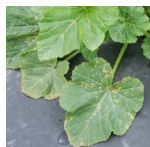




Have weeds gone wild in your sweet corn? Here's a handy chart containing your chemical

post-emergent weed control options.

PAGE 1



Sandblasted squash? Some plantings are exhibiting shotgun-like injuries on mid-age leaves

from high winds carrying sand or small soil particles.

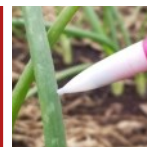
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For farmers who use crop insurance, it's critical to be in contact with your agent while

making planting decisions. Are cover crops an option for you?

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We've got news on fungicide resistance in NY and consequent changes to 2019 fungicide

recommendations for Botrytis and Stemphylium leaf blight in onion.

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Photo: E. Buck

Cornell Cooperative Extension
Cornell Vegetable Program

Weeds Gone Wild: Post-Emergent Sweet Corn Herbicides

Charles Bornt, CCE ENY Commercial Horticulture Program; edited by R. Hadad, CCE Cornell Vegetable Program

[The crazy wet weather that has plagued us this spring hasn't done much for the crops but certainly has allowed for the weeds to go wild. One crop where this has really been hurting growers has been in sweet corn. Chuck Bornt with the Eastern NY Commercial Horticulture Program came out with a great article and handy chart that will try to make sense of the options for chemical control available. Here are the highlights. Ed. R. Hadad, CCE CVP]

With all the rain that we have had, the most common phone call I am getting is what to use on sweet corn post-emergent for weeds that escaped the pre-emergent materials or for those plantings that did not get a pre-emergent! We have some options, but not a whole lot that is new. The post-emergent materials to choose from can be found in Table 1, but there are a couple of other things you will need to know before making your selection. First, you need to know what weeds you are going after. Second, you will need to know the stage of your sweet corn in order to know if you can broadcast the materials or use drop tubes to keep the herbicides out of the whorl in order to reduce the chance of injury to the crop. As always, you need to really pay attention to the labels of these materials.

Notes about Atrazine: Many of the products mentioned will benefit from the addition of 0.25—0.5 pounds of product with atrazine active ingredient. As atrazine has been one of the key materials used in our pre-emergent programs, it has been recommended that vegetable growers not use more than 1.5 lbs of active ingredient of atrazine per acre per season. This is so that other vegetables can be planted the following season without worrying about atrazine carryover.

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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SPECIAL NOTE: We are not producing VegEdge on July 3. The next issue of VegEdge newsletter will be produced July 10, 2019.



We are seeing a number of plantings that appear to have been 'sandblasted' or damaged by high winds carrying sand or other small soil particles. Our unique planting season has been marked by several very small windows for field work, which created a situation of recently fitted soils and tender transplants. Followed by high winds, many transplants suffered. Injury can include a shotgun-like pattern of injuries on mid-age leaves, as well as malformed leaves that were still developing when the event occurred. Given the number of injuries on the leaves, a preventative application of copper may be advisable. New growth looks healthy, and most crops should be able to grow out of this. – JR

Product (active ingredient)	Pre-harvest interval	Weeds controlled	Rate	Comments
Impact or Armezon (topramezone)	45 days	barn-yard grass, fall panicum, foxtails, crabgrass lambsquarter, ragweed and velvetleaf	0.75 fluid ounces	<p>Best control will also occur if broadleaf weeds are less than 4" tall and grass weeds are less than 3" tall.</p> <p>It is also recommended that 0.25—0.5 lbs active ingredient of atrazine be added to improve weed control and residual.</p> <p>Weeds need to be actively growing and coverage is essential.</p> <p>In tall corn, I recommend drop nozzles be used in order to get the spray material down through the canopy and onto the weeds</p> <p>Adjuvants: Methylated seed oil (MSO) or petroleum-based or vegetable seed-based oil concentrate (COC, HSOC) at 0.5 to 1.0 gallon per 100 gallons of water [0.5% to 1.0% volume/volume (v/v)].</p> <p>Nitrogen Fertilizer: nitrogen-based fertilizers include urea ammonium nitrate(UAN; 28% or 34%) at 1.25 to 2.5 gallons per 100 gallons of water (1.25% to 2.5% v/v) or a spray grade ammonium sulfate (AMS) at a minimum rate of 8.5 to 17 pounds per 100 gallons of water.</p>
Armezon Pro (topramezone + dimethenamid-p)	50 days	Broadleaves and several annual grasses (barnyard grass, crabgrass, Giant Foxtail, Wild Proso Millet	For sweet corn and popcorn label recommends 20 fluid ounces per acre	<p>Best control will also occur if broadleaf weeds are less than 4" tall and grass weeds are less than 3" tall and actively growing. Applications can be made from corn emergence to 12-inches tall.</p> <p>DO NOT apply within 50 days of harvesting sweet corn ears.</p> <p>Adjuvants: Armezon PRO Alone: Methylated seed oil (MSO) or petroleum-based or vegetable seed-based oil concentrate (COC, HSOC) at 0.5 to 1.0 gallon per 100 gallons of water [0.5% to 1.0% volume/volume (v/v)].</p> <p>Tank Mixtures with Armezon Pro: Use nonionic surfactant (NIS) at 0.25 to 0.5 gallon per 100 gallons of water [0.25% to 0.5% volume/volume (v/v). Oil-type adjuvants (COC, HSOC, and MSO) may be used in tank mixtures with Armezon PRO, however, combinations with these adjuvants can cause elevated necrosis within a few days after treatment and occasionally crop height reduction. Oil-type adjuvants are not recommended when tank mixing with atrazine.</p> <p>Nitrogen Fertilizer: nitrogen-based fertilizers include urea ammonium nitrate(UAN; 28% or 34%) at 1.25 to 2.5 gallons per 100 gallons of water (1.25% to 2.5% v/v) or a spray grade ammonium sulfate (AMS) at a minimum rate of 8.5 to 17 pounds per 100 gallons of water.</p>
Accent Q (nicosulfuron plus a safener)		Mostly annual grasses	0.9 ounces per acre	<p>Accent Q will provide post emergent control of most annual grasses (limited crabgrass control) and if applied alone has very little broadleaf control (Redroot pigweed). If additional broadleaf control is also needed, consider tank mixing Accent Q with another herbicide listed in the label. Applications of ACCENT® Q may be applied broadcast or with drop nozzles (post-directed) on sweet corn up to 12 inches tall or up to and including 5 leaf-collars (V5).</p> <p>For sweet corn 12 - 18 inches tall, apply only with drop nozzles. Do not apply to sweet corn taller than 18 inches or those which exhibit 6 or more leaf-collars (V6).</p> <p>DO NOT APPLY ACCENT® Q to corn previously treated with "Counter" 15G or to corn treated with "Counter" 20CR in-furrow or over the row at cultivation. Applications of ACCENT® Q to corn previously treated with "Counter" 20 CR, "Lorsban", or "Thimet" may cause unacceptable crop injury, especially on soils of less than 4% organic matter.</p> <p>Adjuvants: Crop oil concentrate (COC) or Non-Ionic Surfactant (NIS) plus a sprayable grade ammonium nitrogen such as UAN or AMS. See label for specific rates and uses.</p>
Permit (halosulfuron)		Broadleaves (pigweed, velvetleaf, ragweed) and Yellow nutsedge	0.67 ounces per acre	<p>Apply Permit over the top or with drop nozzles from the spike through layby stage of the corn. Treat young actively growing broadleaf weeds 1 to 3 inches in height.</p> <p>Adjuvants: Nonionic Surfactant (NIS) is required in the spray solution. Use NIS at 0.25 to 0.5% v/v concentration (1 to 2 quarts per 100 gallons of spray solution). Do not use COC or MSO as the potential for injury is too great.</p> <p>Nitrogen fertilizers: May be added but are not necessary for post-emergent applications. Apply a high quality, granular spray grade ammonium sulfate at a rate of 2 to 4lb/A or a liquid nitrogen fertilizer solution (e.g. UAN 28%) at a rate of 2 to 4 quarts/A.</p> <p>Use of soil or foliar applied systemic organophosphate insecticides on PERMIT treated crops may increase the potential for crop injury and/or the severity of the crop injury.</p>
Stinger (clopyralid)	30 days	Broadleaves (ragweed, wild buckwheat, Common cocklebur, Jerusalem artichoke, Canada thistle)	0.33 – 0.66 pints per acre	<p>Apply Stinger any time after sweet corn emergence through 18-inch tall sweet corn uniformly with ground equipment as a broadcast or directed spray in 10 to 20 gallons total spray volume per acre.</p> <p>Do not exceed 2/3 or 0.67 fluid ounces per year.</p> <p>Do not apply to sweet corn that is greater than 18" tall.</p> <p>Control of common cocklebur, common ragweed, giant ragweed, sunflower, other annual weeds and Jerusalem artichoke, apply 1/4 to 1/2 pint of Stinger per acre from weed emergence up to the 5-leaf stage of growth.</p> <p>I would recommend using Stinger alone and not in tank mixtures at this time.</p>

Supplemental labeling for **Accent Q tank mixed with Impact and atrazine** – If using this combination, the user must have in their possession a copy of this supplemental label! Accent Q may be applied with 0.5 – 0.75 fluid ounces per acre of Impact plus 0.375 – 1.5 pounds per acre active ingredient atrazine (12 – 48 fluid ounces of a 4L formulated atrazine product). However, if you have used any atrazine containing pre-emergent products, the general rule of thumb for rotating vegetables the following year after using atrazine is no more than 1.5 pounds total active ingredient per acre. More than that and you greatly increase the potential for atrazine injury to susceptible crops. ●

Crop Insurance and Cover Crop Decisions Critical During Wet Growing Season

Thomas Björkman, Jennifer Ifft, and Jerzy Jaromczyk, Cornell University

Crop insurance considerations: For farmers who use crop insurance, this year it is especially critical to be in regular contact with your agent while making planting decisions. For most single-crop (MPCI) policies, crop insurance can make payments if you are unable to plant due to inclement weather or related reasons (prevented planting), or if you need to replant (late planting). All policies have a “final plant date”, after which your coverage (potential indemnities) will decline 1% for each additional day planting is delayed. If you choose not to plant and take prevented planting, some alternative uses may be allowed, including cover crops. Cover crops have many potential benefits, including decreasing erosion and enhancing soil fertility. However, rules can vary by crop and year and sometimes RMA will allow exceptions based on general weather and economic conditions. For example, RMA has recently expanded potential uses for cover crops planted on land with prevented planting. Generally, some cover crop uses could lower your prevented planting payments or coverage options for next year.

Agronomic considerations for cover crops: The choice of cover crop for many of the covered crops is fairly simple. The main purpose is to suppress weeds, protect the soil and add a bit of organic matter for the soil biota. For fields that are going into a small-grain cover crop in late September, buckwheat is an easy choice for planting in July and should be terminated five weeks after planting. For August, the many crucifers are well suited. They are best planted between August 10 and 20 in Western NY. The earlier date produces about twice as much biomass as the latter. Earlier plantings tend to flower and produce unwanted volunteers. Summer-planted cover crops that provide winter protection include sudangrass in July, hardy crucifers in mid-August, and forage oats in August and early September. More details on how and when to use these are at

covercrop.org. **When considering use of cover crop for insured crops, it is very important to be in regular contact with your agent about these decisions during this challenging growing season.**

For more discussion of cover crops and prevented planting, see <https://farmdocdaily.illinois.edu/2019/06/cover-crops-and-prevent-planting-in-2019.html>

Key crop insurance dates for selected vegetables

Commodity Name	Sales Closing	Final Planting Date	End Of Late Planting Period
Cabbage	3/15/2019	7/20/2019	N/A
Dry Beans	3/15/2019	6/30/2019	7/25/2019
Fresh Market Beans	3/15/2019	7/25/2019	N/A
Green Peas	3/15/2019	5/20/2019	5/30/2019
Onions	2/1/2019	5/10/2019	6/4/2019
Potatoes (All Counties except Suffolk)	3/15/2019	6/10/2019	7/5/2019
Potatoes (Suffolk County Only)	3/15/2019	5/30/2019	6/24/2019
Sweet Corn (Fresh Market: Clinton, Essex, Franklin, Lewis, St. Lawrence, Warren)	3/15/2019	6/20/2019	N/A
Sweet Corn (Fresh Market: all other covered counties)	3/15/2019	6/30/2019	N/A
Sweet Corn (Processing: Chemung, Steuben, Wyoming)	3/15/2019	6/20/2019	N/A
Sweet Corn (Processing: Cayuga*, Genesee, Livingston, Monroe*, Ontario, Orleans*, Wayne*, Yates)	3/15/2019	6/30/2019	N/A

Note: Prevented planting coverage is not available for cabbage, fresh market beans, and fresh market sweet corn (dollar plan).

*Some areas of these counties have a final planting date of 7/10/2019

Additional resources:

NY Prevented planting fact sheet

<https://agriskmanagement.cornell.edu/files/2018/11/Factsheet-2018-When-Planting-Goes-Wrong-1zznr13.pdf>

NY Prevented planting article

https://agriskmanagement.cornell.edu/files/2019/06/Article_2019-Wet-Spring-Can-Severely-Impact-Forage-Quality-for-Entire-Year.pdf

Prevented planting and cover crop guidelines

<https://www.canr.msu.edu/news/prevented-planting-acres-and-cover-crops>

Cover-crop guidance for New York Vegetable Growers

[Covercrop.org](http://covercrop.org)

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 RM18RMETS524C018

CROP INSIGHTS

COLE CROPS

Alternaria is starting on unprotected cole crop plantings. We'd like samples of alternaria lesions, the folks in Geneva are working to try to understand why it has been more difficult to manage recently. – EB & RH

CUCURBITS

Bacterial leaf spots are occurring, including on young transplants. Squash bug populations are very high in the greater Rochester area. – EB & RH

EGGPLANT

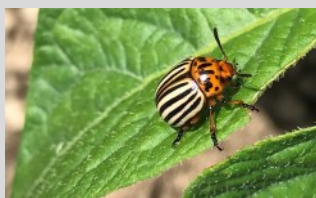
Between the flea beetles and the Colorado potato beetles, things are tough for unprotected eggplants. – EB & RH

ONIONS

The big news of the week was Oswego county onion fields getting slammed with 3-6 inches of rain last Thursday morning, which left many acres of onions under water. Fortunately, the growers were able to get most of the water off and are carrying on. Many direct seeded fields are in the 4-5 leaf stage and earliest plantings of early transplant varieties have 2-inch bulbs. Despite it now being summertime, onion thrips numbers did not move much since last week except in early influx sites (growers generally know where these are), and a couple of these sites reached the spray threshold for their first application of Movento this week. **In Elba particularly, Botrytis leaf blight (BLB) jumped this week with most fields at 4-5 leaf stage exceeding the spray threshold of 1.0 BLB halo lesion per leaf. All fields with four or more leaves should be sprayed for BLB at this time.** With thrips generally not being an issue yet, Bravo is the most logical choice of fungicide at this time.

Research results from 2018 field fungicide trials and preliminary results from Frank Hay's fungicide sensitivity testing were presented at last week's Oswego twilight meeting and the week before at Elba Muck Donut Hour. It is most important to be aware that Scala, Rovral and Scala + Rovral have slipped considerably in their ability to control Stemphylium leaf blight (SLB) and BLB in Oswego fungicide field trial. Preliminary fungicide sensitivity testing has confirmed SLB fungicide resistance to Scala and that it is developing resistance to Rovral. Merivon also appears to be slipping in field trials. Consequently, **Rovral + Scala is no longer being recommended as a substitute for Bravo when tank mixed with an insecticide like Movento.** Some alternative options include: 1) apply Bravo and insecticide in separate passes, 2) Inspire Super, Luna Tranquility or Quadris Top + Tilt. With only FRAC 7 and FRAC 3 left for reliable efficacy against SLB, although far from ideal, we will be considering sub-classes of FRAC 7 as different modes of action. Growers are encouraged to not use more than 3 apps per FRAC per season, and to rotate between FRAC 7 sub-classes (Luna Tranquility and Merivon) within their 3 FRAC 7 apps. See article, page 6, for much more information and for new 2019 onion fungicide recommendations. – CH

POTATOES



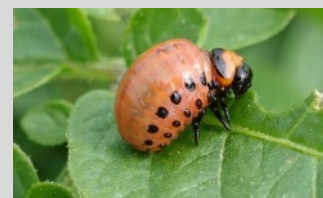
Adult CPB.
Photo: M. Lund, CCE CVP



CPB egg masses.
Photo: M. Lund, CCE CVP



Small CPB larvae.
Photo: M. Lund, CCE CVP



Large CPB larva. Photo: Ben Bradford, Univ. of Wisc-Madison

In the last week Colorado potato beetles (CPB) have started to show up and lay eggs in potato fields. CPB will first show up in field edges and work their way towards the center, so higher numbers of beetles will be seen in field edges at first. To determine if a pesticide should be applied, scout 50 plants throughout the field (10 locations, 5 plants per location). Insecticide treatment should be considered in the following conditions: 25 adult beetles/50 plants, 4 small larvae per plant, 1.5 large larvae/plant, or overall 10% defoliation. Keep your eye out for egg masses while scouting, and re-scout in 3-4 days if masses are frequent. If a neonicotinoid (group 4A) was applied at planting, such as Cruiser or Platinum, use a different insecticide group when treating mid-season, as CPB are at risk of resistance to neonicotinoids. If potatoes are flowering, it is also important to consider an insecticide that is not toxic to bees. – ML

PROCESSING CROPS

Bacterial leaf spot (BLS) is causing spotting, purpling, and curling of leaves in a number of table beet fields. The cool nights and wet weather the past few weeks have been very favorable for BLS. However, the forecast calls for warmer, drier weather over the next 10 days, which will limit the spread of BLS. Copper sprays may also limit spread of the BLS and may be warranted in plants that are still at the 4-6 leaf stage or younger. Older plants are less susceptible. The forecast models for Cercospora have reached a moderate risk level, however, we have not yet confirmed **Cercospora leaf spot (CLS)** in table beets in New York. Please let Julie know if you suspect CLS so we can confirm. Once CLS is detected in a field, protective fungicide sprays should begin if the weather is favorable for disease development. For conventional production, Tilt (4 oz/A) is the most effective registered fungicide for CLS in New York at this time and we recommend using this product as the first fungicide to most effectively provide disease control. A different second fungicide is recommended for resistance management. If required, Tilt could be used again for a third application (there is a 14-day interval required between applications of Tilt). Fungicides will not control BLS, and hence, a copper product should be included if BLS is present in the field. For organic production, a tank mix of Double Nickel and an OMRI approved copper product will provide control of CLS and BLS. – JK

TOMATOES

Conditions are right for development of bacterial diseases, particularly if you have a history of outbreaks on the farm. The pathologists in Geneva are running a study on bacterial diseases in tomato and have asked CVP to collect samples. – EB & RH

News on Fungicide Resistance in New York and Consequent Changes to 2019 Fungicide Recommendations for Botrytis and Stemphylium Leaf Blight in Onion

Christy Hoepting, CCE Cornell Vegetable Program

For over a decade, the CVP has been conducting on-farm small-plot fungicide trials for control of leaf diseases in onion. One of the objectives of these trials is to monitor the relative efficacy of different fungicide products and active ingredients for their ability to control Stemphylium leaf blight (SLB) and Botrytis leaf blight (BLB). In 2018, three on-farm fungicide trials were conducted in Oswego and Elba with a total of 63 treatments among them. Leaves with SLB lesions were collected from each of the trials and also from several onion fields at the end of the scouting season and sent to Cornell Plant Pathologist, Frank Hay. In Frank's laboratory, several isolations from single spores were made, which were then tested for their relative sensitivity to different fungicide active ingredients. At this time, only preliminary information is available from the fungicide sensitivity testing.

SLB now resistant to Scala

In Hay's laboratory assays, of 78 SLB isolates collected in 2018 from two fields in each Elba and Oswego, and from seven fields in Orange Co., **81% were insensitive to pyrimethanil (= Scala). This is up from 37% in 2017.** In the Oswego fungicide field trial, Scala 18 fl oz resulted in only 33% control, which was significantly better than the untreated, but not very useful. With such high levels of isolates being insensitive, essentially, SLB is now resistant to Scala in New York. An exception to this could be in Elba, where 61% of the 18 SLB isolates tested were still sensitive to Scala. In Oswego, 92% of 38 isolates were insensitive to Scala. There are many more isolates that still need to be screened for fungicide resistance, including some from Wayne County, so final results may change slightly and there may be other differences in sensitivity among regions. In the meantime, not counting on Scala to control SLB would be prudent.

Pyrimethanil (= Scala) belongs to Fungicide Resistance Action Committee (FRAC) 9, which does not have any sub-classes. Unfortunately, this means that cross-resistance among all FRAC 9 active ingredients is likely to occur. In 2017, Hay found 30% of SLB isolates insensitive to cyprodinil, which is the FRAC 9 in Inspire Super (FRAC 3, 9) and suggests that cross-resistance is occurring.

Efficacy of Scala + Rovral on SLB and BLB slipped – no longer recommended

In field trials in Wayne Co (2016) and Elba (2017), Scala 9 fl oz + Rovral 1 pt (FRAC 9 + FRAC 2) was statistically as good as the best performing treatments for control of both SLB and BLB. As a result, this treatment was recommended as a substitute for Bravo for BLB control in tank mixes with Movento (and other insecticides) whose efficacy is diminished by Bravo (and other chlorothalonil products). It also provided early SLB control and two other FRAC groups to use in rotation with FRAC 3 and 7 for fungicide resistance management of SLB.

In 2018 Oswego field trial, Scala 18 fl oz alone, Rovral 1.5 pt alone and Scala 9 fl oz + Rovral 1 pt resulted in only poor (33-40%) control of SLB. Similarly, Rovral 1.5 pt and Scala 9 fl oz + Rovral 1 pt resulted in only poor (31%) control of BLB, while Scala 18 fl oz was slightly better (53% control). In the past, addition of Rovral to Inspire Super increased control of both SLB and BLB, but in 2018 Oswego trial, addition of Rovral 1 pt to Inspire Super or Tilt was no different than either of these fungicides alone. In the 2018 Elba field trial, Scala, Rovral and Scala + Rovral appeared to still have very good activity on

SLB. First look at isolates collected from 2018 revealed that 17% of 18 SLB isolates collected from Elba and 100% of 14 SLB isolates collected from Oswego were insensitive to iprodione (= Rovral). Consequently, **Scala + Rovral, Rovral and Scala are no longer recommended for control of either SLB or BLB (at least in Oswego).**

Luna Tranquility (FRAC 7 sub-class 1) top performer for both SLB and BLB – no difference between 16 & 12 fl oz rate

Luna Tranquility 16 fl oz has consistently been one of the best fungicides ever tested against SLB since 2015. It is a premix of FRAC 7 sub-class 1 (fluopyram) and FARC 9 (pyrimethanil = Scala). **In 2018 Oswego trial, it resulted in 89% control of SLB and 97% control of BLB, which was not significantly different than Luna Tranquility 12 fl oz or 8 fl oz or Luna Experience 10 fl oz (FRAC 7 + 3, same rate of FRAC 7 as Luna Tranquility 16 fl oz).** Similar results for SLB occurred in Elba 2018 trial as well. I've lost track of exactly how many side-by-side comparisons between Luna Tranquility 16 fl oz and 12 fl oz I've made now, but it is around 5-6 including in programs, and I've never ever seen any difference between 16 fl oz and 12 fl oz rates. With no differences between 16 fl oz and 8 fl oz rates in two trials in 2018, and no insensitive SLB isolates in 2016 fungicide sensitivity tests, we will **continue to recommend Luna Tranquility 12 fl oz.** This is lower than labeled rate of 16 – 23 fl oz.

Merivon (FRAC 7 sub-class 2) slipping

In 2013-2015 field trials, Merivon was consistently one of the best treatments for control of SLB and also demonstrated very good activity on BLB. In 2017 Elba trial, it was second-best and statistically not quite as good as Luna Tranquility. In 2018 Oswego trial, Merivon slipped even farther away from Luna Tranquility, but still controlled SLB as good as several FRAC 3 fungicides. A fungicide sensitivity bioassay conducted by Katrin Ayer (Cornell Ph. D. student with Kerik Cox) on SLB isolates collected from 2018 Elba fungicide trial revealed a small proportion (<5%) that were highly insensitive to the FRAC 7 in Merivon 5.5 fl oz after six weekly applications. In another 2018 Elba fungicide trial, a Fontelis treatment, which belongs to the same FRAC 7 sub-class as Merivon had almost twice as many plants die standing up as Luna Tranquility. Although SLB isolate fungicide sensitivity testing to FRAC 7 in Merivon (fluxapyroxad) is still in que in Frank Hay's lab, this is enough field trial evidence to make us very nervous about the SLB fungicide resistance status of Merivon. **Thus, only a minimum of Merivon 9 fl oz is recommended from now on.**

FRAC 3 fungicides consistently “middle of the pack”

Since Luna Tranquility broke away from the pack as the front-runner in 2017, all of the FRAC 3 fungicides have generally placed in the “middle of the pack” with efficacies against SLB ranging from fair to very good with no noticeable changes in relative efficacy within this group. Although fungicide sensitivity of 2018 SLB isolates is still in que in Frank Hay's lab, in 2017, there were no SLB isolates that were insensitive to difenaconazole (FRAC 3 in Inspire Super and Quadris Top). In 2018 Oswego field trial, Tilt 8 fl oz was significantly better than Tilt 4 fl oz for both SLB and BLB control. Consequently, **only Tilt 8 fl oz rate will be recommended from now on. Similarly, only the high rates of the other FRAC 3 fungicides including Inspire Super 20 fl oz, Quadris Top 14 fl oz and Viathon 2.5-3 pt are recommended.**

FRAC 3 + FRAC 3 as good as Luna Tranquility

In 2018 Oswego field trial, **Quadris Top 14 fl oz + Tilt 8 fl oz resulted in significantly better control of both SLB and BLB than either fungicide alone, which was as good as Luna Tranquility 16 fl oz.** Although this is only a single data point demonstrating such results, because they are so good, we are going to recommend this tank mix as a “strong” FRAC 3 to use in rotation with FRAC 7 for fungicide resistance management.

Reminder: Previously determined ineffective fungicides

No activity on SLB:

- FRAC 11 – Quadris, Cabrio, Other
- FRAC 33 – Viathon, Rampart, etc.
- FRAC M3 – mancozeb
- FRAC M5 – Bravo
- FRAC 7 sub-class 3 – Endura is developing resistance – do not use

No activity on BLB:

- FRAC 11 – Quadris, Cabrio
- FRAC M3 – mancozeb
- FRAC 33 – phosphorous acid

Table 1. Evaluation of fungicides for control of Stemphylium leaf blight and Botrytis leaf blight: Field trial, Oswego, 2018 (Hoeping).

Treatment and rate/A ^z	Applica- tion Date ^y	FRAC ^x Group	SLB Severity (%) 30 Aug	BLB Severity		
				(%) 30 Aug	Rank Best to Worst	
Same as Best treatment for SLB:						
Luna Tranquility 16 fl oz	A-H	7, 9	3.5	l ^w	0.6 n	2
Tilt 8 fl oz + Quadris Top 14 fl oz	A-H	3, 3, 11	3.8	l	2.9 lm	4
Luna Experience 10 fl oz	A-H	7	4.7	l	0.6 n	2
Luna Tranquility 8 fl oz	A-H	7, 9	6.1	kl	1.6 mn	3
Luna Tranquility 12 fl oz	A-H	7, 9	6.6	jkl	0.4 n	1
Viathon 2.5 pt	A-H	3, 33	9.1	ijk	6.9 ij	11
Inspire Super 20 fl oz + Rovral 1 pt	A-H	2, 3, 9	9.2	ijk	3.0 klm	5
Inspire Super 20 fl oz	A-H	3, 9	9.4	h-k	3.1 j-m	6
Tilt 8 fl oz + Rovral 1 pt	A-H	2, 3	9.8	g-j	15.2 fg	15
Tilt 8 fl oz	A-H	3	10.9	ghi	12.9 gh	13
Merivon 9 fl oz	A-H	7, 11	11.6	ghi	6.3 ijk	9
Sercadis 7.8 fl oz	A-H	7	12.5	fgh	6.0 i-l	8
Quadris Top 14 fl oz	A-H	3, 11	12.6	fgh	6.7 ijk	10
Merivon 5.5 fl oz	A-H	7, 11	12.8	fg	8.1 hi	12
Tilt 4 fl oz	A-H	3	15.2	ef	19.3 def	18
Endura 6.8 oz	A-H	7	15.4	def	15.4 fg	16
Scala 9 fl oz + Rovral 1 pt	A-H	2, 9	16.5	cde	21.5 cd	19
Switch 14 fl oz	A-H	9, 12	18.0	b-e	14.7 fg	14
Scala 18 fl oz	A-H	9	18.5	bcd	15.7 efg	17
Rovral 1.5 pt	A-H	2	19.0	bc	21.5 cde	18
Bravo Weather Stik 3 pt	A-H	M5	20.0	b	4.2 j-m	7
Same as Untreated for SLB:						
Manzate Max 2.4 qt	A-H	M3	25.3	a	37.9 a	22
Untreated – no pesticides	NA	--	25.8	a	27.4 bc	20
Untreated - maintained	BCEGH	--	27.0	a	31.6 ab	21
P value (α = 0.05)			<0.0001		<0.0001	

^z Nonionic surfactant Dyne-Amic 0.125% v/v was included in each treatment except for Bravo and Manzate, unless these treatments were applied with maintenance sprays. ^uIncluded in every treatment, except untreated – no pesticides: Orondis 3 fl oz (FRAC 49) applied in spray C, E and G for protection against downy mildew. Movento 5 fl oz/A and Radiant 8 fl oz were applied with sprays B and H, respectively for control of onion thrips.

^y Application date: A – 7 Jul; B – 12 Jul; C – 18 Jul; D – 27 Jul; E – 2 Aug; F – 10 Aug; G – 15 Aug; H – 25 Aug; NA-- none applied.

^x FRAC: Fungicide Resistance Action Committee chemical class group.

^w Numbers in a column followed by the same letter are not significantly different, Fisher's Protected Least Significant Difference test (p < 0.05).

2019 Fungicide Recommendations for SLB and BLB in Onion

- Start with Bravo for BLB.
- When it is time to add insecticides for onion thrips control to the tank mix, do not co-apply with Bravo, as it can drastically reduce insecticide efficacy. In the past, Bravo could be substituted with Scala 9 fl oz + Rovral 1 pt for BLB and early SLB control when insecticides are used. Since Scala + Rovral is not recommended anymore, at least in Oswego (it looks to still have activity in Elba and activity is unknown in Wayne Co. until their SLB isolates get screened), options include:
 - o Quadris Top 14 fl oz + Tilt 8 fl oz for excellent control of both SLB and BLB
 - o Inspire Super 20 fl oz for good to very good control of both SLB and BLB
 - o Luna Tranquility for excellent control of both SLB and BLB
 - o Make separate passes. One with Bravo for BLB, one for insecticides for thrips.
- Make sure you have protection against SLB starting at early bulbing or mid-July, whichever comes first. SLB fungicides should also be considered if the crop has above normal necrotic tissue such as from herbicide or hail injury.
- **Rotate FRAC groups for best SLB fungicide resistance management:**
 - o No more than 1-2 apps before rotating to another FRAC group (follow label)
 - o Do not exceed maximum use rates per active ingredient, product and FRAC group (follow label)
 - o Extra diligence – **No more than 3 apps per FRAC/sub-class of FRAC.**
 - o **With only FRAC 3 and 7 left with reliable activity on SLB, we are simply going to have to consider the sub-classes of FRAC 7 as different FRAC groups.** This is not ideal, but essential in order to preserve the useful longevity of the remaining effective FRAC groups. In total, you should aim to use no more than 3 apps of FRAC 7, and rotate between Luna Tranquility (sub-class 1) and Merivon (sub-class 2).
 - o Because Inspire Super and Luna Tranquility are FRAC 3 and FRAC 7 premixes with FRAC 9 fungicides, respectively, FRAC 9s are still going to be used, but we are just not expecting them to have any useful activity on SLB or BLB.
- SLB fungicides with very good BLB activity: Luna products, Merivon, Inspire Super – use alone

- SLB fungicides with some BLB activity: Tilt 8 fl oz, Viathon, Quadris Top – may need some help if pressure is high:
 - From Bravo when insecticides are not in the tank mix.
 - Rovral may help in Elba, but very likely not in Oswego.
 - Double up FRAC 3s (e.g. Quadris Top 14 fl oz + Tilt 8 fl oz)
- Make sure you have **protection against downy mildew (DM)** when conditions are favorable and when canopy is filled in.
 - SLB fungicides with activity on DM: Merivon (FRAC 11), Quadris Top (FRAC 11) and Viathon (FRAC 33)
 - SLB fungicides with no activity on DM and need help from mancozeb or other: Luna Tranquility, Inspire Super, Tilt.
 - When risk of DM is high, add foliar Ridomil product (FRAC 4) rotated with Orondis Ultra (FRAC U15, 40)

Fig. 1. Illustrates a sample onion fungicide program, which was designed for a long spray season with high disease pressure from SLB and BLB, and constant need for protection from DM, that aims to not use more than 3 apps per FRAC/FRAC sub-class. A grower can always back away from such a stiff program when disease pressure is lower.

Week	Date	Crop Stage	Fungicides			FRAC
			BLB	SLB	DM	
1-2	Jun 21, 28	Pre-bulb	Bravo 3 pt			M5
3	Jul 5 M	7 leaf Start bulb	Tilt 8 fl oz			3
			Quadris Top			3, 11
4	Jul 12 M	9 leaf, start-1" bulb	Inspire Super 20 fl oz		Manzate 2.4 qt	3, 9/ M3
5	Jul 19 A	9 leaf, 1" bulb	Luna Tranquility 12 fl oz		Manzate 2.4 qt	7(1), 9/ M3
6	Jul 26 A	9-11 leaf, 1-2" bulb	Merivon 9 fl oz			7(2), 11
7	Aug 2 R	9-10 leaf 1-2" bulb	Tilt 8 fl oz			3
			Quadris Top 14 fl oz			3, 11
8	Aug 9 R	10 leaf, 2" bulb, start lodge	Luna Tranquility 16 fl oz		Manzate 2.4 qt	7(1), 9/ M3
9	Aug 13 E	8-10 leaf, 1.5-2" bulb, 5% lodging	Merivon 9 fl oz			7(2), 11
10	Aug 23 E	6-8 leaf, 2-3" bulb, 30-50% lodging	Sprout Stop			Manzate 2.4 qt M3

Figure 1. Sample onion fungicide program for Botrytis leaf blight (BLB), Stemphylium leaf blight (SLB) and protection against downy mildew (DM). This program assumes a long spray season (10 weeks) with high pressure for BLB, SLB, onion thrips and constant need for DM protection. Thus, weekly tank mixes were chosen to achieve very good to excellent control of BLB and SLB, and protection from DM. When insecticides are used, Bravo cannot be included in the tank mix. M: Movento; A: Agri-Mek; R: Radiant; E: Exirel. The objective of this program is to diligently rotate FRAC groups/sub-classes so as not to exceed 3 apps per FRAC/sub-class while providing excellent control. When disease pressure is lower, there is much room to back off from such a stiff program (e.g. 6 weeks instead of 10, Tilt or Quadris Top alone instead of together, etc.).

Cornell Onion Fungicide Cheat Sheet for Leaf Diseases updated for 2019 Coming Soon!

Late Blight Risk

John Gibbons, CCE Cornell Vegetable Program

Last week most all stations exceeded the 18 severity value (SV) threshold for the first fungicide spray, or had done so earlier. The report this week now indicates for most weather stations the favorability for late blight (LB) development, and the need to spray, in Simcast blight units (BU) accumulated in the past week. (If the weather station closest to you has not yet reached 30 blight units (BU) and the forecast indicates that it will in the next 2-3 days, a spray is still recommended. Note that this 30 BU threshold is for fully susceptible varieties, and assumes the use of fungicides such as chlorothalonil. Warning! Forecast BUs can change day by day, just like the weather! Five weather stations did not get to the threshold of 30 BU's. They were Albion, Kendall, Knowlesville, Lyndonville and Elba. The chart assumes that chlorothalonil at the high rate was applied 6/19. Information for other weather stations can be found at the following address: <http://newa.cornell.edu/index.php?page=potato-diseases>

There have been no new light blight reports nationally. The only positive sites remain in north Florida. We will

continue to monitor late blight finds across the country. You can monitor this by going to the late blight website at - <https://usablight.org/?q=map>

New Late Blight Risk Chart, 6/25/19

Location ¹	Blight Units ¹ 6/19-6/25	Blight Units ² 6/26-6/28	Location ¹	Blight Units ¹ 6/19-6/25	Blight Units ² 6/26-6/28
Albion	6	11	Kendall	11	13
Arkport	23	17	Knowlesville	11	11
Baldwinsville	15	18	Lodi	NA	NA
Bergen	14	16	Lyndonville	11	17
Buffalo	25	11	Medina	23	11
Burt	18	0	Niagara Falls	30	16
Ceres	39	19	Penn Yan	25	17
Elba	6	18	Rochester	24	12
Fairville	15	17	Sodus	21	18
Farmington	20	18	Versailles	35	12
Fulton	35	18	Wellsville	41	27
Geneva	14	17	Williamson	13	12

¹ Past week Simcast Blight Units (BU)

² Three day predicted Simcast Blight Units (BUs)

Considerations When Choosing Adjuvants

Mark VanGessel, Univ. of Delaware, Weekly Crop Update, June 14, 2019

We have had conditions that have resulted in a lot of tender plants. Specifically, prolonged periods of overcast skies, cooler weather, and plenty of rain. If postemergence herbicides are made as the days turn hot and sunny, the risk of injury is greater. This is because the wax layer on the leaves may be thin and the leaf surface is "tender". This, coupled with many fields needing postemergence herbicides, means we need to pay attention to adjuvant selections. Adjuvants are needed to increase herbicide coverage, increase adsorption across leaf surfaces, and improved performance. However, this can also increase the risk of crop injury. So consider:

- What is required on the pesticide labels? Herbicide manufacturers will

not stand behind their products if the label is not followed. Given a choice of adjuvants, non-ionic surfactants (80:20) are safer than crop oils or methylated seed oils. Also, given the choice of nitrogen sources, dry ammonium sulfate has less risk than liquid nitrogen fertilizer.

- If the crops are tender and more susceptible, then weeds are likely to be more susceptible (meaning weeds of the same size are more susceptible under these types of conditions). It may not be necessary to use the same level of adjuvants as you would for the same size weed under drought conditions.

- What is included in the tankmixture? Tankmixing can increase risk of injury.

ry. Other pesticides can increase risk of injury, for instance herbicide formulations may have similar properties to an adjuvant (i.e. emulsifiable concentrates can have adjuvant properties and add to the adjuvant load).

- If weeds are larger than the labeled heights for control, then consider using adjuvants and rates that allow for more "activity" (i.e. switching to crop oils or using nitrogen, using higher rates).

Be sure to match the adjuvants you use to the growing conditions, and the weeds and crop susceptibility at time of application. ●

NY Sweet Corn Trap Network Report, 6/25/19

Marion Zuefle, NYS IPM Program; <http://sweetcorn.nysipm.cornell.edu>

Several sites reporting ECB larvae and feeding damage in emerging tassels while other sites have corn that is beginning to silk. The thresholds when scouting differ for these two stages of corn. For tassel emergence corn the threshold is 15% infested plants. As the

WNY Pheromone Trap Catches, 6/25/19

Location	ECB-E	ECB-Z	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	0	0	0	0	0	695
Bellona (Yates)	NA	NA	NA	NA	NA	719
Eden (Erie)	0	0	3	0	0	713
Farmington (Ontario)	2	0	0	0	0	724
Geneva (Ontario)	6	2	0	0	0	699
Hamlin (Monroe)	NA	NA	NA	NA	NA	633
Kennedy (Chautauqua)	NA	NA	NA	NA	NA	720
Lyndonville (Orleans)	2	0	2	0	0	625
Penn Yan (Yates)	2	0	2	0	0	698
Portville (Cattaraugus)	0	0	1	0	0	717
Ransomville (Niagara)	5	1	3	0	0	650
Seneca Castle (Ontario)	17	0	0	0	0	663
Williamson (Wayne)	0	0	0	0	0	579

ECB - European Corn Borer WBC - Western Bean Cutworm
CEW - Corn Earworm NA - not available
FAW - Fall Armyworm DD - Degree Day (mod. base 50F) accumulation

Average corn earworm catch and recommended spray interval

Per Day	Per Five Days	Per Week	Days Between Sprays
<0.2	<1.0	<1.4	No Spray (for CEW)
0.2-0.5	1.0-2.5	1.4-3.5	6 days
0.5-1.0	2.5-5.0	3.5-7.0	5 days
1-13	5-65	7-91	4 days
over 13	over 65	over 91	3 days

Add one day to the recommended spray interval if daily maximum temperatures are less than 80°F for the previous 2-3 days.

tassels begin to emerge larvae will leave the tassel and move down the plant looking for protected places to feed. Insecticide applications need to be timed to kill larvae before they bore into a new feeding location where they will be protected from sprays. For silking corn the threshold drops to 5% infested plants. Scout the ear zone, two leaves above and one leaf below the ears, for egg masses, damage and larvae.

Many sites also reported CEW catches this week. CEW is difficult to scout for but pheromone trap catches may be used to time sprays in silking corn according to the table at the bottom. Add one day to the recommended spray interval if daily maximum temperatures are less than 80° F for the previous 2-3 days.

European corn borer (bivoltine) development estimated using a modified base 50F degree day calculation.

Development Stage	Accumulated Degree Days
First Generation	
First spring moths	374
First eggs	450
Peak spring moths	631
First generation treatment period	800-1000
Second Generation	
First summer moths	1400
First eggs	1450
First egg hatch	1550
Peak summer moths	1733
Second generation treatment period	1550-2100

from J.W. Apple, Department of Entomology, Univ. of Wisconsin-Madison ●



Upcoming Events

view all Cornell Vegetable Program upcoming events at CVP.CCE.CORNELL.EDU



Vegetable Pest and Cultural Management Field Meetings for Auction Growers

July 3, 2019 (Wednesday) | 7:00 - 9:00 PM

Jonas Peachy farm, 5461 Rt 414, Romulus, NY 14541 (Seneca County)

July 9, 2019 (Tuesday) | 7:00 - 9:00 PM

Alan Nolt farm, 5000 Phelps Rd, Stanley, NY 14561 (Ontario County)

July 19, 2019 (Friday) | 7:00 - 9:00 PM

Noah Hoover farm, 3095 Himrod Rd, Himrod, NY 14842 (Yates County)

This course will demonstrate pest management in fresh market vegetables in both field and greenhouse (high tunnel) vegetables, primarily for those growing for wholesale auction. A hands-on demonstration of weed, insect and disease identification in vegetables including management options such as inter-row cover crops, grafting, and where appropriate, spray options will be used to educate growers. Judson Reid, Senior Extension Associate with the CCE Cornell Vegetable Program along with CCE staff will instruct participants and facilitate peer-based learning. Planned topics:

- Weed Control in Row Crop Vegetables – Why and How
- Tomato and Potato Disease Updates
- Cucurbits – Grafting for Vigor and Yield, Downy and Powdery Mildew Management, Insect Pest Management
- Food Safety News
- Q&A and other farm-specific crop observations

1.75 DEC recertification credits (categories 10, 1a, 23) and 1.25 (category 24) will be offered. FREE to attend! For more info, contact Judson Reid at 585-313-8912.

Women in Agriculture Discussion Group: Small Fruit & Veg Production plus Insect Control

July 15 2019 (Monday) | 6:30 - 8:30 PM

Thorpe's Organic Family Farm, 12866 Route 78, East Aurora, NY 14052

Each monthly Women in Ag discussion group meeting will feature an established, innovative Farm-her leading the group on a tour of her operation and sharing her expertise on business management and production. Several guest speakers, as well as Cornell Vegetable Program staff, will be brought in to act as resource people for developing solutions to common production challenges. Participants are encouraged to attend multiple meetings to see varied farm-her operations.

The July 15 meeting will cover small fruit and vegetable production plus insect control led by Elizabeth Buck, CCE Cornell Vegetable Program, and Abby Seaman, NYS IPM Program. The meeting will be hosted by Gayle and Naomi Thorpe ([Thorpe's Organic Family Farm](#)). Gayle and Naomi will share their experiences managing a diversified organic farming operation and family farm transitions.

View the full [Women in Ag discussion group schedule](#) on our website at cvp.cce.cornell.edu. For more info, including the most recent meeting and speaker schedule, or to join the discussion group, [contact Elizabeth Buck](#) at 585-406-3419.

Farm to Table Dinner – Celebrate Agriculture

August 3, 2019 | 5:00 - 8:30 PM

The Clubhouse at Durand Eastman Park, 1200 Kings Highway North, Rochester, NY 14622

Enjoy dinner grown by local farms and prepared by local chefs. Proceeds support the Monroe County Farm Bureau scholarship fund and the promotion and education of agriculture in our community. Purchase tickets: \$25/person in advance online at https://monroecountyfarmbureauun.org/events/celebrate_agriculture_dinner/ or \$30 at-the-door if they aren't sold out.

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 6/18 - 6/24/19

Location**	Rainfall (inch)		Temp (°F)	
	Week	Month June	Max	Min
Albion	0.46	2.37	86	52
Arkport	1.46	3.88	81	46
Bergen	1.29	3.56	81	52
Brocton	1.20	5.28	83	52
Buffalo*	0.75	4.27	86	54
Burt	0.67	2.65	84	52
Ceres	0.93	4.46	83	46
Elba	0.92	3.66	82	53
Fairville	2.12	3.91	79	50
Farmington	1.93	3.70	82	53
Fulton*	2.94	5.83	79	48
Geneva	1.20	3.07	83	66
Hanover	1.59	5.16	86	49
Lodi	2.02	3.93	82	54
Niagara Falls*	0.77	3.26	84	53
Penn Yan*	0.92	2.69	80	57
Rochester*	1.57	3.52	82	54
Sodus	1.58	3.94	79	49
South Bristol	1.25	3.28	79	54
Varick	3.25	6.41	83	54
Versailles	1.63	4.56	87	48
Williamson	1.36	2.87	78	52

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - June 24, 2019

Location	2019	2018	2017
Albion	564	816	736
Arkport	536	900	687
Bergen	558	760	713
Brocton	587	NA	NA
Buffalo*	559	874	764
Burt	476	698	682
Ceres	610	744	683
Elba	526	787	706
Fairville	513	731	703
Farmington	541	765	706
Fulton*	507	746	704
Geneva	580	796	745
Hanover	588	822	NA
Lodi	612	832	803
Niagara Falls*	515	911	842
Penn Yan*	618	849	802
Rochester*	638	886	806
Sodus	504	720	728
South Bristol	553	783	722
Varick	635	843	802
Versailles	594	815	793
Williamson	478	701	743

* 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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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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Cornell Vegetable Program

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