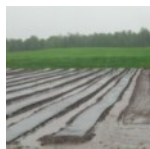




Current weather conditions put brassica crops at risk for outbreaks of Alternaria leaf spot and head

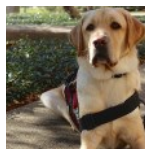
rot. Fungicide recommendations are provided for ALS in broccoli.

**PAGE 1**



Wet weather is forcing area growers to revise their planting plans. Here are the reasons to delay your planting and ways to help manage the delay.

**PAGE 5**



Confused about how to handle service animals and their handlers on your u-pick farm?

Learn how to reduce the food safety risks animals pose.

**PAGE 6**



In processing green peas, the application of post-emergence herbicides should be based on the dominant weed species present and the growth stage of the peas.

**PAGE 8**



# VEGE

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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Photo: C. Vore

Cornell Cooperative Extension  
Cornell Vegetable Program

## New Fungicide Recommendations for Alternaria Leaf Spot and Head Rot in Broccoli

Christy Hoepting, CCE Cornell Vegetable Program

### Wet spring favorable for ALS and DM.

The 2018 growing season will go down in history for having one of the most devastating outbreaks of Alternaria leaf spot (ALS) and head rot in brassica crops with marketable portions of crop falling well below 50% in many fields. ALS is caused by *Alternaria brassicola* and is specific to brassica/crucifer/Cole crops including broccoli, cabbage, cauliflower, Brussels sprouts, kale, etc. and weeds (e.g. mustards such as Shepherd's purse and field pennycress). It can survive in soil and crop debris and can be spread onto plants from splashing soil and over longer distances aerially. **Given the tremendous amount of disease last year, it is fair to assume that the level of ALS inoculum going into the 2019 season will be high.** Optimum temperatures for ALS are 75° to 82°F, which is certainly much warmer than our current conditions. However, if leaf wetness is prolonged for 20 hours or more, ALS can produce many spores outside of the optimum range of temperatures. In this unrelenting wet weather, leaf moisture is driving this disease. Downy mildew (DM) is similar to ALS in its survival, spread and requirement for leaf wetness, and its optimum temperature range is 50 to 60 °F, which is much like current conditions. Thus, **brassicas are currently at risk for both ALS and DM.**

### On-farm high ALS-pressure fungicide trial in September 2018

Last September, I set up an ad-hoc fungicide trial in a field where an adjacent broccoli planting suffered 85% crop loss from ALS head rot. The objective of the study was to determine whether fungicide(s) could control ALS enough to produce marketable

*continued on page 3*



**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.

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# Contents

## Contact Us

Cornell Vegetable Program ..... 12

## Crops

CROP Insights – Our Observations from the Field and Recommendations ..... 09

New Fungicide Recommendations for ALS and Head Rot in Broccoli ..... 01

Processing Green Peas: Post-Emergence Weed Control with Herbicides ..... 08

## General

Welcome Emma van der Heide to the CVP ..... 02

Cool, Wet Spring: Managing the Planting Delay ..... 05

Service Animals and Their Owners on Your Farm: What You Need to Know ..... 06

Incentives for Conservation Implementation on Rented Land ..... 09

How to Establish Crop Production History for Crop Insurance ..... 10

## Upcoming Events

Growing Agritourism in the Genesee Valley Region ..... 10

Weather Charts ..... 11

*The next issue of VegEdge newsletter will be produced May 29, 2019.*

## Welcome Emma van der Heide to the CVP

*"I'm a 2018 graduate of Harvard College with a B.A. in Integrative Biology. I grew up in Pulaski, NY. I'm interested in plant science, specifically plant pathology, so I'm really excited to work as a technician with the Vegetable Team."*

Emma will be a Technician for Christy Hoepting and Elizabeth Buck. Her office is in Albion, NY. She will be working primarily with Christy on onion, cabbage, broccoli and garlic research projects. 🍅



Emma van der Heide



broccoli during extremely high pressure. In a nutshell:

- 11 fungicides belonging to eight Fungicide Resistance Action Committee (FRAC) groups were tested against an untreated control (Table 1).
- Individual plot was a single 15-ft row of broccoli (~ 15 plants) that was treated. Untreated row on each side of treated row. Each treatment replicated four times.
- Broccoli variety was 'Emerald Crown'.
- First fungicide spray applied on Sep 9, which was 3-weeks post-transplanting and 1-week after grower's first application of Bravo 1.5 pt + Quadris 11.2 fl oz. Broccoli plants had about 12 leaves and were about 1-ft wide and 1-ft tall. A few ALS lesions were already present on lower frame leaves.
- Four weekly sprays were made on Sep 17, 24 and 30 using a CO<sub>2</sub> backpack sprayer with 25-30 psi and 40 gpa to ensure good coverage. On Sep 30, first heads were harvested and then forth spray applied.
- An adjuvant with penetrating properties, Dyne-Amic 0.25% v/v was included with all fungicides that have translaminar/systemic activity. Adjuvant was not used with Bravo, which has only contact activity. For worm control, Warrior with Zeon Technology 1.92 fl oz was included in each treatment in every spray.
- Broccoli heads were harvested at maturity or when ALS deemed them unmarketable on Sep 30, Oct 4, 8 and 10. Note, that the Oct 10 harvest was 10 days after last fungicide application.

**Attention! Merivon is not labeled on brassicas, but its sister fungicide, Priaxor is.**

- High rate of Priaxor for brassicas is 8.2 fl oz, which = Merivon 5.5 fl oz for FRAC 7 (39% less)  
= Merivon 11 fl oz for FRAC 11 (18% higher)
- Merivon 9 fl oz = Priaxor 13.4 fl oz (63% higher)

*Trials are planned for 2019 growing season to confirm Priaxor 8.2 fl oz works as well as Merivon 9 fl oz.*

**Best treatment had 97% marketable heads when untreated had only 2%! (See Fig. 1, Table 1)**

- **Merivon** provided **best** control of ALS head rot (97% control) and ALS lesions on foliage (86% control)
- **Endura** (75%), **Switch** (88%), **Quadris Top** (77%) provided **very good** control of ALS head rot and ALS lesions on foliage.
- Although Luna Experience and Inspire Super had less than 60% marketable heads, the ALS severity of these unmarketable heads was statistically as low as Merivon (= very minor), and they reduced ALS lesions on foliage to the same degree as Merivon. These results suggest that **Luna Experience** and **Inspire Super** also have **very good** activity on ALS, but perhaps do not have as long residual or do not move as well within the plant as Merivon. 10 days after treatment, they may have "run out of gas".
- Viathon failed to control ALS head rot, but significantly controlled ALS lesions on foliage (77% control).



**Figure 1.** Best fungicide treatment in on-farm trial resulted in 97% marketable heads (front row) compared to only 2% marketable in the untreated (back row). Photo: C. Hoepting, CCE CVP

Similar to Luna Experience and Inspire Super, **Viathon also has good activity on ALS, but either ran out of gas or did not move as well in the plant.** I would only trust Viathon to provide adequate control of ALS pre-heading.

- **Bravo Weather Stik, Previcur Flex and Tanos failed** to control ALS head rot, and only reduced ALS lesions on foliage by 32%
- **Bravo** was likely overwhelmed by the high pressure, because its control improved under lower pressure in the middle (47% control) and upper (66% control) canopies. As a contact fungicide, it may have not adequately protected the head, especially when foliage prevents fungicide spray from direct contact with the head.
- **Previcur Flex is more of a downy mildew fungicide.** Its failure to control ALS in this trial demonstrates the importance of using the right fungicide for the disease. **Identification of cause of head rot (ALS, DM or bacterial) can be confusing – make sure you know which disease(s) you have – contact CVP Specialists for assistance.**
- FRAC 28 in **Tanos** was not expected to have much activity on ALS, but the FRAC 11 should have.
- Compared to Quadris Top (FRAC 3, 11), Quadris (11) had significantly 3.8, 2.3 and 2.8-times more ALS lesions per leaf in the lower, middle and upper canopies, respectively and 18% fewer marketable heads. These results in addition to Tanos failing to control ALS suggest that **ALS may be developing resistance to FRAC 11.** ALS isolates from the trial are being analyzed for FRAC 11 resistance currently by Chris Smart lab – **stay tuned for results!**

#### **Fungicide Recommendations for ALS in broccoli**

- Spray fungicides preventatively before disease establishes itself, because lower frame leaves serve as inoculum to infect heads. Bravo would be an economical choice at this timing.

**Table 1. Relative performance of fungicides for control of Alternaria leaf spot and head rot in broccoli 'Emerald Crown' in order from best to worst by % marketable heads, field trial, Fairport, NY, 2018.**

Treatment <sup>1</sup> A-D <sup>2</sup> and Rate/A	FRAC Group <sup>3</sup>	Oct 10 Avg. No. ALS lesions/leaf (lower canopy <sup>4</sup> )	Sep 30, Oct 4, 8, 10 Marketable Heads (%)	Sep 30, Oct 4, 8, 10 ALS Severity of Unmarketable Heads (%) <sup>5</sup>
Merivon 9 fl oz (Priaxor labelled) <sup>7</sup>	3, 7	22 c <sup>6</sup>	97 d	27 cd
Switch 14 oz	9, 12	39 c	88 cd	33 c
Quadris Top 14 fl oz	3, 11	28 c	77 c	33 c
Endura 9 fl oz	7	28 c	75 c	25 d
Quadris 11.2 fl oz	11	107 b	59 b	32 c
Inspire Super 20 fl oz	3, 9	31 c	54 b	29 cd
Luna Experience 8.6 fl oz	3, 7	14 c	53 b	25 d
Viathon 2 pt	3, 33	36 c	2 a	42 b
Bravo Weather Stik 1.5 pt	M5	109 b	2 a	58 a
Tanos 8 oz (not labelled)	11, 27	115 b	2 a	45 b
Previcur Flex 1.2 pt (not labelled)	28	113 b	0 a	62 a
Untreated	NA	157 a	2 a	63 a
<b>P value (<math>\alpha = 0.05</math>)</b>		<b>&lt;0.0001</b>	<b>&lt;0.0001</b>	<b>&lt;0.0001</b>

<sup>1</sup> Nonionic surfactant Dyne-Amic 0.125% v/v was included in each treatment except for Bravo Weather Stik.<sup>2</sup> Application date: A – 9 Sep; B – 17 Sep; C – 24 Sep; D – 30 Sep; NA-- none applied.<sup>3</sup> FRAC: Fungicide Resistance Action Committee chemical class group.<sup>4</sup> From 6 randomly selected plants per plot, a lower, middle and upper canopy leaf was picked and number of ALS lesions greater than 0.1-in counted per leaf. In the untreated, average No. ALS lesions per leaf were 157, 99 and 27 for lower, middle and upper canopy, respectively. Only results from the lower canopy leaves are shown.<sup>5</sup> ALS severity in very general terms: up to 33% = minor; 34-83% = moderate; >83% = severe.<sup>6</sup> Numbers in a column followed by the same letter are not significantly different, Fisher's Protected Least Significant Difference test ( $p < 0.05$ ).<sup>7</sup> Merivon is not labeled on brassicas, but its sister fungicide Priaxor is. Tanos and Previcur Flex are not labeled on brassicas.**Table 2. Sample fungicide program for control of ALS in broccoli.** Program was strategically designed to: 1) Use no more than 2 apps per FRAC per crop, 2) No more than 2 apps before rotating to different FRAC group, and 3) 0-3 day PHI products saved for close/during harvest.

Week	Crop Stage	Fungicide	FRAC Group	PHI (days)	Activity on DM
1 & 2	1-2 weeks after transplanting, prior to ALS infection	Bravo WS 1.5 pt	M5	7	Good
3	Pre-heading, large canopy	Switch 14 oz + penetrating adjuvant	9, 12	7	None
4	Heading begins	Switch 14 oz + penetrating adjuvant	9, 12	7	None
5	Harvest begins	Priaxor 8.2 fl oz + penetrating adjuvant	7, 11	3	Good
6	During harvest	Endura 9 oz + penetrating adjuvant	7	0	None

- All fungicides evaluated in this trial EXCEPT Bravo, are at risk of ALS-developing resistance. Follow label directions diligently for resistance management. Most labels do not allow for more than 1-2 apps in a row before rotating to a different FRAC group, and have maximum use rates per season (for product, active ingredient & FRAC group). Also, be mindful of pre-mixes that have more than one FRAC group per fungicide that need to be managed for fungicide resistance.
- Use an adjuvant with fungicides that have translaminar or systemic activity for improved efficacy. Do not apply a copper bactericide in the same tank mix with an adjuvant, or excessive leaf burn injury may occur.
- Save products with 0 (Endura, Quadris) or 3 days (Priaxor) PHI for when you get closer to and during harvest.
- Note that Luna Experience, Endura and Switch have no activity on DM. **ALS fungicides with good DM activity include Bravo, Quadris, Quadris Top and Viathon.** Best control of DM is provided by Orondis Opti/ Ultra and Presidio.
- Table 2 illustrates a sample fungicide program for a high ALS-pressure situation.** It was strategically designed to: 1) Use no more than 2 apps per FRAC per crop, 2) No more than 2 apps before rotating to different FRAC group, and 3) saving 0-3 day PHI products for close to/ during harvest. It costs about \$260/ A. Switch is very expensive, so if you can design a program without or with one less application of Switch, the program will be cheaper. I found it a challenge to come up with a 6-week program that did not use more than 2 apps per FRAC. If disease pressure is low, one can certainly back down from this program.
- Although this trial was conducted in broccoli, I think that the results would be applicable to other brassicas – check labels to make sure fungicides are labeled. ●

# Cool, Wet Spring: Managing the Planting Delay

Elizabeth Buck, CCE Cornell Vegetable Program

To put it nicely, the weather is dictating a revision of many folks' planting plans. Working a field too early, before it has had time to properly dry out, will reduce the soil health and can cause long-term damage. Compaction is the primary concern. Compacted soil can interfere with all sorts of root-zone plant and soil functions:

- root exploration of the soil and nutrient/water uptake
- water percolation into and through the soil profile
- reduced soil air, increased soil water, and therefore greater incidence of anaerobic conditions
- nitrogen loss, promoted by anaerobic and water saturated conditions
- Increased root rot incidence (stressed roots + disease favoring, poorly drained soil conditions)

Compaction can occur in both the plow layer (usually top 6-8") and deeper in the soil. Plow layer compaction is caused by traffic, working the ground too wet, and the downward pressure of the plow implement on the soil. Traffic compaction is both a surface and subsurface compaction concern. Subsurface layers that are wet can be compacted even if upper soil layers are friable, and the depth to which compaction can occur is based on axle weight. Iowa State Extension cites a compaction risk to soil at a depth of 12" when it is at field capacity and driven over by vehicles with more than 7-8 tons of weight per axle.

## To help avoid compaction:

- Check the moisture of your soil throughout the plow layer to see if it is friable. Friable soil will easily form a ball when squeezed, without dripping moisture, and will shatter when that ball is dropped onto the ground.
- Larger tires, when properly inflated, help distribute the weight of equipment over a larger surface area.
- When possible, reduce the intensity of your tillage. Disc instead of moldboard if you can. This will reduce plow pressure on the soil aggregates and reduce the formation of com-



pacted plow pans at the bottom of your tillage depth.

- Control the flow of traffic as much as is practical. Can you follow the same tractor passes to fit, fertilize, apply PRE herbicides to the field, or plant? Doing so will reduce the land area subjected to compaction from traffic.

Obviously there is pressure to get caught up as soon as possible. Here are some other **benefits of waiting until your ground is fit for field operations:**

- Applied N will stay put better than N applied to wet (and compacted, anaerobic) ground.
- Reduced risk of root rots. Pythium and friends like wet soil. Plant roots do not. Drier soils = less favorable disease environment and less susceptible (less stressed) plant roots.
- Greater plant ability to grow deep roots in search of moisture later. If the summer turns dry, plants will have a hard time growing through compacted soils to access moisture, which means you'll need to irrigate more frequently.
- Your field will drainage won't be worse next year because it was worked too soon this year
- You'll kill more weeds if you wait. The summer annual weeds are delayed by cold, wet soils and many have not yet germinated, so your final bed prep step(s) may not help reduce the seed bank and lighten the load on your PRE herbicides like it normally would.
- The soil is cold. Seeds take longer to germinate and transplants take longer to establish. Both are more susceptible to disease in cool, wet soils.
- Many PRE herbicides have a higher crop injury risk in cool, wet soils, especially if the crop is slow-growing

and cannot metabolize the active ingredient as efficiently. Plus, PREs only control weeds for so long, and the more the weed germination period overlaps with the window of herbicide efficacy, the fewer weeds you'll have.

## To help manage the delay:

- Slow transplants down by restricting water and lowering greenhouse temperature. Don't send them into drought stress, just change your watering schedule to deliver smaller amounts more frequently to raise them on the drier side. Keep the greenhouse temperature above the chill injury range for the most cold-sensitive crop you're raising.
- Increase greenhouse space by kicking mature plants out into cold frames or onto wagons. Plants on wagons can harden off outside during the day, and be drawn into a slightly warmer building during cold nights.
- Go over your equipment one more time and make sure everything is in the best working order possible.

If you're thinking that these points are all well and good, but that as an Extension specialist I have the luxury of not needing to grow and schedule a crop... fair commentary. Wet springs are incredibly difficult and can be very stressful. And sometimes things are so wet that you're not able to get everything planted – which translates to a whole new set of challenges. I get it, and I realize that sometimes plants just need to get in the ground. And if that means there are new soil or plant health challenges moving forward, I'm happy to help figure out the best way to manage them. Here's hoping some sunshine and wind come around soon. 🍀



# Service Animals and Their Owners on Your Farm: What You Need to Know

Wes Kline and Meredith Melendez, Rutgers Cooperative Extension; edited by Robert Hadad, CCE CVP

*[Since becoming a farm food safety educator, there has been a great deal of discussion about what to do if you allow visitors onto your farm and they bring their animals. What is allowed and what isn't. At our trainings we have stated that animals shouldn't be allowed into areas where produce is being grown. The problem had been what about pick your own operations. We had advised not to allow pets on the farm. With the advent of service animals and stricter interpretation of the Americans with Disabilities Act, this advice has sort of changed. Here's a great article written about the subject just last week by Wes Kline and Meredith Melendez from Rutgers Cooperative Extension. Ed. R. Hadad, CCE CVP]*

## Are you required to let the public bring their animals onto your retail farm?

An increasing number of customers are bringing animals with them when they visit farm markets, pick your own farms, or agritainment activities. Animals can pose a food safety risk to produce, introduce disease to farm animals, frighten or upset farm animals. Outside animals can pose a risk to employees, and other visitors. Farms need to consider compliance with regulations and buyer requirements specific to food safety and biosecurity to protect their farm animals. The Americans with Disabilities Act (ADA) governs what you are legally allowed to do in regards to service animals on your farm. This post will cover the specifics of the ADA regulations, identify animals that are not covered by the ADA regulations, provide sample policies for farms to follow regarding customer animals on the retail farm, and how to reduce risk on your farm from outside animals. Farm posters and consumer handouts will be made available statewide to assist you in communicating with customers about animals on your farm.

## What do the ADA regulations cover?

While many types of animals provide comfort and emotional support to their owners, only service animals are protected by the ADA, specifically title II and III. The ADA regulations define "service animal" as dogs, and less commonly miniature ponies, that are individually trained to do work or perform tasks for people with disabilities. These activities can include guiding a blind person, alerting people who are deaf, assisting a person in a wheelchair, alerting and protecting a person who is having a seizure, reminding a person with mental illness to take prescribed medications, calming a person with Post Traumatic Stress Disorder (PTSD) during an anxiety attack, or other duties. The work or task that a service animal has been trained to perform must be directly related to the person's disability. Some of these disabilities are obvious, others are not.

## What questions can you legally ask?

When it is not obvious to you that an animal is a service animal you may ask just two questions to determine if the animal is a service animal.

- 1) Is the service animal required because of a disability?
- 2) What work or task has the service animal been trained to perform?

The service animal must have been trained to perform a specific task or work for a person with a disability in order to qualify for protection under the ADA regulations. Note that service animals do not always wear vests or harnesses.

## What questions are you legally prevented from asking?

- 1) You may not ask about the person's disability.
- 2) You may not ask for proof of the person's disability.
- 3) You may not ask for documentation or proof that the service animal is trained.
- 4) You may not ask for an animal health certificate.

## What should you do once you are satisfied the animal is a service animal?

- 1) Inform the handler which areas of the farm are open to the service animal and handler.
- 2) Inform the handler where the handwashing areas are located, and that they should wash their hands before handling and consuming produce.
- 3) Inform the handler of the proper area for the service animal to relieve themselves.
- 4) Inform the handler of where plastic bags and trash cans are available to them to dispose of fecal material.
- 5) Inform the handler of any farm policies specific to service animals.

## Are comfort or emotional support animals protected by regulations?

Neither comfort nor emotional support animals are covered by the ADA regulations. Without the ADA regulatory protection these animals can be refused entry to your farm without fear of legal ramifications based on risk to your crops, your animals, farm employees or other farm customers.

## Can you deny entry to service animals on the farm?

In general the ADA regulations state that service animals may be present where the public is normally permitted. You may restrict service animals from specific areas such as produce handling areas used for washing, packing, and storage (risk of food contamination), or farm animal areas (natural predator/prey relationships that can upset farm animals or potentially be a source of disease transmission).

## What is appropriate behavior for a service animal and their handler?

Service animals should always be under the control of their handler. Service animals must be harnessed, leashed, or tethered, unless these devices interfere with the service animal's work or the individual's disability prevents using these devices. Service animals have been trained on how to perform a service to their handler and should be focused on that task.

*continued on next page*

### Can you ask someone with a service animal to leave the farm?

If the service animal is behaving in a way that indicates they are not under the control of their handler, or if the handler is unable to control the animal, you may ask them to leave. Examples of unacceptable behavior would be: consumption of produce, urination, marking, or defecation in the production areas, excessive barking, or aggressive behavior.

### Can service animals go into you-pick areas?

You should consider your production practices and the risk involved with having an animal in your fields when determining what parts of the farm service animals can access. Crops grown in close proximity to the ground are inherently higher risk crops for contamination when compared to crops growing farther from the ground. Crops typically consumed raw are also higher risk, and in many pick-your-own settings the customers are eating produce in the fields as they pick. Contact with animals can increase the risk of contamination of that produce. Handwashing stations should be provided to give the customers an opportunity to clean their hands after touching the service animal.

### Can service animals go into farm markets?

Service animals may be given access to store areas that are generally open to the public. Service animals would be prohibited from food processing areas, such as a store kitchen, due to contamination risk.

### What should you provide to help reduce risk when service animals are on the farm?

While the presence of service animals on your farm is likely to be a rare event, you should be prepared by having a designated area for service animals to relieve themselves, complete with pick-up bags and a trash can to dispose of fecal material. Handwashing facilities should be available for the handler.

### What are the steps to enforce your policies when someone wants to bring an animal on the farm?

Your own policies regarding service animals on your farm will dictate the conversation you have with a member of the public who wishes to bring an animal onto your property. Below are two examples of a farm policy:

#### Allowing Only Service Animals Covered by the ADA Regulations

- Animals other than service animals will be asked to leave the farm.
- If the disability is not known or obvious the handler will be asked the following questions to confirm the animal is a service animal:
  - “Is the animal a service animal required for a disability?”
  - “What task has the service animal been trained to do?”
- If the animal is confirmed as a service animal you will be informed of the following:
  - Areas that are open to the handler and service animal
  - Location of hand washing areas
  - Areas that the service animal can eliminate waste
  - Policies at the farm specific to service animals
- If the animal is not a service animal, you will be asked to remove the animal from the property.
- If you refuse to leave the property, the police may be called.

#### Allowing Any Outside Animal onto the Farm Property by Customers

- Animals are permitted on the farm property without restriction.
- Customers are made aware of the farm policies regarding outside animals on the farm by prominent signage at:
  - The farm entrance

- The designated animal relief area/s at the farm.
- Signage will inform the customer:
  - Areas that are open to the animal
  - Location of hand washing areas
  - Situations that would warrant when it is appropriate to wash their hands
  - Area/s that the service animal can eliminate waste
  - Instructions for what the customer should do if their animal accidentally relieves themselves in inappropriate areas
- Animal behavior that is considered unacceptable in the farm environment
  - Consumption of produce
  - Urination, marking, or defecation in areas outside of the designated relief area
  - Excessive barking
  - Aggressive behaviors towards other customers, employees, or farm animals
- Customers who are not handling their animals in accordance with the farm policies may be asked to leave.

### What do you need to do to comply with the Food Safety Modernization Act/Produce Safety Rule or a buyer required third party audit?

Produce safety inspectors and auditors will focus on the potential risk of contamination with animals on your farm. You can expect questioning to focus on the production areas where the animals are permitted access, the areas that the animals are allowed to relieve themselves, how those areas are maintained, availability of handwashing facilities for the handler, and relevance and prominence of appropriate signage for the handler. Inspectors and auditors will look for evidence of compliance with your stated policies by watching how animals, handlers, and your staff are behaving. Signage should be prominent and indicate your expectations for the animal handler, locations of areas to support proper handwashing and trash disposal, and appropriate areas for the animal to urinate and defecate.

### Where can I learn more about the ADA regulations on service animals?

[ADA 2010 Revised Requirements – Service Animals](#)

[Frequently Asked Questions about Service Animals and the ADA](#)

[State Specific Regulatory Table](#) 

# Processing Green Peas: Post-Emergence Weed Control with Herbicides

Julie Kikkert, CCE Cornell Vegetable Program

The earliest planted peas already have several nodes of growth while others have not yet been planted. Scouting and managing weeds in all pea fields is critical until the crop begins flowering. The best chance for control is when the weeds are young. Growers of conventional processing peas rely largely on herbicide use for weed management. Pre-emergence herbicides for peas were discussed in the April 3, 2019 issue of VegEdge. The application of post-emergence herbicides should be based on the dominant weed species present and the growth stage of the peas. A copy of the [chart on relative effectiveness of herbicides available for peas in NY](#) is available on the CVP website in the pea crop section. Note that this chart is only for succulent green (English) peas. If you are growing edible pod or other types of peas, please make sure to look at the product labels carefully.

The application of post-emergence herbicides to succulent peas must be made at certain growth stages. Herbicide labels often refer to peas at a certain number of nodes (point where a leaf meets the stem). In peas, the first two nodes have only scale leaves and are often below the ground (Fig. 1). These should be counted in green peas. (Note this is different for dry field peas.) Furthermore, afile (leafless) peas do not have true leaves, rather they have stipules and tendrils.

Basagran and Thistrol don't have any soil residual, so the best time to spray is when the majority of weeds have emerged. Ideally, the first flush of weeds would have one or two leaves and the next flush would be in the cotyledon stage. Keep in mind that rain will stimulate new flushes of weeds. If you have nightshades, pigweed or mustard in your field, a better choice may be Raptor or Pursuit. Basagran will only control hairy nightshade, whereas Raptor and Pursuit will control both hairy and eastern black nightshade. Poast, Assure II/Targa and Select Max all provide good to excellent control of the most prevalent annual grasses in NY.

Figure 1. Node Count in Succulent Green Peas.

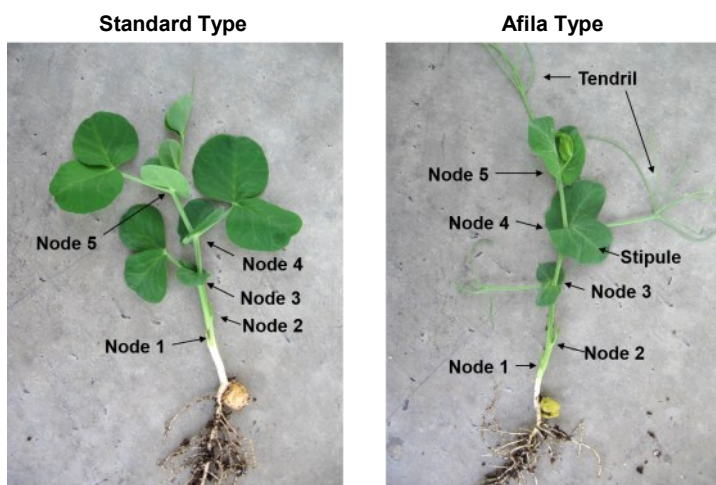


Image: J. Kikkert, CCE CVP

Average node to first flower for commonly grown processing pea varieties in New York.

Variety	Vine type	1st node to flower
<i>Early Season</i>		
Spring	Normal	9 to 10
PLS M-14	Normal	9
<i>Mid-Season</i>		
SV 8112QH	Determinant Afile	10 to 13
Portage	Afile	10
DA1470	Determinant Afile	12 to 13
SV7401QH	Normal	13 to 14
<i>Late-Season</i>		
Spartan	Afile	12 to 14
GV513	Normal	15
PLS196	Afile	11 to 16
SV6844	Afile	13 to 16

Although Basagran is labeled for yellow nutsedge, the rate we use in peas (1.0 – 2.0 pt/A) is too low to kill nutsedge, however, you may see suppression of weed growth. That is why on the pea herbicide chart Basagran is given a “poor” rating on yellow nutsedge. In the future, make note that Dual Magnum applied pre-emergence is very effective against nutsedge. Better yet, control nutsedge in fallow fields or rotational crops as a long-range plan for a particular field.

If you have Canada thistle in your fields, you may either hand-pull if there are small patches or apply a spray of Thistrol when the thistle is 4 to 10 inches tall. Use a rate of 3 to 4 pints/acre. This will prevent the thistle from forming flower buds that can contaminate the pea product, but will not kill the thistle. Remember that Thistrol cannot be applied to peas that are later than 3 nodes before flowering. In early peas, those at nodes 9-11, the timing of this postemergence application is critical. Late applications in early peas cause nonuniform flowering, resulting in uneven maturity. Canada thistle management is best done in rotational crops or in the fall. Stinger is the most effective herbicide, because it moves to the roots. Note that there is an 18 month restriction before you can plant peas in a field where Stinger has been applied. Stinger is labeled for field corn, sweet corn, cabbage, beets and spinach, and pasture/forage crops. The optimal time for application is in April and May before the thistle buds open. Later in the season, you can use 2,4-D in labeled crops (not peas). In the fall, Roundup + Banvel can be used. ●



# CROP INSIGHTS



## ONIONS

May 10<sup>th</sup> (last Friday) marks the suggested last day to plant direct seeded onions in New York. Planting is behind schedule due to the unrelenting cold and wet weather that has prevented growers from doing field work. Most growers in Elba got most of their direct seeded onion acreage planted, but Wayne and Oswego are much farther behind. Planting later increases the risks of delaying maturity into September, stand reduction due to heat stress when onions are in flag-leaf stage, and reduced bulb size and yield. How it all turns out is highly dependent on the weather and it is certainly possible to produce a decent crop when onions are direct seeded later than May 10<sup>th</sup>. This year, many growers will continue to pursue planting until at least May 20<sup>th</sup>. Earliest direct seeded onions are in the flag-leaf stage just starting the first true leaf (flag+), and so far, stands of emerged onions look good. Earliest transplanted onions have 4-5 leaves. Soggy field conditions are also preventing timely application of pre-emergent to onion herbicide applications and barley-kill herbicides.

Missing Buctril (a.i. bromoxynil) pre-emergent to onion will result in increased escapes of ragweed and annual mustards such as marsh yellowcress and Shepherd's purse. Two years ago, in my trials I started to use Buctril 2E at 1.5 pt instead of Buctril 1 pt and it appeared that the higher rate did a better job of preventing these weed escapes without having any effect on crop injury. These escapes can be controlled with post-emergent applications of Chateau, Goal 2XL and Buctril. Fortunately, Buctril is only part of the overall PRE herbicide program. Usually, growers also apply 1-2 applications of Outlook and 2-3 applications of Prowl, which in addition to their activity on grasses, also have activity on broadleaf weeds.

### Mark your calendars – more info to follow:

**Jun 3 (Tuesday morning) – Muck Donut Hour begins in Elba** at corner of Transit Rd. and Spoilbank Rd. in the Elba muck every Tuesday morning from 8:30 am to 9:30 am. All welcome!

**Jun 6 (Thursday morning) – Onion Crop Insurance Listening Session**, 10 am - 12 noon, CCE of Wayne Co., 1581 Route 88N, Newark, NY.

**Jun 20 (Thursday evening) – Annual Oswego County Onion Twilight Meeting**, 4:30 pm to 7 pm. Educational program at John Dunsmoor Lake Elizabeth farm, dinner to follow at Sorbello's. – CH

## Incentives for Conservation Implementation on Rented Land

Aaron Ristow, American Farmland Trust

### FARMERS AND LANDOWNERS PARTNERING TO PROTECT CLEAN WATER IN THE GREAT LAKES

American Farmland Trust, Cornell Cooperative Extension and other partners are working together to improve stewardship on rented land in the Great Lakes Watershed. The purpose of this program is to find win-win opportunities for landowners and farmer-operators that result in improved farm productivity and environmental stewardship.

### FINANCIAL INCENTIVES FOR LANDOWNERS AND FARMERS

Interested landowners or operators are eligible for guidance from American Farmland Trust expert staff on talking about options to move forward with implementing conservation on rented land. The program offers incentives which include free consultation, free Cornell Soil Health testing, and up to \$1,500 reimbursement for implementation of activities agreed to

by the owner/operator pair.

Up to \$1,500 per pair will be available for support and implementation of activities identified in the consultation and agreed to by both parties. At least 20% of total implementation cost must be provided by the landowner and/or operator.

Examples include:

- Farmer and landowner agree to try cover crops. They are reimbursed for 80% of the purchase of the cover crop seed up to \$1,500.
- Farmer and landowner agree to several conservation practices and decide to implement a new, longer term lease with flexible rent payments to accommodate the new practices. Program pays for 80% of attorney fees to develop the new lease, up to \$1,500.
- Farmer and landowner agree to invest in variable rate fertilizer appli-

cation technology with a local retailer. Program pays for 80% of the service, up to \$1,500.

Activities must be implemented by December 2019 and be located within the Great Lakes Watershed in New York.

### TO GET STARTED

Are you a landowner or operator that could benefit from this program? If so, or if you just want more information, please contact Aaron Ristow at American Farmland Trust: (607) 745-7165 or [aristow@farmland.org](mailto:aristow@farmland.org). This is a special opportunity.

*THIS PROJECT IS MADE POSSIBLE BY FUNDING SUPPORT PROVIDED BY THE GREAT LAKES PROTECTION FUND* ●

# How to Establish Crop Production History for Crop Insurance

Fay Benson, CCE South Central New York Dairy & Field Crop Team, with info from Acceptable Records of Production

As the government moves away from disaster payments and programs, New York farmers are increasing their reliance on crop insurance to take some of the risk out of their cropping enterprises. During the period between 2007 and 2017, liabilities covered by New York farmers increased by 46% according to RMA's Summary of Business records. In order for farmers to take advantage of crop insurance, certain records are necessary. To determine insurance coverage, all insurance policies have three main components:

1. Number of units protected: Acres, Bushels, Tons, etc.
2. Guaranteed price per unit
3. Actual Production History (APH) for the crop on your farm

Once these are established a "guaranteed" amount of coverage is determined. The most time consuming record required is the APH, because in order to determine the APH database, a farm needs four years of yield records for that crop on their farm. Without the four years of acceptable records farmers can still participate with crop insurance, but they will have to use their county's average yields for their production history. County average yields are almost always lower

than a farmer's actual production. For each year the farmer creates an acceptable record of production, they can replace a year of the county average. RMA uses the term T-Yields for county averages. Your county's T-Yields can be found by using the "Cost Estimator" tool on RMA's website. <https://ewebapp.rma.usda.gov/apps/costestimator/>

## Acceptable Third-Party Sales and/or Commercial Storage Records

For all crops, acceptable third-party sales and/or commercial storage records must contain the following: Name and address of the buyer or the commercial storage facility, insured's name, load or ticket number, crop, gross weight, tare weight, date weighed, and unit and/or field identification from which the production was harvested.

## Production Harvested and Stored on the Farm

The producer/farmer (insured) is responsible for providing separate records of production for each unit that is stored and notifying the insurance company for measurement when production from another unit, crop year, or uninsured acreage is to be added to existing production in a single storage

structure.

For weights, acceptable scale types are non-portable on-farm scales, commercial elevator scales, or grain carts. Each ticket must provide at least the insured's name, crop, the gross weight, tare, date weighed, load number, identification and location of farm-storage structure in which the load(s) from each field are stored. The insured must hand-write any of the required information listed if the scale being used is not capable of printing a ticket or the required information.

To help with this last record keeping option, contact your Cornell Cooperative Extension Office for a free "New York Crop Insurance Education Program" – Crop Production Record Book.

## For more information

To find a crop insurance agent, visit the RMA online locator at: <http://cli.re/gzPVWY>. For more information on crop insurance options in New York, visit: <https://agriskmanagement.cornell.edu>. Cornell University delivers crop insurance education in New York State in partnership with the USDA, Risk Management Agency. This material is funded in partnership by USDA, Risk Management Agency, under award number RM18R-METS524C018.

[www.farmbureau.org/cropinsurance.com/wp-content/uploads/2016/08/FarmersPacket.pdf](http://www.farmbureau.org/cropinsurance.com/wp-content/uploads/2016/08/FarmersPacket.pdf)

## Upcoming Events

view all Cornell Vegetable Program upcoming events at [CVP.CCE.CORNELL.EDU](http://CVP.CCE.CORNELL.EDU)

## Growing Agritourism in the Genesee Valley Region

May 1, 2019 - March 31, 2020 (series of workshops totaling 8-9 hours of instruction)  
CCE Monroe County, 2449 St. Paul Blvd, Rochester, NY 14617

FREE training to grow your business through agritourism! An estimated 6 million people visited the Finger Lakes and its neighboring counties in 2018, making tourism a one of the major industry in the Genesee Valley Region. The visitors often seek new ways of entertainment. Agritourism— a niche sector of tourism, can meet this need by offering a wide variety of farm-based experiences. Join our training and tap into this market potential and grow your business!

Cornell Cooperative Extension of Monroe County invites the Genesee Valley Region (Genesee, Livingston, Monroe, Ontario, Orleans, Steuben, Wayne, Wyoming and Yates County) farmers who want to start an agritourism to join this FREE training. The experts from Small Business Development Center, Visit Rochester, and Cornell University will guide you through a series of workshops as you are developing your own on-farm activity.

Space is limited, registration required. Register by Friday, May 31, 2019. For more information, go to <http://monroe.cce.cornell.edu/resources/gvrma-training-overview-2019> or contact Jarmila Haseler, Agricultural Education, CCE - Monroe County, at [jh954@cornell.edu](mailto:jh954@cornell.edu) or call 585-753-2565.

## Weather Charts

John Gibbons, CCE Cornell Vegetable Program

### Weekly Weather Summary: 5/07 - 5/13/19

Location**	Rainfall (inch)		Temp (°F)	
	Week	Month May	Max	Min
Albion	1.19	1.80	66	41
Arkport	1.70	2.18	69	37
Bergen	1.18	2.22	75	48
Brocton	1.53	2.45	80	35
Buffalo*	1.69	2.40	75	39
Burt	1.83	2.93	77	37
Ceres	2.03	2.49	69	34
Elba	1.74	2.87	75	37
Fairville	1.95	2.96	69	37
Farmington	2.38	3.56	73	37
Fulton*	2.59	3.75	72	37
Geneva	1.76	2.56	70	46
Hanover	1.12	1.75	78	37
Lodi	1.49	2.21	71	39
Niagara Falls*	1.91	2.95	76	39
Penn Yan*	1.85	2.60	73	39
Rochester*	1.18	1.98	74	41
Sodus	1.86	2.83	70	36
South Bristol	1.52	2.13	71	38
Varick	2.48	2.99	73	39
Versailles	1.36	2.04	76	36
Williamson	1.02	2.01	71	39

### Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - May 13, 2019

Location	2019	2018	2017
Albion	74	139	112
Arkport	94	162	131
Bergen	88	128	112
Brocton	111	NA	NA
Buffalo*	82	158	120
Burt	56	106	91
Ceres	142	128	147
Elba	77	NA	113
Fairville	80	137	127
Farmington	82	141	134
Fulton*	89	148	139
Geneva	90	144	146
Hanover	107	140	NA
Lodi	107	159	184
Niagara Falls*	61	159	138
Penn Yan*	109	152	167
Rochester*	115	161	147
Sodus	107	146	134
South Bristol	99	151	151
Varick	109	157	173
Versailles	121	141	165
Williamson	73	124	118

\* Airport stations

\*\* Data from other station/airport sites is at: <http://newa.cornell.edu/> Weather Data, Daily Summary and Degree Days.

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# Cornell Cooperative Extension Cornell Vegetable Program

480 North Main Street  
Canandaigua, NY 14424



VegEdge is the award-winning 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 and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.



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