



VEGEdge

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Spinach Leaf Disorders

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

The lush green leaves of a spinach crop can easily be ruined by any number of biotic or abiotic factors. Below I list many of the common ailments grouped by the general symptoms. Please see the websites listed for each disorder and/or the 2022 Cornell Vegetable Guidelines for more information and management strategies.

SPECKS, SPOTS AND BLOTCHES (NO FUZZ)

Leaf spots are a common issue in spinach and can be caused by a variety of factors. These can be difficult to diagnose. Often a sample needs to be collected and observed using a microscope. When diagnosing a problem, make sure to: 1) note what symptoms are on the upper and/or lower leaf surfaces, 2) determine if a certain age leaf is affected, and 3) look for patterns in the field.

Abiotic leaf spots on spinach are commonly caused by pesticides or fertilizers but may also be due to water and weather. According to Richard Smith, Univ. of California, "spinach leaves are quite sensitive to chemicals and will readily respond to them by developing chlorotic or tan colored necrotic areas. The size and distribution of the lesions can often provide clues as to the cause of the issue. Having some background information about recent spray applications in the vicinity of the field helps piece together how and when the incident occurred. Spotting on the weeds also provides confirmation of the cause of the incident. Distortion of the leaves occurs when the necrosis occurs early in the development cycle of the leaf; in this situation, the expanding young leaf continues to develop around the dead lesion and results in distorted growth. Chemical issues can also cause a sub-lethal response in spinach leaves which results in chlorotic lesions." Additional information and photos can be found at <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=29890#:~:text=Abiotic%20leaf%20spots%20on%20spinach,spotting%20or%20lesions%20on%20spinach> or by contacting our office for a print out.

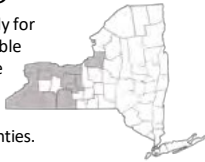
"**Insects**, such as leafminers, frequently cause spots on spinach leaves. Female leafminers stipple spinach leaves by puncturing the leaf surface with their ovipositors and then feeding on plant sap that exudes from the holes. The stippled areas often occur in clusters and have a characteristic look due to the broken epidermal cells in the center of the stipple." (Richard Smith, Univ. California).

Diseases that cause spots on spinach in New York include Anthracnose, Cladosporium leaf spot, and Stemphylium leaf spot. These are often difficult to diagnose except by a trained eye and a microscope. In addition, more than one pathogen may be present in a leaf spot or blotch.

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About VegEdge

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



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

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The next issue of VegEdge newsletter will be produced on October 3, 2022.

Accumulated Growing Degree Days, 9/12/22

Nina Gropp, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD)
Base 50°F: April 1 - September 9, 2022

Location**	2022	2021	2020
Albion	2504	2437	2233
Appleton	2404	2200	2146
Arkport	2169	1894	1947
Bergen	2423	2177	2172
Brocton	2441	2216	2154
Buffalo*	2515	2380	2329
Ceres	2054	1970	1875
Elba	2295	2072	2069
Fairville	2349	2113	2130
Farmington	2345	2158	2137
Fulton*	2350	2103	2195
Geneva	2449	2202	2215
Hammondsport	2341	2082	2150
Hanover	2426	2200	2126
Jamestown	2086	1930	1871
Lodi	2655	1812	2264
Lyndonville	2348	2208	2202
Niagara Falls*	2634	2332	2199
Penn Yan*	2522	2295	2311
Rochester*	2498	2239	2215
Romulus	2531	2269	2299
Sodus	2542	2286	2174
Versailles	2351	2111	2069
Waterport	2403	2177	2167
Williamson	2314	2084	2083

* Airport stations

** For other locations: <http://newa.cornell.edu>

Feedback Wanted: Please Take Surveys

Lynn Sosnoskie, Cornell AgriTech

NY Herbicide Resistance Survey

Cornell wants to better understand the current "state of the state" with respect to herbicide performance and failure. This survey is VERY SHORT and should be QUICK to answer. It is also COMPLETELY ANONYMOUS. Your responses will help Cornell weed scientists plan future research and extension projects. Please access the survey using the link below."

https://cornell.ca1.qualtrics.com/jfe/form/SV_a2F9urYcHjpl5AY

Cole Crop and Leafy Green Survey - Novel Weed Control Technology

The survey is VOLUNTARY, SHORT, and ANONYMOUS. The link is below. Questions can be directed to the study leader, Dr. Matthew A Cutulle (mcutull@clemsun.edu) or Dr. Lynn Sosnoskie (ims438@cornell.edu)."

https://clemsun.ca1.qualtrics.com/jfe/form/SV_1fwcgcAXC9i6h0

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Anthrachnose is favored by wet conditions and cool temperatures, with fall plantings being more susceptible. Symptoms of this disease are small, round water-soaked spots on leaves. The spots develop into larger yellow or tan areas with distinct margins that coalesce to form brown lesions that become thin and dry like paper. Tiny black fruiting bodies on diseased tissue distinguish this pathogen from other leaf spot pathogens. For more information: <https://www2.ipm.ucanr.edu/agriculture/spinach/anthracnose/>.

Cladosporium leaf spot is characterized by round, tan leaf spots that rarely exceed 0.25 inch in diameter. Dark green spores and mycelium later develop in the centers of these spots. The presence of dark green sporulation distinguishes Cladosporium leaf spot from other leaf spot diseases. Cladosporium is known to be seedborne. For more information: <https://www2.ipm.ucanr.edu/agriculture/spinach/cladosporium-leaf-spot/>.



Stemphylium leaf spot is considered uncommon. It was first detected in western NY in 2017 and on Long Island in June 2019. It is favored by prolonged periods of leaf wetness when temperatures are moderate (64-75 F). Symptoms are light gray to tan leaf spots ranging in size from 1/16th to ½ inch with larger spots being irregular in shape. Older spots often dry up and become papery. Stemphylium is seedborne, so it is important to purchase seed from a reputable dealer as a first step in disease management. For more information:

<http://blogs.cornell.edu/livepath/2019/06/13/stemphylium-leaf-spot-new-disease-of-spinach-for-northeast-region/>

Leaf blotch on spinach leaf that was determined to contain Cladosporium, Stemphylium and Alternaria.
Photo: J. Kikkert, CCE Cornell Vegetable Program.

YELLOW SPOTS/BLOTCHES WITH FUZZ OR BLISTERS ON UNDERSIDE OF LEAF

Downy Mildew (DM) – the Spinach DM factsheet was recently updated and is available at <https://www.vegetables.cornell.edu/pest-management/disease-factsheets/spinach-downy-mildew/#:~:text=Introduction,constraint%20in%20California%20and%20Arizona> or by contacting our office. This disease has been observed on farms in the Northeast since 2014. Growers should inspect their spinach crop routinely. Upper leaf surfaces will be yellow. Flipping over the leaf will reveal the characteristic purplish-gray, fuzzy growth of the pathogen. Early morning is the best time to see the spores because they are produced overnight and then dispersed during the day. Please see the factsheet for photos and detailed measures for control which include resistant varieties, cultural practices, and fungicides.

White Rust is a concern all season, and is favored by warm (72 F), sunny days followed by cool nights with dew. Symptoms are small yellow spots on the upper leaf surface and white blister-like pustules most commonly on the lower leaf surfaces and petioles. The pustules release spores that can infect other leaves.

YELLOWING, STUNTING, MOSAIC SYMPTOMS

Cucumber Mosaic Virus (CMV) has caused severe crop loss in several fields each year in western, NY for the past decade. Aphids acquire and transmit CMV when they feed, even briefly, moving the virus quickly from infected to uninfected plants as the aphids migrate through the weeds and fields. Weedy areas adjacent to fields are of great concern as a source of CMV. Infested aphids usually do not colonize spinach. Infected plants show severe stunting, leaf curling, and mosaic symptoms on the leaves. Resistant varieties are the best management tool. It is not possible to control CMV by managing aphids because they transmit the virus very quickly. CMV can be seedborne.



Severe symptoms of CMV in spinach. Photo: J. Kikkert, CCE Cornell Vegetable Program.

CROP INSIGHTS

CVP Team Observations from the Field and Research-Based Recommendations

ASPARAGUS

It is worth walking your asparagus field in early fall to see what kinds of weeds you have and survey for any diseases. There are herbicide options for fall application that can help address the overwintering annuals that become a nuisance during harvest. Marehail, purple deadnettle, henbit, chickweed, and annual blue grass are examples of winter annuals. There may also be options for spot treating perennial weeds that have begun to establish in your beds. Disease carryover from one year to the next can be reduced by fall mowing. For fields with severe disease challenges, fall burning of crop residue is an effective management strategy, especially if you are trying to control *Cercospora*.

BEETS

Harvest continues. The weather has been highly favorable for leaf diseases! According to the *Cercospora* Leaf Spot (CLS) Decision Support network, a high risk for CLS infection was achieved on September 12 at the Conesus Lake (S), Geneva, and Sodus weather stations, and moderate risk at Albion, Bergen, Elba, Lyndonville, and Waterport stations that same day. Moderate risk was achieved at Elba, Geneva, Lyndonville, Sodus and Waterport on September 13. The forecasted risk is low for today through the weekend. However, disease is present in many fields and foliage that remains wet in heavy leaf canopies and from morning dews is favorable for diseases. Scout your fields and consider a second fungicide application if needed and within the appropriate intervals according to labels. – JK

CARROTS

As harvest ramps up in September, keep an eye on leaf spot diseases in fields that still have a long way until harvest. Alternaria leaf blight is the biggest concern because it can blow up quickly. *Alternaria* first appears as deep brown to black irregular spots on the margins of the leaflets. Lesions on the petioles and stems are deep brown and girdle the stems, killing them. As the disease progresses, entire leaflets may shrivel and die. Lesions are more prevalent in older foliage. Cercospora leaf spots may also be present, although it is more prevalent in hot and humid weather. *Cercospora* lesions are small, circular, tan, or gray spots with a dead center which appear along the leaf margins, causing them to curl. The *Cercospora* fungus attacks younger leaves. Bacterial lesions are small yellow areas on the leaflets with brown, dry centers which are often surrounded by a yellow halo. While sprays with Bravo fungicide (group M5) will control both Alternaria and Cercospora, rotation with a fungicide with a different mode of action is advisable for resistance management. There are several other fungicides labeled for carrots and are outlined in the 2022 Cornell Vegetable Guidelines. Inspire Super, Quilt Xcel, and Miravis Prime have a combination of fungicide groups that are effective on both *Cercospora* and *Alternaria*. Tilt and PropiMax EC (group 3 fungicides) are labelled for *Cercospora*, but only suppress *Alternaria*. Choices should be based on what organisms you are trying to control, cost, and PHI. - JK

COLE CROPS

Alternaria is picking up. We need *alternaria* samples to continue monitoring fungicide resistance, particularly around Quadris efficacy. Please call one of us if you have *alternaria*, we will happily take some of it off your hands! A fungicide “Cheat Sheet” is available on the CVP website to help you make your fungicide decisions for managing *Alternaria* and downy mildew

(https://cvp.cce.cornell.edu/submission.php?id=739&crumb=crops|crops|broccoli|crop*6)

Aphids are starting to show up in Cole crops now, which can especially be problematic in Brussels sprouts. Control options include Movento, Admire Pro/generic spray, Fulfill, Beleaf and Assail; include a spreader or wetting agent for waxy foliage. Organic growers can use insecticidal soap or a horticultural oil (SuffOil-X, e.g.); Dan Gilrein, Cornell Entomology suggests a mix of 2% horticultural oil + 0.5% insecticidal soap when conditions allow.

DRY BEANS

Recent storms may continue to spread bacterial blight in fields that have not been defoliated. Use of a copper-based bactericide can be used but will have a limited ability to suppress the disease. If beans are at the correct stage, consider defoliation to stop the spread throughout the field. -ML

GARLIC

Leeks – be on the lookout for allium leaf miner damage on late season leeks. The larvae chafe the leaf tissue and the signs should be very visible. Contact CVP if you see this type of problem.



This photo (by udel.edu) shows tell-tale line of chafing feeding damage that resemble a dotted line from the allium leaf miner larvae. The use of row covers to keep females from laying eggs on the leeks is helpful. Several products can also be used such as Entrust and M-Pede. Consult the Cornell Vegetable Guidelines for further products and rates. As always, read the labels before using. - RH

LETTUCE AND GREENS

Lettuce should be green. Unless it is a red variety. But it shouldn't be brown or nasty yellow, which is the look of bottom rot caused by white mold or bacteria. September is typically a white mold window, and the rains we've been receiving favor bacterial development. Neither is well corrected once it begins. Improved airflow and reduced soil soggy can help a bacterial problem, along with copper targeted toward the base of the plant....watch your pre harvest intervals.

ONIONS

Three days of leaf wetness early last week caused *Stemphylium* leaf blight (SLB) to rage (Fig. 1) and downy mildew to start up, which was detected in one field last week. Thank goodness we did not get this type of weather earlier in the summer or excessive leaf dieback would have set in. In some fields foliar symptoms of bacterial disease is not too hard to find. When multiple inner leaves have collapsed, the chance that the rot is already in the bulb is pretty good. Alternatively, when only a single leaf is affected, often the infection never makes it into the bulb (Fig. 2). The majority of main season direct seeded crop has completely lodged and the green foliage is drying up quickly (Fig. 3). It is amazing the effect that an effective fungicide program has on the rate of leaf dieback. Pulling and harvesting operations have been held up due the recent rain, but will resume when things dry out at the end of this week. So far, yield and quality look pretty good, especially for how dry it was in Elba this summer. Spring barley can be planted after onion harvest until the end of September as a cover crop for prevention of wind erosion and to recycle leftover nutrients for next year's crop. – CH



Fig. 1. Target spots and necrotic tissue are covered in black SLB spores and leaf dieback accelerated. C. Hoepting, Cornell Cooperative Extension.



Fig. 2. Foliar symptoms of bacterial disease. Left: Collapse of multiple inner leaves is often an indication that the bacterial infection is already in the bulb. Right: When only a single leaf is collapsed, the bacterial infection often does not reach into the bulb. Photos: C. Hoepting, CCE



Fig. 3. Foliage in completely lodged onion fields is drying up quickly. Photo: C. Hoepting, Cornell Cooperative Extension

POTATOES

Many potato fields have been desiccated, but with storm systems moving through western NY this week it is important to continue to monitor for late blight in fields that have not.

Simcast forecasting indicates that all stations have reached the 30 blight units (BU) needed to trigger a spray for late blight this week. If the weather station closest to you has not yet reached 30 BU and the forecast indicates that it will in the next 2-3 days, a spray is still recommended. Because weather conditions can vary depending on topography and altitude, the recent disease information and disease forecasts will be most accurate very close to the weather station used. For locations that are not close to a weather station, forecast information should only be used as a **general indication** of how favorable weather has been for late blight. No new late blight outbreaks have been reported this week. Past reports include late blight in NC, TN, CA, and Ontario, Canada in tomato, and two outbreaks in FL in potato earlier this season according to usablight.org. -ML

Late Blight Risk 9/14/22

<i>Location</i>	<i>Blight Units¹</i> <i>9/7-9/13</i>	<i>Blight Units</i> <i>9/14-9/16</i>	<i>Location</i>	<i>Blight Units¹</i> <i>9/7-9/13</i>	<i>Blight Units</i> <i>9/14-9/16</i>
Albion	33	39	Geneva	35	41
Arkport	35	46	Hammondsport	40	47
Baldwinsville	41	41	Knowlesville	32	39
Bergen	39	46	Lyndonville	33	43
Brant	35	42	Medina	-	-
Buffalo	43	56	Niagara Falls	43	58
Burt	-	-	Penn Yan	47	66
Ceres	49	60	Rochester	48	63
Dansville	47	65	Sodus	40	47
Elba (Muck)	39	46	Versailles	40	47
Fairville	41	48	Wellsville	42	58
Farmington	40	47	Williamson	39	46
Fulton	49	68			

Calculated using a May 26 crop emergence date, last fungicide application August 24, cultivar Reba

Numbers in red indicate locations that have or will surpass the 30 blight units needed to trigger a fungicide application

¹ Past week Simcast Blight Units (BU)

² Three-day predicted Simcast Blight Units (BU)

SNAP BEANS

The risk of white and gray mold is high now. If you detect a white mold infection, it is too late to apply fungicides. Rogue out infected plants if possible to prevent the formation of sclerotia (overwintering structures). Take and keep accurate notes about which fields or portions of fields are infected and how much white mold is seen. Record disease and yield data for different crops and varieties on your farm to help in future planning. Rotate with grains and corn or other non-hosts for three or more years. - JK

SQUASH

Though the rain received across the region is a help, when it comes to fall and winter squash in the field, wet conditions can promote rots that can reduce the crop going into storage. Be sure to harvest squash as soon as it is ready. Get it up off the ground and onto tables, trailers, benches, or whatever and let the fruit dry down and cure properly. Give each squash room for air to move around it. Run fans and if needed, some heat would also help. We are already seeing some rots showing up in the field in the last 4-5 days and a quick breakdown of the softer skinned varieties. - RH



Delicata squash showing white powdery fungal rot coming out of the field. Photo: R. Hadad, CCE Cornell Vegetable Program.

Guidelines for Maggot and Disease Control in Onion with an Emphasis on Seed Treatments

Brian Nault¹ and Christy Hoepting²

¹Department of Entomology, Cornell AgriTech, Cornell University, Geneva, NY ²CCE Cornell Vegetable Program

There has been a great deal of interest about how best to protect next year's onion crop from maggots given the limited supply of spinosad seed treatment (Regard SC). This article focuses on what insecticide seed treatments should be used for managing the maggot complex (onion maggot and seedcorn maggot) (**Fig. 1**) as well as what fungicide seed treatments should be used to manage the disease complex (damping off and onion smut) (**Fig. 2**). In both cases, there are no rescue treatments once onions are infested and infected, respectively. Therefore, **selecting effective insecticide and fungicide seed treatments is especially critical for protecting the onion crop.**

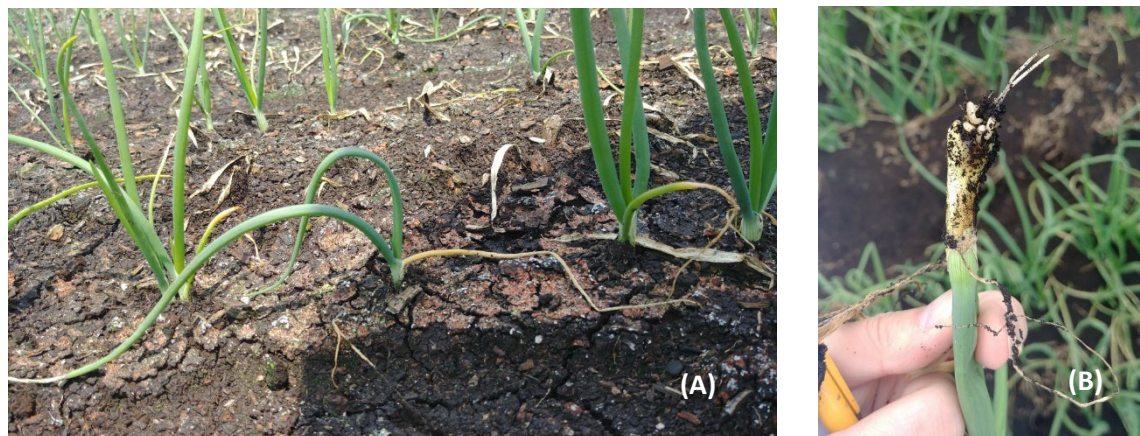


Fig 1. Onion maggot damage (A) and maggots actively feeding (B). Photos courtesy of E. Moretti.



Fig 2. Seedling diseases including damping off (A) and onion smut (B). Photos: C. Hoepting.

Table 1 on the next page, lists the active ingredients available for onion seed treatments and their relative efficacy on onion maggot, seedcorn maggot, onion smut and damping off, based on results from Cornell on-farm trials conducted over several years.

Table 1. Insecticide and fungicide seed treatment options for onion including relative efficacy of products based on multiple years of research experience by Brian Nault, Cornell Entomology, and Christy Hoepting, CCE Cornell Vegetable Program, as well as western US entomologists.

Seed Treatments							
Tradename		Active Ingredient(s)	Group	Activity on Target Pests			
Insecticides:			IRAC ¹	Onion Maggot	Seedcorn Maggot		
Regard SC		spinosad	5	Excellent	Excellent		
Trigard OMC		cyromazine	17	Excellent	Fair/ Poor		
Cruiser 70WS		thiamethoxam	4	Poor	Fair/ Poor		
Sepresto		chlothianidin	4A	Fair	Good/Fair		
		+ imidacloprid	4A				
Fungicides:			FRAC ³	Onion Smut	Damping Off ²		
EverGol Prime		penflufen	7	Excellent	None		
Pro Gro		thiram	M3	Fair-Poor	Fair		
		+ carboxiin	7				
FarMore F300	Apron XL	mefenoxam	4	None	Pythium spp.		
	Maxim 4FS	fludioxonil	12	None	Rhizoctonia spp.		
					Fusarium spp.		
	Dynasty	azoxystrobin	11	None	Rhizoctonia spp.		
Thiram		thiram	M3	Poor	Fair		
Seed Treatment Packages							
FarMore FI500 with Regard		=	Regard	+	Cruiser 70WS	+	FarMore F300
FarMore FI500 with Trigard		=	Trigard	+	Cruiser 70WS	+	FarMore F300
In-Furrow Drench Treatments							
Ridomil Gold SL*		Mefenoxam	4	Good	Pythium spp.		
Manzate Max*		Mancozeb	M3	Fair-Poor	Fair		

¹ **IRAC:** Insecticide Resistance Action Committee. For resistance management, consider rotating among IRAC groups.

² Most common pathogens that cause damping off in onion in New York are *Pythium* species.

³ **FRAC:** Fungicide Resistance Action Committee.

⁴ Apron, Maxim and Dynasty have activity on different genera of soil borne pathogens. Individually, these fungicides are not rated for their activity against the different damping off pathogens, because we have no research results from New York. However, **FarMore F300 and FI500** packages seem to have provided **fair control of damping off** in New York trials.

Green highlights

Excellent pest control.

Yellow highlights

No pest control.

Insecticides

Regard SC has been a workhorse for maggot control for years, but it will be discontinued.

Regard SC is a formulation of the active ingredient spinosad, which has excellent activity on both onion maggot and seed corn maggot. This active ingredient is owned by Corteva and Syngenta has been contracting with Corteva to offer it as part of their FarMore FI500 seed treatment package. In addition to Regard SC, the FarMore FI500 package includes the insecticide Cruiser 5FS (thiamethoxam) and three fungicides in FarMore F300 (Apron XL, Maxim and Dynasty) (**Table 1**). Earlier this year, Syngenta ended their contract with Corteva. **There is a limited supply of Regard SC remaining and it will likely be gone by the end of the year.** There are no plans for Regard SC to be available after supplies are gone. **As of mid-September 2022, there is uncertainty as to whether spinosad will be available as an onion seed treatment in the future.**

Will Trigard still be available for maggot control next year?

Trigard OMC onion seed treatment will be available for the 2023 season. Syngenta will continue to offer “**FarMore FI500 with Trigard**” as a seed treatment package. This FarMore package will include both Trigard OMC and Cruiser 70WS as well as the FarMore F300 package (**Table 1**). It can also be applied alone without Cruiser and the fungicides. Trigard OMC continues to work very well in New York to protect onions against onion maggots.

How effective is Cruiser 5FS on maggots?

Cruiser 5FS is a poor choice for onion maggot control, but should provide limited control of seedcorn maggot, which is a sporadic pest of onion in New York (**Table 1**). **The combination of Trigard and Cruiser should protect the onion crop from all maggot damage.**

Is Sepresto an effective option for maggot control in New York?

Sepresto contains two insecticide active ingredients, clothianidin and imidacloprid. Sepresto has not performed well against onion maggot in most field trials in New York. Based on research experience by onion entomologists from the western US, Sepresto may provide fair to good control of seedcorn maggot (**Table 1**).

Are there effective insecticide options other than seed treatments for maggot control?

Based on field research trials in New York, only insecticide seed treatments have been successful. **Past research in New York has examined in-furrow drench treatments of many insecticides** including Entrust SC (a.i. spinosad, IRAC 5), Admire Pro (a.i. imidacloprid, IRAC 4), Verimark (a.i. cyantraniliprole, IRAC 28), Coragen (a.i. chlorantraniliprole, IRAC 28), Capture LFR (a.i. bifenthrin, etc., IRAC 3A) as well as a pre-plant incorporated treatment, Diazinon AG500 (a.i. diazinon, IRAC 1B) **and none have controlled maggots.** In 2022, a field experiment examined **post-emergent banded applications** of either Radiant (a.i. spinetoram, IRAC 5), Exirel (a.i. cyantraniliprole, IRAC 28) or Mustang Maxx (a.i. zeta-cypermethrin, IRAC 3A) when onions were in the 2-leaf stage and when 50-70% of onion maggot flies were predicted to have emerge based on a degree-day model (23 and 31 May). These treatments **provided zero protection against maggots.**

Should you be concerned about maggot resistance to insecticides?

Yes! Onion maggot has developed resistance to insecticides in the past. Most notably, onion maggot populations in New York were resistant to chlorpyrifos (e.g., Lorsban). **The threat of onion maggot developing resistance to spinosad (Regard) and to cyromazine (Trigard) is relatively high** because both of these active ingredients have been used as seed treatments on onion for many years. Regard SC and Trigard OMC belong to different modes of action; IRAC (Insecticide Resistance Action Committee) Groups 5 and 17, respectively (**Table 1**). Therefore, the best approach for avoiding resistance is to rotate Regard and Trigard on an annual basis. Given the limited availability of Regard for 2023 and the uncertainty about the future availability of spinosad as a seed treatment, this approach will be challenging to impossible until a new active ingredient is identified.

What insecticide seed treatment should you use in 2023?

1) FarMore FI500 with Regard continues to be an excellent option that should provide great protection against onion maggot and seedcorn maggot (**Table 1**). This option would be especially good if FarMore FI500 with Trigard was used this year because rotating to another chemistry class will mitigate resistance development to spinosad and cyromazine. Moreover, if spinosad is not available as a seed treatment in the future, FarMore FI500 with Trigard can be used in future years until a new product becomes available. **Effort should be made to get FarMore with Regard treated seed for onions that will be grown in muck pockets where onions were treated with Trigard in 2022.** This will avoid the onion maggot populations from potentially being exposed to Trigard for 3 consecutive years or more

(2022, 2023, 2024, etc.).

2) FarMore FI500 with Trigard is an excellent option that should provide great protection against onion maggot and adequate protection against seedcorn maggot (**Table 1**). This option would be especially good if FarMore FI500 with Regard was used this year because rotating to another chemistry class will mitigate resistance development to spinosad and cyromazine. Note, if Trigard is applied in the absence of Cruiser (e.g. not part of FarMore FI500 package), seedcorn maggot will not be controlled. For onion maggot, Trigard/Regard + Cruiser improved control only slightly (by 5-10%), if at all, compared to Trigard/Regard alone in Cornell trials.

3) Sepresto is a distant third option for onion maggot control. This could be an adequate option in onion fields where onion maggot damage has been uncommon or expected to be very low because of crop rotation. If seedcorn maggot pressure is high, Sepresto could be added to Trigard and the FarMore F300 fungicide package to manage the maggot complex. However, the combination of Sepresto + Trigard has not been evaluated for efficacy or phytotoxicity. Research trials in 2023 will examine this option.

Fungicides

FarMore F300 does not control onion smut – Add EverGol Prime.

None of the three fungicides included in the FarMore F300 package (a.i. mefenoxam, fludioxonil, azoxystrobin) has activity on onion smut, but they do have some activity on damping off pathogens (**Table 1**). So, **in addition to the insecticide seed treatment packages, growers will have to order EverGol Prime for control of onion smut.** Since it first became available in 2019, EverGol Prime has appropriately become the first choice for onion smut control as its performance is far superior to Pro Gro. When EverGol Prime is used with FarMore F300, it is not necessary to order additional seed treatment for control of damping off. Mancozeb and/or mefenoxam (Ridomil) could be applied as an in-furrow drench for additional protection against damping off. If for some reason, EverGol Prime is not used with a FarMore package, then another fungicide with activity on damping off should be included in the seed treatment (**Table 1**). Generally, a mancozeb in-furrow drench is not needed for control of onion smut with EverGol Prime seed treatment. However, some red onion varieties that appear to be more susceptible to onion smut have benefited from inclusion of mancozeb drench for improved control of onion smut, according to on-farm demonstrations where the mancozeb drench was turned off compared to where it was used in the rest of the field.

For questions about this information, please contact either Brian Nault (ban6@cornell.edu) or Christy Hoepting (cah59@cornell.edu).

Upcoming Events

New York State Pawpaw Conference

Saturday, October 1, 2022 8:00AM – 5:30PM Pulaski, NY

Cornell Cooperative Extension of Oswego County and Cornell Cooperative Extension Harvest NY are hosting a state-wide conference on a native fruit called pawpaw (*Asimina triloba*), at the historic Kallet Theater in Pulaski, NY. Pawpaw is a fruiting tree reaching 30 feet high; pawpaw fruit is the largest fruit native to North America.

The goal of the conference is to fill gaps in knowledge about this uncommon fruit and to create networking opportunities for interested parties. This conference will cover pawpaw history, best fruit production practices, nutrition, processing, value-added products, and marketing. Our guest speakers include recognized growers and researchers from across the country. The cost to attend this all-day event is \$40 per person. Registration is required and seating is limited.

The option to pay online will be available soon. Currently, to confirm your seat at this educational event, please mail a check or cash to Cornell Cooperative Extension of Oswego County located at 3288 Main Street, Mexico, NY 13114. All checks should be made out to Cornell Cooperative Extension of Oswego County. [Registration link](#)

Farm Food Safety Meeting

Save the date Dec 5, 2022; 9 am - 4pm Wayne CCE Building 1581 Rt 88N Newark, NY

Topics to be covered include: Agricultural water quality assessments, Traceability procedures, Tips for improving flow and efficiency in wash/pack facilities, Cleaning and sanitation updates, Lots of discussion to answer your questions. For more information, please contact Robert Hadad 5857394065 rgh26@cornell.edu

NY Sweet Corn Trap Report, 9/13/22

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

Statewide, twenty-four sites reported this week. European corn borer (ECB)- E was caught at four sites and ECB-Z was caught at three sites. The hybrid ECB was caught at three of the six sites trapping for it: Geneva (1), Hurley (3) and Sherwood (1). Twenty-three sites reported corn earworm (CEW) catches this week with twenty-two sites high enough to be on a 3, 4, 5, or 6-day spray schedule. Fall armyworm (FAW) was caught at thirteen sites and Western bean cutworm (WBC) was caught at four sites. For more information and reference material go to <https://sweetcorn.nysipm.cornell.edu>.

WNY Pheromone Trap Catches: August 30, 2022

Location	ECB -E	ECB -Z	ECB Hybrid	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	0	0	NA	3	NA	0	2426
Bellona (Yates)	1	0	0	42	3	0	2460
Collins (Erie)	NA	NA	NA	NA	NA	NA	2357
Eden (Erie)	NA	NA	NA	NA	NA	NA	2412
Farmington (Ontario)	2	0	NA	0	3	1	2520
Geneva (Ontario)	0	0	1	74	4	0	2442
Hamlin (Monroe)	0	0	NA	70	4	4	2418
Leroy (Genesee)	0	1	NA	12	0	0	2406
Lyndonville (Orleans)	0	0	NA	34	0	1	2403
Oswego (Oswego)	0	0	NA	7	0	0	2268
Panama (Chautauqua)	0	0	NA	12	0	0	2081
Penn Yan (Yates)	0	1	0	67	0	0	2393
Portville (Cattaraugus)	NA	NA	NA	NA	NA	NA	2102
Ransomville (Niagara)	NA	NA	NA	NA	NA	NA	2458
Seneca Castle (Ontario)	NA	NA	NA	NA	NA	NA	2392
Williamson (Wayne)	0	0	NA	0	0	0	2227

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm; NA: Not Available; DD: Degree Days based on accumulation starting April 1 and modified to 86/50.

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

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Cornell Vegetable Program**

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