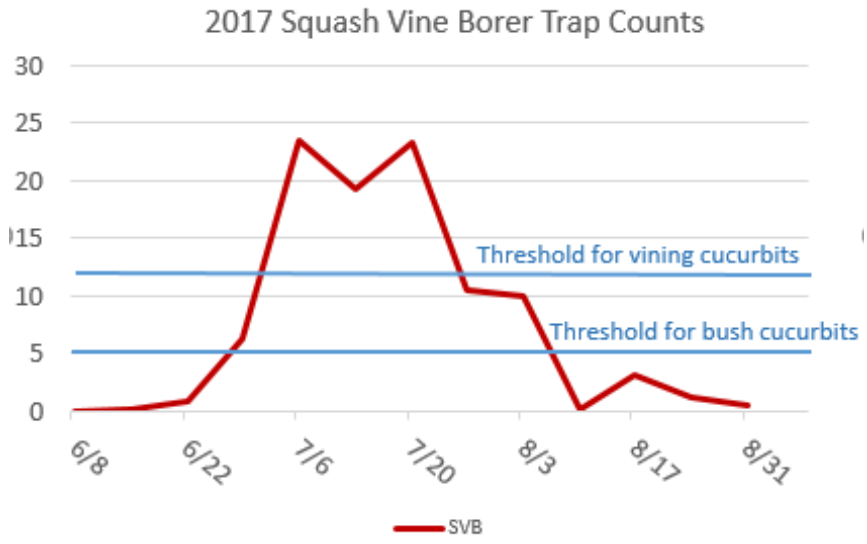

Figure 1. Weekly pheromone trap captures of squash vine borer (SVB) on 7 farms in Massachusetts. Figure: Annalisa Flynn and Genevieve Higgins.

Sweetcorn:

We have stopped collecting data from our pheromone trapping network for the season and would like to thank the following scouts and farms for their participation and dedication: Annalisa Flynn (UMass Vegetable Program, Eastern MA Scout), Jim Mussoni (Mussoni IPM, Scout), Andy Radin (URI Extension), George Hamilton and Linda Kundhart (UNH Extension), Marion Zeufele (Cornell Extension), The Bars Farm, Four Town Farm, Golonka Farm, Gove Farm, Howden Farm, Indian Head Farm, Langwater Farm, Moonlight Rose Alpacas, Outlook Farm, Tangerini's Spring Street Farm, Vangarden Farm, and Ward's Berry Farm. Here we present the trends in caterpillar (moth) pest populations found in sweet corn pheromone traps across the state from May – September 2017 (Figure 2).

Corn earworm (CEW) began as a pest problem in early July this year at some southeastern coastal locations when it was blown up from the south with storm events. Later, the pest built up to be a problem further west and up into NH.

Fall armyworm **(FAW)** has been a growing pest of concern over the past few years; growers should consider trapping for FAW going forward. In Maine, a threshold of 3 moths per trap is used to make weekly sprays in silking corn, since FAW gets into the tip of corn like CEW but can also bore into the ear like ECB. In New York, the scouting threshold for ECB and FAW at tassel emergence is 15% infested plants, and once a field is silking, the worm threshold drops to 5% infested plants. This pest also blows in from the south but from a more westerly direction than CEW. This year, there was a storm event in early August which brought in both CEW and FAW, but by late August, only CEW was found. At the end of August and beginning of September, however, FAW populations skyrocketed, particularly in the western part of the state. We captured 30-150 moths per trap at the research farm in South Deerfield, MA for the last 4 weeks. This pest is likely a growing concern for grain corn growers at this time of year.

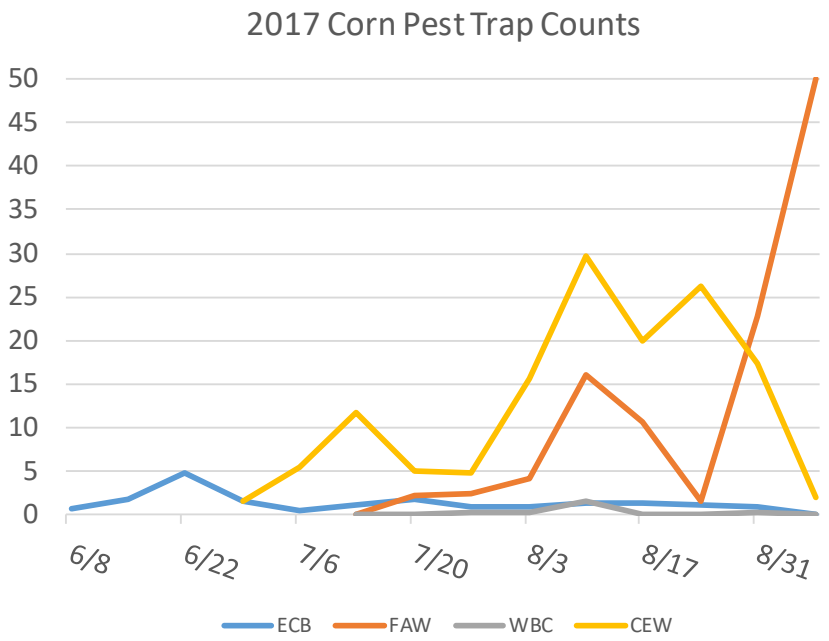

Figure 1. Weekly pheromone trap captures of sweetcorn pests on 14 farms in Massachusetts. Figure: Annalisa Flynn and Genevieve Higgins.

European corn borer **(ECB)** has been a pest of very little concern for the past few years, as populations have virtually disappeared. As the only overwintering moth in our sweetcorn trapping network, this pest may be reducing in numbers due to the increased production of genetically engineered Bt corn in MA.

Western Bean Cutworm (WBC) was captured only twice this season in our trap in South Deerfield, MA and has not been reported causing damage in the field. However, we will continue to monitor this pest as it is a growing issue in NY and can impact dry bean growers as well.

Fall soil testing

Although soil samples can be taken any time, many prefer to take samples in the fall because this allows time to apply any needed lime to adjust pH, plant a cover crop to recover any leftover nutrients, make a nutrient management plan, and order materials well in advance of spring planting. It is best to take soil samples at the same time of year for the most consistent and reliable results. Avoid sampling when the soil is very wet or soon after a lime or fertilizer application. If a field is uniform, a single composite sample is sufficient. A composite sample consists of 10 to 20 sub-samples taken from around the field and mixed together. To obtain sub-samples, use a spade to take thin slices of soil representing the top 6" to 8" of soil. Make sure to remove any thatch or other organic debris such as manure from the surface before taking your sample as this will inaccurately impact your soil organic matter results. A soil probe is faster and more convenient to use than a spade. Put the slices or cores into a clean container and thoroughly mix. Take about one cup of the mixture, dry it at room temperature spread out on paper, put it in your own zip lock bag, and tightly seal it. Label each sample on the outside of the bag or box. On the submission form to the lab for each sample, indicate the crop to be grown, recent field history and any concerns.

In many cases, fields are not uniform. There are many reasons for this including: uneven topography, wet and dry areas, different soil types and areas with varying previous crop and fertilizing practices. For example: "There was a tractor mishap in this field years ago and a ton of lime was dumped right here." In such cases, the field should be subdivided and composite samples tested for each section or avoid problem areas entirely.

Soils should be tested for organic matter content every two or three years. Be sure to request this as it is not part of the standard test. A standard soil test at the UMass Soil Lab costs $15; with organic matter it costs $21.

Submitting soil samples:

Depending on your goals, different tests are appropriate. In addition to standard soil tests, other services are available including: Pre-Sidedress Soil Nitrate Test (PSNT), manure or compost analysis (from the University of Maine), soilless greenhouse media, soil texture, and plant tissue analysis. (Click on each link to access the submission form).

A fall nitrate test or "report card nitrate test" as some university labs call it, indicates how closely crop nitrogen (N) uptake has been matched with nitrogen supply for the season. High (> 20 ppm) or excessive soil nitrate content in the fall indicates that too much N fertilizer was applied in the prior season, and a fall cover crop would be beneficial to conserve this remaining N for the following season. Use the Pre-Sidedress Soil Nitrate Test form to submit a Nitrate test soil sample, or check the box for Nitrate on the standard soil test submission form; it is only an additional $6.

A standard soil test that includes other macro- and micronutrients can help you make the best choice to fit a particular crop to a given soil nutrient profile for the following season. When submitting your soil sample for testing, include the crop code on the form for the crop to be grown in that field the following year. Haven't prepared your crop rotation plans yet? No worries. You may ask for recommendations for up to 3 different crops without extra charge. Use this form for Vegetable and Fruit Crop Soil Submissions.

Interpreting Results and choosing amendments.

For specific information on interpreting your UMass Soil Test results, see this factsheet that accompanies each soil test report.

Soil pH: Most New England soils are naturally acidic (4.5-5.5) and need to be limed periodically to keep the pH in the range of 6.0 to 7.0 desired by most vegetable crops and beneficial microbes. The lab report will recommend the amount of lime to apply based on active and exchangeable acidity as well as the crop(s) to be grown. Active acidity is a measure of the H+ ions in solution while exchangeable acidity is a measure of H+ ions adsorbed on soil humus and clay colloids. Soils with a higher cation exchange capacity (CEC) have a greater potential for higher exchangeable acidity. Therefore, more lime will be needed to raise the pH in a high CEC organic matter soil than in a low CEC sandy soil with the same amount of active acidity. Lime can be applied any time, but fall is preferred to allow several months to raise the pH. Split applications (half in the fall and half in the spring) may also be effective.

Compost is often applied as a method for increasing soil organic matter. However, do not overlook the fact that composts contain nutrients which are soluble and available for crop use just like commercial fertilizers. While only about 10% of total N analysis in compost is available to the crop each year, 80-100% of P analysis in compost has been shown to be available, increasing the potential for losses to the environment if not applied to actively growing crops. Phosphorous content also varies in compost from 0.1-3%, so analysis is important for determining rates of application. Sheet composting is not a recommended practice on bare fields in the fall unless a cover crop is planted. A compost analysis should be completed to measure nutrient availability and to determine if the product is finished before applying to the field. Unfinished compost applied to the field may harbor pathogens or harm crops as it continues to decompose. Ammonium content <100mg/kg and C:N ratio of 20:1 indicates a finished compost. Higher amounts of ammonia indicate active decomposition, or unfinished compost, and the C:N ratio is reduced as microbes break down carbon content in the pile and convert it to CO_2. Matured compost applications are usually made in the spring, however, testing may happen in the fall in order to estimate plant available nutrients for next year's crop and help determine future compost application rates.

Manure is an excellent source of nutrients, however, as manure ages and decays, considerable nutrient loss occurs from leaching, surface runoff, or volatilization of ammonia into the atmosphere. Manure may also contain pathogens such as E. coli and salmonella. If manure is used, vegetables should not be harvested before 120 days after application (or 90 days for vegetables that do not contact the soil, such as peppers). This is a requirement for organic production and a good practice for everyone. In most cases, manure should be applied in the fall or to a non-food rotation crop. Fall-applied manure should be incorporated immediately and a winter cover crop should be planted to protect N from leaching. Manure applications should be made in cold weather to reduce volatilization, but not to frozen ground as this increases surface runoff potential. In no-till systems, research has shown that manure can be effectively surface applied to a growing cover crop to reduce nutrient losses, but not to bare ground. In order to make accurate nutrient applications to best fit your crop needs, a manure analysis should be conducted. The University of Maine has a manure testing lab; here is their Manure Sample Submission Form. Be sure to submit your samples in a tightly sealed container or the postal service will be very unhappy

with you!

Cover crops planted in the fall, preferably before September 15th, are an excellent way to capture and store nutrients for your crops in the following spring. While your soil test results will not recommend cover crop selection, here are some general guidelines for fall-planted cover crops and their spring contributions of plant available nitrogen (PAN) per acre:

Legume cover crops provide up to 100 lb PAN/a. To maximize PAN contribution from legumes, kill the cover crop at bud stage in the spring.

Cereal cover crops immobilize up to 50 lb PAN/a. To minimize PAN immobilization from cereals, kill the cover crop during the early stem elongation (jointing) growth stage.

Legume/cereal cover crop mixtures provide a wide range of PAN contributions, depending on legume content. When cover crop dry matter is 75 percent from cereals + 25 percent from legumes, PAN is usually near zero.

Micronutrient application recommendations cannot be determined accurately by soil labs in New England because deficiencies in crops have not been widely measured in our soils. However, the soil test results do report the ranges found in all the soils that come through the lab so that you may compare where your soil falls in regards to other soils in New England. For recommendations on specific micronutrients needed for crop growth, such as Boron, see the New England Vegetable Management Guide section on micronutients. Preferred timing of micronutrient applications in the fall vs. spring has not been determined.

Other Nutrient applications should be avoided until spring when a growing crop is best able to use the applied nutrients in water soluble form and avoid leaching, runoff, or volatilization.

Need further assistance interpreting your soil test results? Contact the soil lab or any of the following Extension Educators:

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Greenhouse:
Doug Cox
Phone: (413) 545-5214
Email: dcox@umass.edu

Cover crops:
Masoud Hashemi
Phone: (413) 545-1843
Email: masoud@psis.umass.edu

--by Katie Campbell-Nelson, UMass Vegetable Extension, 2015. Updated for 2017 by Lisa McKeag.

VEGETABLE DISEASES CAUSED BY *ALTERNARIA*

Almost all vegetable crops are susceptible to disease caused by species in the fungal genus *Alternaria*. This can lead to some confusion when it comes time to make crop rotation decisions: Is the leaf spot I had on my broccoli last year going to be a problem for the tomatoes next year? Luckily, most *Alternaria* species are specific to certain plant species, genera, or families, making crop rotation decisions somewhat easier. One exception to keep in mind is *Alternaria alternata*. A ubiquitous fungus with numerous hosts, *A. alternata* can survive as a saprophyte, an epiphyte, or a pathogen of weeds or other wild plants. It is usually a weak pathogen in field crops, taking advantage of dead tissues or those weakened by other diseases, abiotic factors or natural senescence. Leaf lesions caused by *Alternaria* often have a target-like appearance and a yellow halo around the margin. Gray to black sporulation may be observed in the centers of older lesions.

General Management Considerations: Start with clean seed, as many *Alternaria* species are seed borne. Hot water treatment or fungicide dusting can discourage disease development. Keep fields clear of weeds which may also be hosts for the pathogens. Like most fungal pathogens, *Alternaria* species thrive in high humidity and require free moisture on the plant surface for a certain period of time in order to cause infection. Use raised beds and/or appropriate plant spacing to encourage good air circulation in the crop canopy. Consider early cropping, as disease pressure builds through the grow-

ing season. Plow in or remove crop debris immediately after harvest. Rotate away from the affected crop family for 2-3 years.

Follow the Network for Environment and Weather Applications (NEWA) website for tomato, potato, and onion disease forecasting (www.newa.cornell.edu).

Consider growing tolerant or resistant cultivars when available. A full list of resistant varieties may be found at www.vegetablemdonline.ppath.cornell.edu

For a full list of fungicide choices for individual crops, consult the New England Vegetable Management Guide (www.nevegetable.org).

Early Blight on Tomato
Photo, S. Scheufele

Alternaria on cabbage leaf.
Photo, S. Scheufele

Purple Blotch on onion leaf.
Photo, S. Scheufele

***Alternaria* diseases by crop**

SOLANACEAE

Tomatoes:

Stem canker- *A. alternata f. sp. lycopersici*. This disease is uncommon in the Northeast and the strain is specific to tomatoes.

Black mold- *A. alternata*. Fruit rot, mostly of overripe fruit.

Early Blight- *A. solani* was once considered to be the sole cause of early blight on tomatoes and potatoes. It is now recognized that early blight on tomatoes is primarily caused by *A. tomatophila* while *A. solani* causes early blight on potato. Although both species of fungi are capable of infecting both crops, *A. tomatophila* is more virulent on tomato. *A. solani* can affect other solanaceous hosts such as eggplant, pepper, and nightshade.

Peppers:

A. alternata may be a secondary invader of fruit lesions caused by factors such as sunscald. It may also cause post-harvest rot of fruit. A. solani may cause leaf spot, but it is a weak pathogen on peppers and is typically of minor importance. Chemical controls generally are not necessary. Prevent sunscald, blossom end rot, and other causes of fruit injury.

Potato:

Early blight- *A. solani.* Lesions have concentric circles, often yellow haloes.

Brown Spot- A. alternata. Symptoms are similar to those of early blight, but lesions don't have concentric circles. This species can also cause a post-harvest condition called black pit.

CRUCIFERAE (BRASSICAS)

Black Spot- *A. brassicae* and *A. brassicicola* cause black spot on most varieties of cruciferous crops and weeds. *A. brassicicola* requires a longer time for infection and higher temperatures than A. brassicae. For *A. brassicicola* the optimum temperature ranges for spore germination and symptom development is 82-88°F, while for *A. brassicae* the optimum ranges are 70-82°F and 52-73°F for spore germination and symptom development respectively.

A. japonica causes black spot of radish. This pathogen has been reported on a few other Brassicas.

ALLIUMS

Purple blotch- *A. porri.* The optimum temperature for disease development is 77-81°F. The disease is worsened by thrips.

A. porri leaf spot has been reported on *Gerbera* species in California and occasionally on other annual ornamentals.

APIACEAE (UMBELLIFERAE)

Leaf spot and blight- *A. dauci.* It also infects other members of the Umbelliferae. It is sometimes referred to in older literature as *A. porri* f. sp. *dauci.* The optimum temperature range for infection is 61-77°F.

Black rot of carrot and celery- *A. radicina*. This species also causes foliar blight in herbs belonging to this family.

A. petroselini infects all parts of the parsley plant. It also causes leaf spot on celery, and has been reported on other members of the family.

A. dauci *on carrot*
Gerald Holmes, Bugwood.org

CUCURBITS

Leaf blight- *Alternaria cucumerina*. It is sometimes also called target leaf spot. Optimum conditions for infection are 70-90°F with a leaf wetness period of at least 8 hours. Fruit may also be affected but not as commonly. This species is known to form chlamydospores, thick-walled structures that allow the fungus to survive in soil. 'Torneo 143' cucumbers are reported to be resistant.

LEGUMES

Beans: A. alternata (syn. tenuis), A. brassicae, A.brassicicola can all cause Alternaria leaf and pod spot. A. alternata is a weak pathogen but can be severe on senescent leaves and mature bean pods.

Peas: Alternaria blight is caused by A. alternata, but this disease is of minor importance on peas in the Northeast.

Alternaria cucumerina *on canteloupe*
Gerald Holmes, Bugwood.org

by Angie Madeiras, UMass Plant Disease Diagnostician

THE VALUE OF STANDARD OPERATING PROCEDURES

While the thought of developing standard operating procedures (SOPs) for your farm may seem daunting, or simply like a bureaucratic waste of time, these standardized protocols are simply a way to capture routine farm processes and ensure that they happen the same way each time. SOPs come up a lot when talking about produce safety and complying with the sanitation standards of FSMA's Produce Rule or 3rd-party GAP audits, but their usefulness goes well beyond jumping through food safety hoops. A well-written SOP can help you save time, train workers, manage pests, and put out a more consistent product.

A standard operating procedure doesn't need to be complicated—in fact, it should be as concise as possible. This brief document should provide step-by-step instructions for a specific task. A good rule of thumb is if the same thing needs to be done more than twice, you should have an SOP for it.

Accurately capturing all of the steps to even a simple process does require an investment of time. These steps are often stored only in a farmer's head and might have evolved over a long period of time. You might not realize all of the steps that go into a certain process or the best way to tell somebody else how to do it. Writing an SOP should start with either doing a job yourself, or watching somebody else do it, and writing down all of the steps that lead to the completion of the task. Note which tools and materials are necessary for the job, and if there are tricks that you use to make the job easier. Involve anyone who routinely performs this task to weigh in on whether you've captured the process accurately and included important details or efficiencies. The SOP should be complete enough so that someone who has not done the task before can pick it up after some initial instruction and do it well with little supervision. Investing this time up front will pay you back in the amount of time you save by not having to spend as much time training—or correcting mistakes.

A general format for an SOP might consist of the following parts:

Title

Objective/purpose—what task are you accomplishing and why?

Scope—where and to whom does it apply?

Responsibility—who is responsible for making sure the task gets done?

Materials—what specific items will be needed to complete this task?

Procedure—what are the steps to the task, in order?

Verification/documentation—how will you verify that the procedure was completed correctly and which records will you keep?

Some examples can be found in the Resources section at the end of this article.

It's important to have SOPs for tasks that affect both produce safety and quality, like wash and pack procedures.
Photo: K. Campbell-Nelson

Each of these sections should be written in short, direct sentences that are easy to understand after a quick read. Use visual instruction as much as possible. Include pictures of, for example, the tools you will need or the way something should look at each step in the process. SOP sheets should be readily accessible and not locked away in an office. Workers should be able to refer to an SOP easily, so it is a good idea to keep it posted—maybe laminated, or in a plastic sheet cover—at eye level in the area where the task will be completed. This way too, the SOP can be easily edited if a part of the process is eliminated or improved, or one of the materials changes. For instance, if you start using a different rate or brand of sanitizer.

SOPs are useful for tasks that are complex or involve many steps that should be done in order, or where amounts must be accurate. They are useful where there is high worker turnover and a frequent need for retraining. If different employees have responsibility for training or supervising, they should be working from the same standard. It is confusing for a trainee to learn Mary's way one day and Jim's the next—the process and standard for completion should be agreed upon ahead of time and adhered to. This makes improvements easier too, since you know what you're doing you also know what you could be doing differently, and you have a formalized way to get everyone on the same page.

SOPs are particularly useful where there is a high risk for mistakes or contamination. This is why they feature so prominently in farm food safety plans. You might have SOPs for labelling product, or how to organize boxes in the cooler. Having confidence that produce leaving the packhouse is labeled correctly and is headed to the right place can help with traceback in the event of a recall. You generally can't see contamination. You can see a disorganized wash room or manure caked onto tractor tires, and these things are good indications that the risk for nearby produce to become contaminated is high, but you can't easily see the pathogens that actually make produce unsafe. When devising SOPs for organizing the wash room or cleaning the tractor, you should consider the hazards that your produce may encounter on its way out the door and include steps that help you feel confident that you have done all you can do to manage those risks. For instance, in devising a wash room protocol, you should include steps for eliminating standing water, cleaning and sanitizing food contact surfaces, and keeping totes and tools off the floor and protected from pests. Even though you can't see that the area is free from pathogens, with a good SOP you have the peace of mind that you have thought through the likely routes of contamination and addressed them, you have a checklist of instructions that everyone can see, and employees are trained on all of the instructions. This goes not just for human pathogens, but also plant pathogens and weeds. You could have an SOP for sanitizing equipment that has been used in fields that are infected with Phytophthora. The University of Idaho has SOPs for all of the field procedures at their research farm to prevent the spread of a particularly noxious weed.

Other examples of tasks that may warrant a written SOP:

Leafy greens washing, drying and packing

Tote washing and sanitizing

Monitoring and changing sanitizers in wash water

Moving animals

Water sampling

Greenhouse seeding

Mixing and applying pesticides

Sprayer calibration

Monitoring irrigation equipment

Any task that you want done efficiently and consistently

Resources

The Cornell GAPs program has several good examples of SOPs relevant to the major food safety risk areas: https://gaps.cornell.edu/educational-materials/decision-trees/log-sheets-sops. Make sure to tailor these to your own farm so they accurately reflect your actual processes.

North Carolina Extension Produce Safety. Standard Operating Procedures https://ncfreshproducesafety.ces.ncsu.edu/ncfreshproducesafety-gaps-standard-operating-procedures/

Penn State Extension. Standard Operating Procedures: A Writing Guide
https://extension.psu.edu/standard-operating-procedures-a-writing-guide

University of California Extension. Standard Operating Procedures
http://ucanr.edu/sites/placernevadasmallfarms/Farm_Business_Planning/FBP_Risk_Management/Risk_Management/SOP/

by Lisa McKeag, UMass Vegetable Program,

Events

Twilight Meeting: Produce Wash Station Design, Use and Maintenance: Improving Efficiency & Complying with Food Safety Requirements

When: Tuesday, September 26, 2017 - 4:00pm to 6:30pm

Where: Atlas Farm, 635 River Road, Deerfield, MA 01342
(*note:* this meeting is at the main farm on River Rd, and NOT at the Atlas Farm store on Routes 5 & 10 in S. Deerfield)

FSMA's Produce Rule states that equipment, tools, and buildings must be of adequate design and able to be cleaned and properly maintained. What does this mean? We will discuss the range of options available for growers of different scales to meet these requirements. We'll tour the wash house with a recirculating hydrocooler at Atlas Farm with owner, Gideon Porth, and hear about the design of a mobile wash station by Amanda Brown from the UMass Student Farm. Hear how these two farmers have navigated the process of becoming CQP certified and eased their fears about new regulations while accessing new markets. We will also cover how to develop Standard Operating Procedures (SOPs) and keep sanitation records. Extension Educators will be on-hand to give input and answer questions on the following topics:

- Infrastructure upgrade decision-making – Chris Callahan, University of Vermont Extension Agricultural Engineer
- Developing useful SOPs – Amanda Kinchla, UMass Food Science Extension
- Produce safety regulations -- Lisa McKeag, UMass Extension

A light dinner will be provided.

Co-sponsored by UMass Extension and Community Involved in Sustaining Agriculture (CISA)

Click here to register: https://www.surveymonkey.com/r/8QWR52Q

Contact: Lisa McKeag at 413-577-3976 or lmckeag@umass.edu

Massachusetts No-Till Conference 2017: Dairy and Vegetables

When: Monday, October 30, 2017 - 9:00am to 3:00pm

Where: Carter and Stevens Farm, 500 West Street, Barre, MA 01005

Topics will include:

- Why no-till works! (Kate Parsons, NRCS Resource Conservationist)
- Nutrient management in No-till systems(Tom Morris, UConn Plant Science Professor)
- Pest and Disease Management for No-Till (Katie Campbell-Nelson, UMass Extension Vegetable Program)
- No-Till Planter Demo
- Cover crops
- Farmer Presentations

Sponsored by the USDA Natural Resources Conservation Service (NRCS), Massachusetts Association of Worcester Conservation Districts, and UMass County Extension, and Sustainable Agriculture Research and Education (SARE)

To register contact: Lisa.trotto@ma.usda.gov

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

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