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# Farm Food Safety: Cleaning the Cleaning Tools

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

Have you ever helped with dishes and grabbed the sponge to wipe off the plates only to find that the sponge was pretty gross looking? The same is true for the tools you would use for cleaning harvest bins or any food contact surface in your wash/pack space. Not cleaning food contact surfaces? Then, we need to have a talk later. Anyway, right now, let's focus on cleaning up the tools needed to do the job of cleaning.

Brushes are an obvious choice for scrubbing off dried on crud, soil, and plant debris. If you have used brushes for a long time, goo can accumulate down between the bristles and into the holes where the bristles are secured to the brush head. Many brushes use the hole and staple method where a length of a bristle bunch is folded and stapled into the holes. It's a cheap brush and gets the job done while it is fairly new. After a while though, organic matter can stick into the space where the bristles are stapled. This is a place where bacteria can colonize and get spread onto food contact surfaces you are trying to clean. Trying to pick at the crud stuck down there isn't going to be easy and will take time.

If this is the case, it is time to replace the brush. Do you want to stick to the same kind of brush or go look for something that isn't going to get gummed up? With the emphasis on food safety increasing, tool companies are coming out with hygienically designed cleaning tools that make it tougher for organic matter to get stuck in. These brushes and brooms have the bristles molded into the head of the tool. No holes or spaces.

Wear and tear of tools is another reason for replacement. Eventually, buying cheaper tools will add up. More expensive higher quality tools may be worth the money. Broken bristles will reduce effectiveness of the tool plus it may leave a trail of plastic on food contact surfaces and even the produce itself. Torn squeegees won't move standing water very well. Worn out brooms won't clean up floors effectively or in a timely manner.



A few of the many heavier duty scrub brushes that would work for cleaning food contact surfaces. *Photo by R. Hadad, CCE Cornell Vegetable Program* 

# About VegEdge

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.



The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

We're interested in your comments. Contact us at: CCE Cornell Vegetable Program 480 North Main Street, Canandaigua, NY 14224 Email: cce-cvp@cornell.edu Web address: cvp.cce.cornell.edu

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The next issue of VegEdge newsletter will be produced on April 28, 2021.

# **Cornell Cooperative Extension Cannot Assist** with Cannabis Production

Julie Suarez, Cornell Cooperative Extension

While Cornell CALS and CCE have a very active research and extension program helping farmers to grow industrial hemp, because of our land grant status and the federal funds we receive, we are precluded by federal law, which does not legalize adult use recreational cannabis at this time, from providing technical assistance or guidance to farmers growing adult use recreational cannabis. If the federal government changes the definition of controlled substance to no longer include adult use recreational cannabis, our ability to help farmers in growing adult use recreational cannabis will change.

While we're happy to field questions about industrial hemp, we cannot do so legally in regards to adult use recreational cannabis.

# Got Bird Problems? Squawk to Us About Them! Survey Participants Needed

Julie Suarez, Cornell Cooperative Extension

Researchers at the University of Rhode Island are currently distributing an online survey about **fresh market sweet corn**. If you grow fresh market sweet corn, you

are eligible to take this short 5 minute online survey. Your participation and feedback are extremely valuable to the success of this research!

The survey will gather information on growers bird damage levels to sweet corn and prevention methods used to deter bird damage

To take the Bird Damage to Fresh Market Sweet Corn survey, click on the hyperlink or paste the following URL into your browser: https://uri.co1.qualtrics.com/ jfe/form/SV\_8qBBeU2HAIwcKYI

If you have further questions or interested in this study, contact Dr. Rebecca Brown at <a href="mailto:brownreb@uri.edu">brownreb@uri.edu</a>



Looking at the job you want to do will help in deciding which tool might be needed or if more than one type will help get the job done quicker or effectively. Using a soft bristle brush is good for loose dusty material. Longer bristles for a deeper reach is helpful. Shorter stiff bristles are good for heavy scrubbing. Short handles may be fine for some jobs while long handles are needed for deeper reach and even longer handles for hard to get places like cooler or facility upper walls or ceilings. Is the surface smooth or textured? Is the construction of the food contact surfaces 90 degree angled like sink sides or curved like a tub or some dunk tanks? Brushes can come in many different configurations to meet these types of situations.

In addition to an improved design, emphasis is also being placed on designating tools for specific jobs. One way this is being done is through color-coding. Tools for use, say, for cleaning outdoor tools/equipment could all be one color while brushes and brooms for restrooms are another color, and tools for cleaning food contact surfaces in the wash/pack area a different color as well. Of course, having a color key chart up where workers can see what color means what will be needed. This system will work just fine if tools are put back where they belong meaning there needs to be designated spots. Storing tools near where they will be used is one way of accomplishing this.

Armed with the appropriate arsenal of tools, keeping them clean is also needed. When buying new tools, remove any tags and clean off surfaces before using. Soapy water and a sponge, scrubby sponge or a stiff straight bristle brush dedicated for use cleaning tools will do the job. After cleaning, rinse, and spray with sanitizer. Hang the tools up with the heads down to drip dry. Some of the soft textured long bristle brushes may take a while to dry so running a fan will help with this process.



Example of a stiff bristle floor or wall surface brush. Photo by R. Hadad, CCE Cornell Vegetable Program

Whether you are a large or small farm, to make the investment in new proper tools cost effective, following the necessary steps in handling and care are important. Workers must be trained and they must see the management practice what they preach. The goal is keeping produce safe and improved cleaning procedures will make a difference.

For more information on farm food safety topics, please contact Robert Hadad, <u>rgh26@cornell.</u> <u>edu</u>, or Caitlin Tucker, <u>cv275@cornell.edu</u>.

# How do You Know Your Price is Right and Your Investment is Protected?

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

### Please sign up for our new project, "How Do You Know Your Pricing is Right and Your Investment is Protected?"

You guessed it, another survey! The weather is cold and while you're sitting at the kitchen table with a hot beverage, you should be able to get the survey finished by the time you reach the bottom of the cup. Organic, sustainable, socially disadvantaged and beginning farmers are welcome.

### Click to COMPLETE THE SURVEY ONLINE NOW!

Cornell Cooperative Extension, the Northeast Organic Farming Association of New York, and the Agricultural Justice Project are collaborating on an effort to help farmers succeed through improved financial management and better understanding of crop insurance options.

Your participation and advice will make this project stronger! Please consider joining our farmer advisory board. The tasks will include review of returned farmer surveys, providing feedback on our training sessions, and assisting with the overall evaluation of the program's usefulness to farmers.

This project will help farmers gain knowledge about overhead costs, equipment depreciation, using crop budgets, the complexity of specialty crop insurance, how to apply for and use crop insurance, how to hire workers and provide a workplace that is legal, fair and safe. The end result will be improved profitability and worker retention. You will feel more secure about farm costs and know how to use crop insurance. Your pricing will be more accurate and you will know more about building a team of experienced workers who will stay with you to realize your farm visions.

The program will include 5 online or in-person trainings, with multiple individualized consultations, online resources, and ongoing technical assistance.

For more information or to receive a paper version of the survey, contact: Robert Hadad, Regional Vegetable Specialist, CCE Cornell Vegetable Program at 585-739-4065 or by email, rgh26@cornell.edu

# Control <u>Alt</u> Delete: Multi-Million Dollar Grant to Mitigate <u>Alternaria</u> Leaf Spot and Head Rot in Broccoli

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

After witnessing many of our New York vegetable growers suffer severe losses from Alternaria leaf blight and head rot (ABHR) in broccoli and other brassica crops in 2018, it is our pleasure to be a part of a new multi-state project to address this potentially devastating disease. Cornell Plant Pathologist, Chris Smart and Cornell Cooperative Extension Vegetable Specialist, Christy Hoepting are Principle Investigator and collaborator on a new grant that seeks to mitigate ABHR in broccoli. They are part of a multi-disciplinary team of scientists and extension specialists from University of Georgia (including Project Director Bhabesh Dutta), Virginia Polytechnic Institute and State University, and University of Nebraska on a \$2.7 million 4-year USDA Specialty Crop Research Initiative (SCRI) grant. Although the project focuses on broccoli, new discoveries will be relevant to all brassica crops. **Disease** surveys and research trials will begin during this 2021 growing season – see call to action on the next page.



Figure 1. Close-up of tiny (~2-3 mm) black spots caused by Alternaria fungal pathogen on brassica transplant leaf. These spots can be indistinguishable from those caused by bacterial pathogens. If you see tiny black spots or suspect Alternaria in your brassica transplants, please alert Chris Smart or Christy Hoepting, because we want to collect Alternaria isolates from transplants for the Control Alt Delete broccoli Alternaria project. *Photo by Chris Smart, Cornell University* 

### NEW AGGRESSIVE ALTERNARIA PATHOGEN RESISTANT TO QUADRIS FUNGICIDE

Alternaria leaf spot causes dark sooty spots and target-spot lesions on brassica plant leaves and heads that can deem marketable portions unmarketable. In 2018, in an on-farm fungicide trial in New York, Quadris failed to control ABHR. That same year in GA, preliminary DNA sequencing of ABHR isolates collected from severe outbreaks in broccoli revealed that they were different from the *Alternaria brassicicola* pathogen that has typically been associated with ABHR. Furthermore, these isolates were found to be either moderately or highly aggressive on several other brassica crops (kale, cabbage and collard). Most importantly, GA plant pathologists observed that these ABHR isolates were highly resistant to azoxystrobin (the active ingredient in Quadris) using *in-vitro* fungicide sensitivity assays. These results were consistent with the field observations made by broccoli growers from NY, VA and GA, where they reported reduced or no efficacy with azoxystrobin applications. A major effort of the Control Alt Delete project will utilize genomics, population genetics and fungicide resistance profiling to understand the Alternaria pathogen(s) that attack brassica – "get to know the enemy" so-to-speak.

### ABOUT THE CONTROL ALT DELETE PROJECT

The Control Alt Delete project seeks to design practical and economically sound strategies to limit losses to Alternaria leaf blight and head rot (ABHR):

- Coordinated effort of multi-state (NY, VA, GA and NE) research and extension team.
- Sampling of broccoli fields and transplants, commercial seed and weeds to determine the sources of inoculum, pathogen species, genetic diversity, and fungicide sensitivity distribution of the pathogen(s).
- Develop fungicide resistance detection assays to monitor fungicide resistance of ABHR to several FRAC groups.
- Develop rapid molecular diagnostic tools to identify ABHR species and fungicide resistance.
- Evaluation of the relative performance of conventional and organic fungicides for control of ABHR.
- Screen broccoli varieties for relative susceptibility or tolerance to ABHR.
- Determine effect of nitrogen levels on development and severity of ABHR.
- Study irrigation amount, type and frequency on development and severity of ABHR.
- Conduct economic analysis of disease management tactics.
- Regular interaction with Stakeholder Advisory Panel made up of growers and other relevant industry members to provide grass roots advice.

Also from New York, **Dan Henry, Grower, W.D. Henry & Sons**, and **Thomas Björkman, Project Director of Eastern Broccoli Project** and Professor in Department of Horticulture, Cornell University, both serve on the Control Alt **Delete project Stakeholder Advisory Panel**.

#### **CALL TO ACTION - NEW YORK BRASSICA GROWERS**

- Let us know if you have Alternaria Leaf Spot in brassica transplants (not limited to broccoli). Alternaria infection in brassica transplants looks like non-descript black spots (Fig. 1), which can be indistinguishable from spots caused by bacterial pathogens. Nonetheless, if you see black spots that might be caused by Alternaria (can be on any brassica transplant, not limited to broccoli), please alert Smart or Hoepting.
- 2. Let us know if you have an unusually aggressive outbreak of Alternaria leaf spot or head rot in any brassica crop. We will remind you of this as the season progresses.
- 3. Fill out the 10-minute Broccoli Grower Survey. This is a 10-minute survey for anyone who grows broccoli (on any scale) that collects baseline information on the severity of Alternaria leaf spot and head rot and on the perceptions of management

strategies. It is completely anonymous. Your participation would be greatly appreciated.

Broccoji Grower Survey http://bit.ly/BroccoliGrowerSurvey

click to take the

For a paper copy of the survey, contact Christy Hoepting at 585-721-6953

#### FOR MORE INFORMATION

For more information on the Control Alt Delete Broccoli Alternaria Project, please visit <u>https://alternariabrocco-</u> liproject.uga.edu/welcome/

Or reach out to:

- Chris Smart, Cornell University: cds14@cornell. edu; 315-787-2441
- Christy Hoepting, CCE Cornell Vegetable Program: cah59@cornell.edu; 585-721-6953

# **Early Spring Berry Maintenance**

Esther Kibbe, Cornell Cooperative Extension, Harvest NY This article will approach spring maintenance by activity, rather than berry type. Not all berries or systems will require each activity. Species (crop) specific activities are discussed. New York comprises many micro-climates, and plant development varies tremendously farm-to-farm and season-to-season. Check your own plants for phenological development, any mention of months/dates are averages and estimates.

#### PRUNING

With the exception of black raspberries, caneberries and blueberries should be pruned before budbreak. Mature **blueberries** should, at a minimum, have the oldest canes removed, and any that are diseased, damaged, leaning into the rows or crossing over. Prune out and remove any gall wasp galls from the field. **Raspberry** floricanes should be narrowed into a 12-inch row and thinned to 4 canes per foot. **Black raspberries** are pruned once buds break, to identify and remove winter damage. Top floricanes to a manageable height, to avoid plants tipping over, and to encourage lateral branch development.



Prune out any stem galls in blueberry plantings. Photo by E. Kibbe, CCE Harvest NY



Diseased canes (on the right) should be pruned out and a dormant spray applied to protect new growth. *Photo by E. Kibbe, CCE Harvest NY* 

#### WINTER COVER (STRAW) REMOVAL

Leaving straw on too long will stress the **strawberry plants** as they are trying to "wake up" from dormancy, but don't have any light for the overwintering leaves to use for photosynthesis. Research has shown that late removal of straw will hurt fruit yield and plant vigor. Preemergent herbicides need to go on while plants are still dormant; straw should be removed and herbicides applied (see below for recommendations) before new leaves emerge from crowns.



Strawberries can tolerate frosts and even snow after straw has been removed. *Photo by E. Kibbe, CCE Harvest NY* 

#### WEED MANAGEMENT

If you are using mulch to prevent weeds, check that the barrier is still good. With wood chip mulch, this means 3-5 inches over the soil. If the mulch is decomposing and allowing weeds to germinate, consider herbicides, hand weeding or fresh mulch. With landscape cloth or plastic mulch, consider mending holes and brushing or blowing off any organic residues that are building up, where weed seeds might take hold.

Winter annual weeds are taking advantage of these doses of warmer weather, and can easily get ahead if not dealt with early. If you didn't apply pre-emergent herbicides in the fall, it is time to think about getting out to take care of these and other early germinating weeds. Most preemergent herbicides must be applied to bare soil. If you didn't deal with them in the fall, plan to clear any residual stems and leaves in a strip along the row before applying herbicides. There are many product options, but one frequently used for managing perennial weeds in blueberries and raspberries is Casoron 4G (or Casoron AS), both need to be watered in for activation. Other options include Devrinol (seedling grasses), Solicam (annual weeds and nutsedge), Surflan AS (grasses), Princep (annual weeds and crabgrass), Velpar (some perennial weeds), Dual Magnum (nutsedge and other problem weeds) and Sinbar (grasses, broadleaves), depending on which weeds are a problem in a particular planting. Most need to be applied before weeds germinate, see label or Cornell Guidelines for more details.

In **strawberries**, raking the straw mulch into the middles can help act as a weed barrier. However, herbicides are usually still required, *if not applied in the fall*. 2,4-D (Amine 4 or Formula 40) can be applied while the plants are still dormant to control existing broadleaf weeds. Apply Chateau at the same time for pre-emergent control, but not after dormancy has broken or severe injury may result. You may only use Chateau once in a calendar year. Devrinol may also be applied in early spring to control seedling grasses. It should be applied to bare ground and watered in or incorporated. Most other herbicides are only labeled for pre-planting, directed or shielded applications, or at renovation, again, see labels for specific recommendations.

#### **DORMANT SPRAYS**

In **blueberries and caneberries**, 'delayed dormant', as buds just start to swell, is the key time for dormant sprays, if you have had issues with cane disease (Phomopsis, Botrytis). Options include lime sulfur, copper (many options, including organic ones) or sterilants (such as Oxidate, JetAg or Rendition). Check **strawberries** for overwintering Two-spotted Spider Mites, by looking at the undersides of leaves with a magnifying lens (winter morph will be reddish). If more than 5 per leaflet are found, apply a miticide, such as Agri-Mek, Savey (only 1 application per season), Zeal or Portal, among others.

#### FERTILIZATION

It's a little too early to actually fertilize, but it doesn't hurt to have a plan and products ready before things get really busy. **Blueberries** should get half of their nitrogen at bud swell (late April- early May) and the remainder at petal fall (late May- early June). The actual rate depends on the age and size of the plants, but mature plants require 40-70 lb N/acre per year. If soil testing shows that the soil pH is creeping up, apply 200 lb/ acre of sulfur in the spring. **Caneberries** want all of their nitrogen at bud-break (late April in 2020), mature plants require 50-100 lb N/acre. **Strawberries** in matted row should NOT receive nitrogen in the spring, those in plasticulture might benefit from a little through the drip. For all crops, Phosphorous and Potassium can be applied to all as *recommended in tissue analysis* (taken previous July), if not done in the fall.

#### **FROST PROTECTION**

Frost protection with overhead sprinklers or double row covers ("fleece") is highly recommended for **strawberry** growers. Sprinklers on risers have benefited **blueberry** growers as well. Late freezes, such as those we had in 2020, can destroy a crop in bloom. This is the time to get your equipment out and test it, making sure your water source(s) and pumps are working as well. Be sure to have thermometers on hand and in place in the field, as the temperature at ground level may be different (lower!) than at your house or barn. Growers using row covers to advance the crop have had best results using sprinklers over the top of the covers.

#### **NEW PLANTINGS**

If you're planning to put in new berry plantings this year, it is important to prepare the site early. If you haven't already, take soil samples and apply amendments according to the recommendations in the analysis. Deal with any drainage or perennial weed issues. Confirm plant orders and delivery schedule with your nursery. Check that you have all necessary materials: mulch, irrigation equipment, herbicides, fertilizers and so forth.

#### FOR MORE INFORMATION

Contact Esther Kibbe at eip9@cornell.edu, 607-351-1991.

# Success with Green Peas in New York

Julie Kikkert, CCE Cornell Vegetable Program

Nothing says spring like the planting and harvest of green peas, one of my favorite eat-in-the-field vegetables! Peas are a cool season crop that thrive in the humid continental climate of western New York. Below are tips for a successful crop along with some of the most common problems that I have seen in peas in New York over my 20+ career in extension. Best wishes to all pea growers this season and please reach out to one of our specialists if you have questions or issues in your fields.

### VARIETIES

While you have probably already obtained your seed for 2021, here are some resources to help in future decisions. Keep track of your own experience this year and compare with what the researchers have observed. The 2020 fresh market pea variety trial report from Crystal Stewart-Courtens, Extension Vegetable Specialist with CCE in Eastern NY is available as a pdf for printing or as a podcast at <a href="https://enych.cce.cornell.edu/submission.php?id=733&crumb=crops">https://enych.cce.cornell.edu/submission.php?id=733&crumb=crops</a> [crops | peas | crop\*22 | If you need a printed copy mailed to you, please reach out to us.

Processing pea growers have their seed provided to them by the processor. Cornell University and the University of Delaware run processing pea variety trials regularly. If you are interested to learn more, the reports are available at the following websites:

Cornell University: <u>https://www.vegetables.cornell.edu/crops/pro-</u> cessing-vegetable-research-and-extension-program/

University of Delaware: <u>https://www.udel.edu/academics/col-leges/canr/cooperative-extension/sustainable-production/vari-ety-trials/</u>

### PLANTING

Preparation for planting peas begins the previous year with perennial and winter annual weed control, soil testing, zone building and planting cover crops. Spring tasks include field and seedbed preparation followed by planting. Make sure to select fields that have good soil health and are well-drained because peas generally have weak root systems and easily succumb to seed rots, root rots and subsequent die-off when the crop is filling the pods, especially if drought and heat stress are prevalent. PLANTING IN WET OR COMPACTED SOILS IS THE NUMBER ONE PREDICTOR OF PEA **CROP FAILURE!** Planting can begin in late March for the earliest varieties and continue until late May. Pea seed will germinate at soil temperatures as low as 40°F, however the optimum temperature is between 50° to 75°F. Some growers inoculate the seed with symbiotic bacteria that fix nitrogen, however, this is generally not needed except for fields with no history of peas in the rotation and low nitrogen levels. A pre-emergent herbicide may be applied (see Weed Control section). Seeds should be planted at a maximum of 1 inch depth unless the soil is very dry. Fresh market growers typically plant 18-20 plants per yard in the row and 32-36 inches between rows. Processing growers use 7-inch rows, with 16-22 plants per yard in the row depending on variety. Seeding rate must be adjusted to the seed size, which can vary greatly (see the 2021 Cornell Vegetable Guidelines). Seedlings will begin to emerge in about 10 days depending on the weather.



Field of healthy young pea plants for processing grown on 7-inch wide rows. Photo by J. Kikkert, CCE Cornell Vegetable Program

### WEED CONTROL

Weed management is an important component of pea production. Weeds in pea fields reduce yields and interfere with machine harvest. Flower buds of Canada thistle, corn chamomile "daisy", and nightshade berries are all contaminants in processing peas because they cannot be easily separated from the shelled peas. Processing growers also need to keep fields free of wheat and small grains because of concern over gluten contamination.

Peas do not compete well with weeds and it is wise to avoid fields with known serious weed problems. Growers may begin blind cultivation with a tine weeder or flexible harrow, prior to the ground cracking. The goal is to kill very tiny weeds at the white thread stage. Be aware that peas are very susceptible to breakage if they are in the crook stage before ground crack, until the seed leaves are unfolded and horizontal. Organic growers may continue tine weeding or other cultivation depending on planting configuration for fresh or processing market. There is a concern with processing peas of bringing up stones that will be picked up with the harvest machine. Young processing peas will withstand a light rolling to tamp down the soil and stones after tine weeding. For more tips on weed management for organic peas, refer to the Cornell Production Guide for Organic Peas for Processing at https://ecommons.cornell.edu/handle/1813/42896

Conventional growers should note that peas are sensitive to residues of several herbicides. Peas are very sensitive to atrazine. Do not plant in fields where more than one pound of atrazine was applied the previous year. There is an 18-month restriction for planting into fields where mesotrione (Callisto, Instigate, Halex GT, Lexar, Lumax, Realm Q, Zemax) and clopyralid (Hornet WDG, Stinger, SureStart, TripleFlex) have been applied. Make sure to know the history of herbicide use in your field and note planting restrictions for peas.

Herbicides labeled for use in peas include pre-plant incorporated, pre-emergence, and post-emergence products (see the 2021 Cornell Vegetable Guidelines). Herbicide choice should be based on the weed species,

crop growth stage, weather, and pre-harvest interval. Applicators should read the product labels carefully for full details. Post-emergence herbicides need to be applied at the correct stage of pea growth to avoid crop injury.

#### DISEASES

#### Seed Decay and Damping-off

In New York, Pythium ultimum and Rhizoctonia solani are the principal pathogens causing seed decay and/or seedling damping-off diseases of peas grown throughout the production regions in the state. Seeds of poor quality and vigor as well as those planted in suboptimal soil conditions germinate rather slowly, and thus are most prone to attack. Infected seeds often become discolored, exhibit soft rot, and eventually decay. Seeds may not germinate or seedlings may die before reaching the soil surface or die shortly afterwards, resulting in poor emergence and stand establishment. The first and most important management option against these diseases is the use of high-quality seeds that are pathogen-free and treated with effective products, where possible. Captan and Thiram fungicide seed treatments are fair against Pythium, Rhizoctonia, and Fusarium sp. Apron fungicide is best for Pythium, while Maxim fungicide is best for Rhizoctonia sp. Organic (OMRI approved) seed treatments are being studied.

#### **Root Rot**

Several pathogens alone or in combination can cause root rot symptoms in peas. Fusarium cortical rot (*Fusarium solani f. sp. pisi*) has been the most prevalent disease of peas in Western NY in recent years, followed by Fusarium wilt and near wilt (*F. oxysporum f. sp. pisi*) (*G. Abawi, Cornell*). These pathogens only infect peas and you will only see these diseases if peas have been grown in a field before. These fungi can survive for a very long time in soil. Root and stem rots can also be caused by *Rhizoctonia* and *Pythium* spp., which can affect a number of other vegetable crops. If that isn't enough, pea roots can also be infected with *Thielaviopsis* and *Aphanomyces* spp.

Damage caused by root disease pathogens is greatest in poor quality soils. Thus, improving soil health status will directly or indirectly improve root health and reduce damage of root pathogens. It has been shown that assessing root health is a highly correlated biological indicator of soil health in general. Roots growing in healthy soils generally are of larger size, firm, have large numbers of fibrous rootlets, penetrate deeper into the soil profile, and exhibit limited or no symptoms of infections by root pathogens. Such roots are more tolerant to environmental stress conditions and more efficient in absorbing water and nutrients. In addition, it is known that all soil health management practices (various modifications of tillage systems, cropping sequences, cover crops and soil amendments) directly or indirectly affect the populations of root pathogens and their damage to vegetable crops.

#### **Best Practices to Keep Pea Roots Healthy**

- Use high quality, pathogen-free, and fungicide treated seed.
- Well-drained soils, free of compaction
- Plant peas only once every four years in a field
- Avoid fields with a history of severe root rot
- Rotations with grain crops will improve soil structure and reduce disease severity.
- Use tolerant varieties



Pea plants with severe root rot. Photo by J. Kikkert, CCE CVP

#### **FOLIAR DISEASES**

Although peas are susceptible to many foliar diseases they are uncommon and to date have not caused obvious losses in NY.

#### **INSECTS**

Insects are generally not a major problem in peas in NY, but seedcorn maggot and aphids are occasional pests. Aphids can feed on pea leaves and pods, but are usually not a concern unless populations get very high. Seedcorn maggots are most severe when cool, moist spring conditions slow seed germination and growth of young plants. Seedcorn maggot adults emerge from overwintering pupae. Mated females fly close to the ground in search of suitable egg laying spots – preferably near decaying organic material or germinating seed to provide a food source for the newly hatched larvae. Eggs hatch 2-3 days after being laid, and the maggots feed on and burrow into the seed and stems. Maggots develop through larval stages for 2-3 weeks depending on the temperature. If damaged plants aren't killed outright, the injury provides wounds for plant pathogens to attack, causing root and stem rots to develop. Prevention is the key to control because there are no effective rescue treatments. Among the most important steps are to incorporate crop residues and cover crops 2 to 3 weeks prior to planting and avoid manure applications right before planting as this attracts egg-laying adults. In small, fresh market plantings, row covers may prevent egg laying and subsequent plant damage, however, they will not protect crops where pupae are already in the soil.

# **Upcoming Events**

Cornell Vegetable Program events at CVP.CCE.CORNELL.EDU

### Berry Grower Workshop (Allegany County) April 7, 2021 (Wednesday) | 6:00pm - 8:00pm Beginning at Wagoner Bees & Produce, 11137 Wayne Rd, Fillmore, NY 14735

Open to aspiring, beginner or experience growers.

Esther Kibbe, WNY Berry Specialist, will talk about spring maintenance activities in strawberries and raspberries, for management of weeds, pests and diseases. These include pruning, straw removal, dormant sprays, and scouting. There will also be a demonstration of fall-planted strawberries under row covers.

We will start out at Wagoner Bees & Produce located at 11137 Wayne Road, Fillmore, NY 14735 to cover strawberries, and end at White Rabbit Farm at 10926 Dugway Road, Fillmore, NY 14735 looking at raspberry production.

There is no fee to attend however pre-registration is required; participants must wear masks. To pre-register for this workshop or for more information, contact Lynn Bliven of CCE Allegany County at 716-244-0290.

### Women's Tractor & Equipment Operation Safety Zoom Meetings

### April 8 and April 15, 2021 (Thursdays) | 7:00pm - 8:00pm Online via Zoom

(or attend in-person on Saturday, April 17, 10:00am in Falconer, NY, or at 1:00pm in Sheridan, NY)

Cornell Cooperative Extension of Chautauqua County encourages women of all ages and experience levels who operate tractors and farm equipment to participate in this informational program on tractor operation and safety. This free program will be offered via Zoom, as well as an in-person class at a local tractor dealership. Teenage girls are also welcome to participate. The virtual classes will be presented by Christina Day, Ag Safety Educator with the New York Center for Agricultural Medicine and Health (NYCAMH).

Topics to be discussed will include:

- Types of tractor incidents that cause the most injuries and fatalities rollovers, runovers, PTO entanglements
- How to prevent those incidents
- Road safety
- Mechanical hazards
- OSHA's guidelines for tractor operation
- Understanding basic maintenance & operation of tractors with hands-on tractor driving at the in-person class

#### Cost: FREE

Pre-registration required: <u>https://cornell.zoom.us/meeting/regis-ter/tJApc-qvqTltHtWCQECDvY9bRjVQCgKJqlvz</u> or call CCE of Chautauqua County at 716-664-9502 Ext. 203.

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# **Cornell Cooperative Extension** Cornell Vegetable Program

480 North Main Street Canandaigua, NY 14424





VegEdge is the highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell University and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

## Contact Us VEGETABLE SPECIALISTS

**Elizabeth Buck** | 585-406-3419 cell | emb273@cornell.edu fresh market vegetables, weed management, soil health

**Robert Hadad** | 585-739-4065 cell | rgh26@cornell.edu farm food safety, organic, business & marketing, fresh market vegetables

**Christy Hoepting** | 585-721-6953 cell | cah59@cornell.edu onions, cabbage, broccoli, garlic, pesticide management

Julie Kikkert, Team Leader | 585-313-8160 cell | jrk2@cornell.edu processing crops (table beets, carrots, peas, snap beans, sweet corn)

**Margie Lund** | 607-377-9109 cell | mel296@cornell.edu potatoes, dry beans, and post-harvest handling and storage

Judson Reid | 585-313-8912 cell | jer11@cornell.edu greenhouses/high tunnels, small farming operations, fresh market vegs

### **PROGRAM ASSISTANTS**

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### **ADMINISTRATION**

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# **Cornell Cooperative Extension** Cornell Vegetable Program

For more information about our program, email cce-cvp@cornell.edu or visit CVP.CCE.CORNELL.EDU

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