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## June is Nematode Month in Onions

Christy Hoepfing, Cornell Cooperative Extension, Cornell Vegetable Program

### Stunting Damage from Nematodes are “Showy” in June

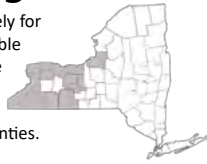
The reason that June is nematode month in onion is because it is during the month of June when onions are in 2-5 leaf stage that stunting caused by nematodes becomes apparent. Onions that are stunted from nematodes may appear in patches within an onion row(s) that are right beside a row(s) of healthy onions (Fig. 1).



Figure 1. Two examples of the patchy nature of onion stunting caused by stubby root nematode. Stunted onions can occur in a row or patches of rows next to a row(s) of non-stunted healthy onions. Photos: C. Hoepfing, CCE Cornell Cooperative Extension

# About VegEdge

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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 June 20, 2024.

## Biopesticides for Tomato Bacterial Diseases: Economics & Environmental Risk

*Amara Dunn-Silver, Biocontrol Specialist, NYS IPM*

Last summer we wrote about [integrated pest management strategies \(IPM\) for tomato bacterial diseases](#) and how biopesticides fit into strategies for managing these diseases. Research trials conducted at Cornell in Chris Smart's lab **indicated that you could replace some copper sprays with the biopesticides Double Nickel or LifeGard and achieve the same level of disease control.** In 2023, we wanted to demonstrate what this might look like on vegetable farms around New York State. You can read more [details about these on-farm demonstrations](#). Here we're comparing economic costs and potential risks to people and the environment of using these biopesticides versus copper pesticides.

### Economics

We researched some prices for pesticides from a few different suppliers. Below are the assumptions we made to calculate some price estimates and make comparisons. Prices for pesticides can vary across regions and time. If you think any of these numbers are far out of line, please let Amara know!

If you are applying...	and a container costs you...	and you apply at a rate of...	Your cost per Acre per application is:
Actinovate AG	\$115/18 oz bag	7.5 oz/A (range on label is 3-12 oz)	\$48.00
Double Nickel LC	\$85.25/1 gal	1 qt/A (recommended for tomato bacterial diseases)	\$21.31
LifeGard WG	\$148/1 lb bag	4.5 oz/100 gal and 50 gal/A = 2.25 oz/A	\$20.80
copper (Kocide 3000-O or Badge X2)	\$102/10 lb bag	1.25 lb Kocide, 1.8 lb Badge X2 (highest rate on label)	\$15.00
copper (Badge SC)	\$150/2.5 gal	1.8 pt/A (highest rate on label)	\$13.58
Copper (Champ Formula 2 Flowable)	\$139.95/2.5 gal	1.33 pt/A	\$9.31
copper (Cueva)	\$114/2.5 gal	1 gal/A (label rate is 0.5-2 gal)	\$46.27

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### Stubby Root Nematode the Culprit in Recent Years

Three nematode species have been associated with yield loss in New York onion: Northern root knot nematode (*Meloidogyne hapla*), lesion nematode (*Pratylenchus penetrans*), and stubby root nematode (*Paratrichodorus allius*). In 2022, the stubby root nematode caused excessive onion stunting in several pockets of muck in Oswego Co. This nematode has been known to occur in muck pockets in Oswego for decades and it had been common practice to treat for nematodes with Vydate at-planting. When Vydate became unavailable after the plant shutdown its production in 2014, eventually stubby root nematode showed up again in Oswego in 2015.

**Stubby root nematode is favored by cool and wet conditions during the 5 weeks following planting in the spring**, which made spring of 2022 ideal for this nematode to flourish. The stunting was so bad that plants were already starting to bulb in early July. Population densities of stubby root nematodes in some of the stunted patches ranged from 85-228, 192-247 and 42-104 nematodes per 200 ml soil. During the heat of summer, the stubby root nematodes migrated back down into the soil profile below the root zone where it was cool and moist. Eventually, the onion roots recovered and the stunted plants resumed growth and were able to size up to at least small-sized marketable bulbs.

### It Doesn't Take Many Stubby Root Nematodes to Reduce Yield

According to 2023 yield studies, regression analysis implied:

**For every 10 stubby root nematodes per 200 ml of soil in June/July, total yield is reduced by 10%.**

### 2023 Survey of Muck Soils for Nematodes

In June, stubby root nematode was detected in 4/5 and 1/5 onion fields in Oswego and Wayne Cos., respectively, although counts were very low (mean of 15 samples/field: 1.6 to 6.2 nematodes per 200 ml soil). But in the July sampling, stubby root nematode was detected in 2/3, 1/3 and 2/3 fields in Oswego, Wayne and Elba, respectively (56% of fields) and the average stubby root nematode counts were in the range that could cause yield loss (average 12.0 to 61.1 nematodes per 200 ml soil). It is important to note that soil samples were collected from a 15-point grid in each field, and not specifically from onions that appeared to be stunted. In July in the infested fields, 85% of the sample sites tested positive for nematodes.

**Our preliminary data suggests that stubby root nematode is widespread throughout New York muck soils and is likely impacting onion yield.**

### Vydate to the Rescue

In a treated and nontreated replicated nematicide strip trial set up by a grower cooperator, Vydate significantly reduced stubby root nematode from 30 per 200 ml soil in the nontreated to 0.0 in the Vydate treatment (100% control) and to 3.3 per 200 ml soil in the Velum Prime treatment (89% control) in the June sampling. In July, stubby root nematode dropped to 14 per 200 ml soil in the nontreated and remained low in the Vydate treatment (0.7 per 200 ml soil = 95% control), while the nematodes rebounded in the Velum Prime treatment, which was not significantly different than the nontreated (11.3 per 200 ml soil). These reductions in stubby root nematodes resulted in 86% and 72% increase in medium-sized bulbs compared to the nontreated for Vydate and Velum Prime, respectively.

### Test Muck Soil for Parasitic Nematodes Now!

To get a better handle on identifying onion stunting caused by nematodes and to further explore the extent to which muck onion soils are infested with nematodes, in 2024 Frank Hay has the capacity to test soil samples from 10 fields in each of Elba, Wayne and Oswego Cos. for a total of 30 fields. Contact Christy Hoepting ([cah59@cornell.edu](mailto:cah59@cornell.edu); 585-721-6953) or Frank Hay ([fsh32@cornell.edu](mailto:fsh32@cornell.edu)) to arrange for soil sampling, as we have a sampling protocol to follow and would like to collect the soil samples ourselves. Soil samples will also be tested for root knot and lesion nematodes, as yield can be further reduced by parasitic nematode complexes.

Having nematode count data in hand will inform whether you want to use Vydate in spring of 2025 in infested fields that will be rotated back into onion. Our 2024 survey results will inform whether funding should be pursued to conduct in-depth research on nematodes and their management in muck-grown onion, such as optimizing use of Vydate, alternative nematicides to Vydate, cover crops that reduce nematode populations, etc.

Funding for 2023 survey and research trials was provided by the New York Onion Research and Development Program. ●

The biopesticides in the table range from fairly similar in price (Double Nickel and LifeGard) to approximately 5 times the cost of the less expensive coppers (Actinovate). Each copper application replaced with either Double Nickel or LifeGard is estimated to increase the pesticide cost by \$6-\$12 per acre per application. If a grower makes eight applications in a season to protect tomatoes from bacterial diseases, this would be an increase of \$24-\$48 per acre for the season if half of the copper applications are replaced with Double Nickel or LifeGard. If a grower adds LifeGard or Double Nickel applications on top of their copper spray program, the cost increase is greater, including both purchasing extra product and application costs like fuel, labor, equipment depreciation, etc.

### Protecting people and the environment

Replacing some copper sprays with biopesticides can have other benefits. The following table compares restricted entry intervals (REIs), label signal words, and field use ecological Environmental Impact Quotient (EIQ) for several biopesticides and copper formulations. Shorter REIs indicate a pesticide has lower toxicity to agricultural workers. The signal word shows the relative acute toxicity of the pesticide to the pesticide applicator.

Product	Active Ingredient (%)	Rate	REI	Signal word	Field Use Ecological EIQ <sup>1</sup>
Actinovate AG	<i>Streptomyces lydicus</i> WYEC 108 (0.037%)	12 oz/A	4 hrs	Caution	NA
Double Nickel LC	<i>Bacillus amyloliquefaciens</i> strain D747 (98.85%)	1 qt/A	4 hrs	none on label	NA
LifeGard WG	<i>Bacillus mycoides</i> isolate J (40%)	4.5 oz/A	4 hrs	Caution	NA
Serenade Opti <sup>2</sup>	<i>Bacillus subtilis</i> QST 713 (26.2%)	20 oz/A	4 hrs	Caution	7.2
Badge SC	copper hydroxide (15.36%); copper oxychloride (16.81%) <sup>3</sup>	1.8 pt/A	48 hrs	Caution	40.1
Champ Formula 2 Flowable	copper hydroxide (37.5%)	1.33 pt/A	48 hrs	Warning	34.5
Cueva	copper octanoate (10%)	2 gal/A	4 hrs	Caution	NA
Kocide 3000-O	copper hydroxide (46.1%)	1.25 lb/A	48 hrs	Caution	38.2
MasterCop	copper sulfate pentahydrate (21.46%)	2 pt/A	48 hrs	Danger	66.4

1 The [Environmental Impact Quotient \(EIQ\)](#) seeks to quantify the environmental impacts of pesticides. Higher numbers indicate more negative impacts. The values reported here are "field use" values, calculated based on the rates listed in the table. These values vary depending on how much product you use per acre. The ecological component summarizes risk to fish, birds, bees, and beneficial insects.

2 The active ingredient in Serenade Opti is in the EIQ database, while the active ingredients of the other biopesticides in this table are not. The EIQ for Serenade Opti is expected to be similar to those of Double Nickel and LifeGard because they have similar active ingredients. It may also be similar to the EIQ for Actinovate.

3 Only copper hydroxide - not copper oxychloride - was in the EIQ database, so this ecological EIQ was calculated using 32.17% copper hydroxide (sum of the percentages of the two active ingredients).

Other benefits of reducing copper applications could include:

- reduced risk of selecting for tomato bacterial pathogens that are resistant to copper.
- avoiding fruit residue from some copper fungicides.



Tomato bacterial canker is a difficult disease to manage, even with weekly copper applications. Use of multiple integrated pest management (IPM) tools yields the best results. Photo: C. Stewart-Courtens, ENY Commercial Horticulture Program

### The Bottom Line

- **Use all your IPM tools to manage tomato bacterial diseases**, especially canker. If you bring canker to your field in seedlings or on tomato stakes, it will be very difficult to catch up with the disease using any pesticide if weather favors disease.
- **Some biopesticides are competitively priced** (per bottle and per acre) with copper pesticides. Replacing a few copper applications with these products will not cost you much more.
- Replacing some copper applications with **biopesticides offers additional benefits, including copper resistance management, and potentially reduced risk** to the environment and human health.

**Changes in pesticide registrations occur constantly and human errors are possible. Read the label before applying any pesticide. The label is the law. No endorsement of companies is made or implied.**

Thanks to collaborators [Chris Smart](#), Professor in the School of Integrative Plant Science, Plant Pathology and Plant-Microbe Biology Section at Cornell University, [Crystal Stewart-Courtens](#), Extension Vegetable Specialist, Eastern NY Commercial Horticulture Program; [Elizabeth Buck](#), Cornell Vegetable Program; [Margaret McGrath](#), Retired Faculty, School of Integrative Plant Science, Plant Pathology and Plant-Microbe Biology Section at Cornell University, and [Sandra Menasha](#), Cornell Cooperative Extension, Suffolk County.

Support for this project was provided by the NY Farm Viability Institute. ●

# CROP Insights

Observations from the Field and Research-Based Recommendations

## ASPARAGUS

Asparagus beetle larvae are active. – EB

## BEETS

Black cutworms are of concern for any young plants in the field through the end of June. Leaf miners may be present in both high tunnel and field grown beets this month. They may make the foliage unsightly for fresh market bunched beets, but otherwise do not affect the roots. Beets that were planted in high tunnels are being harvested. Field-grown processing table beets that were sown early in the season have nice stands. Timely cultivation, post-emergence herbicides, and hand-weeding may be needed. – JK

## CARROTS

Begin leafhopper scouting and management. The main concern with leafhoppers is the spread of aster yellows. See the 2024 Cornell Vegetable Guidelines for management options. Weed management is also important now. – JK

## COLE CROPS

Receiving reports of both maggot damage and suspected *Rhizoctonia*. Rhizoc is a common cause of “wirestem” in cole crops. It is not easily treated once in the field and is easily picked up by transplants in the flats. Keep flats off the ground. Cabrio (pyraclostrobin) and Quadris (azoxystrobin) are common treatments, used around transplanting. – EB

## CUCUMBERS

Root rots, likely caused by the fungus *Rhizoctonia solani*, cause cucumber and other vine crops to have nutrient deficiencies, wilt and die. If plants survive, this fungus can also cause Belly Rot, affecting mature fruit. This disease is actually favored by warm soil temps. We are seeing increased levels of infection where there are short, or no rotation away from vine crops (cucumbers, melons, squash, pumpkins, etc.) Seed treatments and rotation are key management steps for Rhizoc. – JR

## GARLIC

Yellowing of garlic leaves point to several issues. Seeing a couple cases of stemphylium driving die back; check for thumbprint lesions and blackening of necrotic tips. Most yellowing seems to be from weather stress from wet conditions. Related to these conditions, nutrient levels could be waning. As we approach the longest day of the year, plants will be shifting from vegetative to reproductive mode. The time for nutrient balance needed to be much earlier in the season. From here on out, bulb growth is the most important consideration and water availability needs to be watched. If we go into a hot and breezy spell, wetter soils will dry out. Irrigation will be needed. Don't be fooled by all the previous rain received. Garlic has a smaller root system so water availability can be more quickly needed. Water while there still is some soil moisture for irrigation to be more efficient.

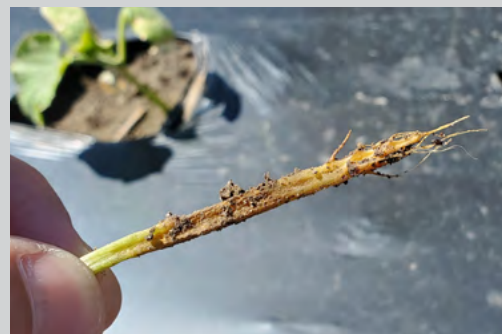
Also keep an eye out for thrips and mites especially if the hot weather shows up. – RH & EB

## ONIONS

The week before the summer solstice (June 21) we always see excellent growth in onions—just like we see in preteens and teens, we've gotten them past the baby/little kid stage. Most of the direct seeded crop is at the 3-4 leaf stage this week and earliest transplants of early-maturing varieties have 1-1.5" bulbs and the outermost leaves are beginning to dieback. It is in this outer leaf that *Stemphylium* leaf blight (SLB) usually appears, but let's table talk of this disease for now.



Reddish stem and poor root development are characteristic of *Rhizoctonia* infections in vine crop.  
Photo: J. Reid, Cornell Vegetable Program



*Rhizoctonia* lesions generally do not extend far above the soil line, but rot away nearly all the roots.  
Photo: J. Reid, Cornell Vegetable Program

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Weed control and herbicides. Most growers apply a third or fourth (depending on their herbicide program) application of Prowl during 3-5 leaf stage for pre-emergent weed control. In our scouting this week, we saw a flush of newly emerged weeds in the cotyledon stage in some fields, an indication that earlier applications of pre-emergent herbicides had “run out of gas”. To pick up some post-emergent weed control with these Prowl applications, there are a couple of strategies: 1) Use the oil in Prowl EC to “heat up” Goal 2XL/Goaltender, which is usually applied at lower rates that Goal would be applied by itself. Last year in my trials when it was hot and dry, I couldn’t heat up Goal with anything, but following the cool and rainy weather, this combo will have a lot more bite (on both weeds and onions). 2) Combine Prowl H2O with Chateau. The advantage of this combination is that the Chateau will also provide pre-emergent weed control, especially of annual mustards like marsh yellowcress and pigweed.

This week we noticed that Optogen + Buctril 2E (a.i. bromoxynil) had some post-emergent activity on YNS (Fig. 1). In my research trials, I looked at Optogen pre-emergent to YNS (it did not have much activity) but had not gotten a good read on its post-emergent activity (no to low pressure in trials). I expect that the post-emergent control of Optogen on YNS will be in the form of a “hold” (= hold it back, not kill it) and that it will regrow, but that is still better than nothing.

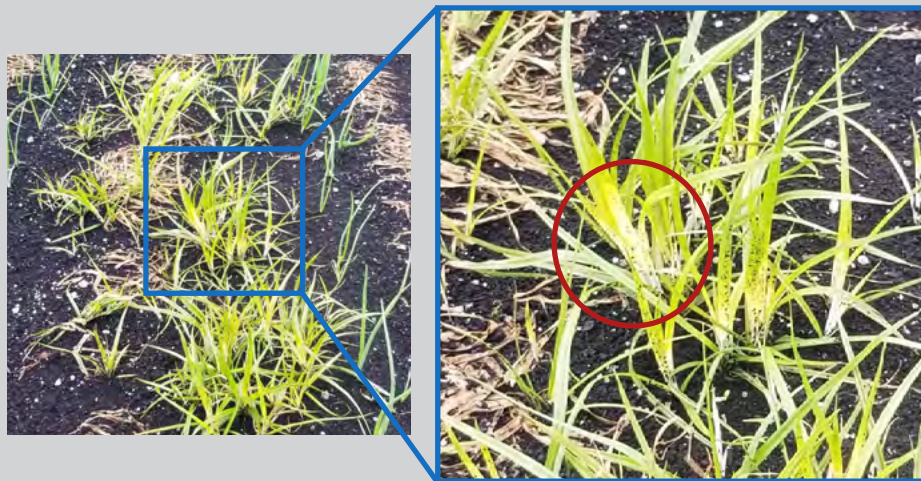


Figure 1. Optogen + Buctril (a.i. bromoxynil) has some post-emergent activity on yellow nutsedge (YNS), which is turning yellow and white, especially at the growing point (close-up). When I tugged on the center leaves, they slipped right out, as if the growing point was destroyed. It is likely that the herbicide combo will not kill all of the YNS, because the healthy below-ground parts will continue to produce new shoots, but it could hold it back for awhile, which is better than nothing. Photo: C. Hoepting, Cornell Vegetable Program

The maximum leaf stage for Buctril 2E (Brox, Broclean, etc.) is 5-leaf and the maximum leaf stage for Chateau and Stinger is 6-leaf. If you apply these herbicides when onions are greater than the maximum leaf stages, risk of injury increases dramatically. For example, Stinger should be applied at 5-6 leaf stage and not 6-7 leaf stage.

**Thrips, BLB halos and nematodes.** The cool and wet weather slowed down thrips build up this past week, thank goodness! Time will tell, but some direct seeded fields will likely reach spray threshold for first their Movento/Senstar insecticide application next week. Botrytis leaf blight (BLB) halo lesions were evident in both transplanted and direct seeded onions this week. We will likely see an increase next week and may need to start fungicide sprays then. Go to the Cornell Vegetable Program website for tips on [Scouting Onions for BLB Halo Lesions](#). Stunting caused by nematode feeding in early spring becomes evident now that the onions are 3-5 leaf stage – see cover article of this issue of for more information.

**What better way to celebrate the summer solstice, which triggers bulbing in onions, then by attending the Muck Onion Twilight Meeting in Oswego next Thursday, June 20th** – see page 10 for details. We have been very busy preparing to roll out the new fungicide recommendations for BLB and SLB, setting up an herbicide demonstration featuring pre- and post-emergent control of marsh yellowcress, Lamb’s quarters and ragweed, and hoping to present research results from 2024 onion maggot seed treatment trials. – CH

### PEAS

Planting of the processing crop is completed, and harvest of the earliest peas will begin soon. There are some very nice-looking processing pea fields out there, but some are starting to show symptoms of root rot with yellow lower leaves (or the whole plant) and stunting. Hot, dry weather later in the season will cause plants with poor roots to go downhill fast. Dig up some plants to look at the roots and compare them with healthier plants. Areas with compacted soil and low wet spots are the first to show symptoms. – JK

### PEPPERS

They don’t appreciate cold winds and cold temps. Separately, seems that the previously warm weather has allowed broad-mite infestations picked up in the greenhouse to persist and cause damage in the field. This is another reason why raising transplants separate from ornamentals is a good idea if you can swing it space wise. – EB

### POTATOES

Colorado potato beetle adults are active and laying eggs in potato fields. Early egg clusters are hatching, and larvae are starting to feed on foliage. Seed treatments or insecticides sprayed at planting should provide early control, but populations should be monitored for resistance. – ML

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### SNAP BEANS

Planting of the processing crop has been going according to schedule, with a small delay this week waiting for fields to dry out. Bean emergence and growth as well as weed control have been good. Scouting for early season pests and weed escapes is important during crop establishment. Treat small weeds as necessary. – JK

### SQUASH

When it comes to seasons with cold nights and even cool days, vine crops can be affected. The older leaves can start showing up with yellowing, appearing like streaks or blotches. This is usually attributed to the lower temperatures causing stress. Nutrients get tied up and deficiencies show up in the older leaves as the plants try to draw out nutrients from the older leaves. Magnesium becomes in short supply. Generally, the plant does grow out of this as the temps warm back up. Epsom salts could be applied with 1-2 tablespoons per gallon of water. This can be a lot of work so it might be best just to wait it out. June weather can warm up quickly and in a few more weeks, the plants will be back to normal. Some of the old affected leaves still might show yellowing but the plant is depending on the newer leaves to carry the load. – RH

Several cases of pumpkins and winter squash being slow to germ or sitting still with this cold. Their feet are sensitive to cold soils. Tops can often tolerate cold temperatures better than roots will take equally cold soils. Be patient, let them warm up and avoid temptation of throwing excessive moisture (drip irrigation) at the situation if your roots look unhappy. Roots sitting still and unhappy are more susceptible to pythium, rhizoc, and fusarium – all 3 are aggravated by plentiful soil moisture. – EB

### SWEET CORN

Seeing a little bit of corn borer damage. Continuing to catch corn earworm in Eden (5), Ransomville (2), and Lyndonville (3). Seeing some flashing in certain plantings associated with herbicide application + cold wet soils. They should outgrow. – EB

### TOMATOES

Magnesium deficiency is widespread in local greenhouse and high tunnel tomatoes. Look for interveinal yellowing, beginning with older leaves. This occurs lower in the plant canopy as magnesium is considered a mobile nutrient, that plants can reallocate to different tissues. The plant is simply moving magnesium from older leaves to new ones, or to fruit. Some visual Mg deficiency is acceptable, although growers may choose to amend when symptoms move upwards. Better yet, weekly foliar sampling can catch the problem before it presents symptoms. Magnesium sulfate (Epsom salts) are the most common source of fertilizer Mg, and low foliar doses have corrected problems for many growers. Injecting Epsom salts over the long term can increase soil salt levels. Excess applications of nitrogen can exacerbate magnesium deficiency by forcing the plant to be too vegetative. – JR



Interveinal yellowing, beginning with older leaves occurs when the plant translocates magnesium to new tissue. *Photo: J. Reid, Cornell Vegetable Program*

### WATERMELON

Isolated cases of damage by Four Lined Plant Bug can be found in local watermelon patches. These secretive bugs are yellow and green with four black lines. Nymphs are yellowish-green to bright red with blackish spots. Their damage is rather distinctive round, dark spots, often taking over an entire leaf surface. The good news is, that although damage to individual plants can be visually dramatic, Four Lined is rarely a problem worth treating as they feed on individual plants, and do not congregate themselves into high numbers. – JR



Four Lined Plant Bug damage is rather distinctive; round, dark spots, often take over an entire leaf surface. *Photo: J. Reid, Cornell Vegetable Program* ●

# Evaluation of a Laser Scarecrow to Deter Birds from Sweet Corn Fields in New York State

Julie Kikkert, CCE Cornell Vegetable Program, Chuck Bornt, CCE Eastern NY Commercial Horticulture Program, and Marion Zuefle, NYS Integrated Pest Management Program

**NOTE:** Growers in the Cornell Vegetable Program partner counties may request to borrow a URI laser scarecrow from Julie Kikkert (limited supply). To purchase a unit, contact Rebecca Brown at [brownreb@uri.edu](mailto:brownreb@uri.edu).

A research laser scarecrow utilizing a rapidly rotating 50-milliwatt green laser to frighten birds was developed at the University of Rhode Island (URI) <https://sites.google.com/view/urilaserscarecrow/home> and tested on NY farms. The pole-mounted electronic components are inside a weather-resistant bucket (Fig. 1). Laser scarecrows (LS) were deployed 10 to 14 days before harvest. When the corn was ripe, the number of ears with bird peck out of a given sample size was recorded at 50 ft (fresh market) or 100 ft (processing corn) intervals from the laser for the entire length of the field.



Figure 1. A URI laser scarecrow set up in sweet corn. An optional solar panel keeps the battery charged. Photo: J. Kikkert, CCE Cornell Vegetable Program

## Results

In 2022, LS were deployed at three fresh market farms in eastern NY (Table 1). The average bird peck per field with a LS was less than 4%. Nearby control fields at farms B and C experienced 19.8 and 59.1% bird peck, respectively. Farm C’s control field was not harvested because of the high level of bird damage.

In 2022 and 2023, seven fresh market farms in western NY deployed LS (Table 2). All except Farm W utilized additional deterrents. Seven of 13 fields had no damage. Five fields experienced less than 8% bird peck, and one field averaged 22%. Distance from the LS was not significant in fresh market fields which ranged from 250 to 1000 ft long. Farm V, with 22.0% bird peck, deployed the most bird control methods in addition to the LS. This farm has high red-winged blackbird pressure and lacks alternate food sources for the birds, making control quite difficult.

LS with or without a BirdGard (BG) squawking device were deployed in processing sweet corn fields in 2022 and 2023. There was a significant effect of distance from the LS in the large processing fields which were up to 2,500 ft long. LS and LS+BG reduced overall bird peck in the treatment fields compared to control fields. The least amount of bird damage was in fields with both LS and BG (data not shown).

**Table 1. Bird damage in fresh market sweet corn fields in eastern, NY in 2022 where laser scarecrows were deployed by C. Bornt. Data is the average of multiple transects walked per field.**

Grower	Field	Laser (Y/N)	Date of Assessment	Percent of Ears with Bird Peck
A	1	Yes	7/25/2022	3.3
B	1	Yes	8/2/2022	3.3
B	2	Yes	8/23/2022	0
B	3	NO	7/16/2022	19.8
C	1	Yes	8/16/2022	0
C	2	NO	8/16/2022	59.1

**Table 2. Bird damage in fresh market sweet corn fields in western NY in 2022 and 2023 where laser scarecrows were deployed by J. Kikkert and M. Zuefle. Additional bird deterrents used are listed. Data is the average of multiple transects walked per field.**

Year	Grower	Field	Other Bird Deterrents Used	Data Collection Date	Percent of Ears with Bird Peck
2022	Z	1	Chemical	5-Jul	0
2022	Z	2	Chemical	5-Aug	1.4
2022	Z	3	Chemical	15-Aug	7.4
2022	Y	1	Scare Balloons	8-Aug	1.1
2022	X	1	Scare Balloons	26-Aug	0
2022	W	1	None	11-Jul	0
2022	W	2	None	2-Aug	6.7
2022	W	3	None	18-Aug	2.2
2023	Y	1	Scare Balloons	27-Jul	0
2023	V	1	Hawk Kites, Noise Crackers, BirdGard	17-Aug	22.0
2023	U	1	Scare Balloons	22-Aug	0
2023	U	2	Scare Balloons	1-Sept to 1-Oct (grower reported)	0
2023	T	1	Scare Balloons	All Season (grower reported)	0

## What Do Growers Say?

In a 2024 survey, 17 NY growers asked, “How much has using a laser scarecrow reduced bird damage in your sweet corn,” responded: 12% “A great deal;” 18% “A lot;” 35% “A moderate amount;” 29% “A little;” and 6% “none.”

*continued on page 9*



When asked, “Are you interested in continued use of laser scarecrows on your farm?” 64% responded “definitely yes,” citing reduced bird pressure and increased revenue, especially when lasers were combined with other bird scare tactics. 18% responded “might or might not.” This group included those wanting additional testing on their farm and/or are still in the learning curve of how to best use the laser scarecrows. 18% responded “probably not” and noted that the laser scarecrow did not work on their farm, or it was not worth their investment of time and money.

### Conclusion

New York on-farm data supports findings by URI and others, that green lasers can deter birds. The URI laser scarecrow reduced bird damage in sweet corn by 80% (*Brown RN and Brown DH, 2021. Robotic laser scarecrows: a tool for controlling bird damage in sweet corn. Crop Protection 146:105652*). The LS paired with a BirdGard squawker further decreased damage (*R. Brown personal communication*). Bird populations, habitat, and other sources of food determine whether birds can be moved away from sweet corn fields. The laser scarecrow is another tool in the bird management toolbox.

*This project was funded by the New York Farm Viability Institute and a USDA NIFA Multistate Specialty Crop Block Grant.* ●

## Why Are My Garlic Leaves All Streaky?

*Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program*

Garlic seems to have some sort of yellowing at some point during the growing season. Early on it could be winter damage on early leaf tips. Later it could be fertility issues or lack of water. Depending on the season, we receive a few calls each year as garlic harvest time draws closer. Garlic leaves have yellow streaking. Worse ones have yellow blotches too. Usually not too many plants show these symptoms, but some seasons tend to have more than others.

There are several virus diseases that show up in garlic. The symptoms are hard to tell apart without a lot of lab work. It has become easier to simply lump together the onion dwarf virus with leek yellow stripe, and several other minor viruses. Some term this garlic virus group as garlic mosaic due to the leaf symptoms or Potyvirus. The yellow streaking along with various degrees of yellow splotches can be found on some younger plants but also as the plants get into the bulb sizing days of June.

If the disease comes in on later in the season, bulb size isn't too much affected. If the virus hits in the earlier leaf growth stage, plants can become stunted along with diminished bulb size. Weakened plants are more easily stressed by harsh weather and post-harvest quality can be reduced. The culprits responsible for transferring the virus are aphids. Aphids can carry several different diseases affecting numerous vegetable crops like summer squash, for example. It is, therefore, hugely important that aphids are kept under control from the outset.

It is important to keep an eye out for the symptoms when they show up on plants. The virus can move down into the bulb. If the bulb is saved for seed and is planted out the next season, the new plant that emerges will already have the virus. Non-virus laden aphids can feed on these plants picking up the virus and spread it to surrounding plants. This is how a small problem can easily turn into a big problem. Rogue out all garlic plants that appear to have these stripes and blotches. If aphids are carrying the virus, using an insecticide will not do much to reduce the spread of the disease because the aphids need to feed on the plants in order to ingest the insecticide. A little bit of feeding will pass the virus even if the aphid succumbs to the spray. ●



Streaking, striping on leaves of garlic infected with virus complex. *Photo: University of Maine Extension*



### Got berry questions?

Drop in for an informal conversation about berry production with Laura McDermott and Natasha Field of the ENY Commercial Horticulture Program, and Anya Osatuke of CCE Harvest NY. Come chat berries with us!

**Wednesday mornings, 8:30 - 9:00 am EDT**  
**May 15 through July 3**

Join the [Zoom meeting](#): Meeting ID: 962 9520 5493; Passcode: 12345  
Call in to: 646-876-9923

### Muck Onion Growers Twilight Meeting

June 20, 2024 (Thursday) | 4:00 - 6:50 pm meeting, catered dinner at 7:00 pm  
Dunsmoor Farms, 7965 NY 104, Oswego, NY 13126

Open to all Onion Enthusiasts, the Muck Onion Growers Twilight Meeting will feature new fungicide recommendations for 2024, and onion insect pest management updates featuring seed treatment combinations for onion maggot control. View our onion herbicide trial with pre- and post-emergent control of marsh yellowcress, Lamb's quarters and ragweed. This educational event is immediately followed by a catered dinner; both are **FREE thanks to generous sponsors! No RSVP required.**

2.0 DEC recertification credits available in categories 1A, 10 and 23, and 0.5 credits in category 5. CCA credits available. *This event is organized by CCE Cornell Vegetable Program and Oswego County Vegetable Growers and Improvement Association.*

*Event sponsors: Bayer Crop Science, Certis Biologicals, Enza Zaden North America, Gowan, Helena Agri-Enterprises, Rovensa Next, Seedway, Seminis Vegetable Seeds, Stokes Seeds, Valent USA, and VM Agritech.*

### Beans for Lunch Webinar Series

Are you growing dry beans this year? Have questions? Join Cornell University and University of Vermont for a two-part summer webinar series. We will discuss the top pests of dry bean to watch for and troubleshoot in-season challenges with your fellow farmers, service providers, and Extension personnel. These webinars are intended to be informal and interactive. Both certified organic and conventional methods will be discussed.

#### **Managing Dry Bean Insect Pests in the Field | June 21, 2024 (Friday) | Noon to 1:00 pm**

Hear from Clark Moore, CCA of Western NY Crop Management Association about common dry bean pests to look out for, scouting techniques, and management options.

#### **Managing Dry Bean Diseases in the Field | July 19, 2024 (Friday) | Noon to 1:00 pm**

Learn from Dr. Sarah Pethybridge of Cornell AgriTech about common dry bean diseases to look out for, how to distinguish them from each other, and your options for management.

FREE event, but you must pre-register at <https://go.uvm.edu/beansforlunchwebinar> before the webinar date to receive the confirmation email with the webinar link to access it.

### Tree Fruit and Small Fruit Twilight Meeting

June 27, 2024 (Thursday) | 6:30 pm - 8:30 pm  
Lakeview Apple Orchards, 2336 Barnes Rd, Penn Yan, NY

Join CCE Specialists for a conversation about tree fruit and berry phenology, pest management, food safety and water quality. Attendees are encouraged to bring pictures or descriptions of pests they are concerned about on their farm. 1.5 DEC credits will be offered in categories 1a, 10, and 22. This event is free to attend, and no pre-registration is required. Pizza and refreshments provided by Valent. Questions? Please contact [aco56@cornell.edu](mailto:aco56@cornell.edu)

### New York State Honeyberry Conference

June 29, 2024 (Saturday) | 8:30 am - 4:30 pm  
CiTi BOCES, 179 County Rte 64, Mexico, NY 13114

Join CCE Oswego and CCE Harvest NY for a state-wide conference on a new emerging fruit called Honeyberry, also known as Haskap (*Lonicera caerulea*). Honeyberries are a dark blue color, like blueberries, but with a distinct oval shape. The taste is most associated with raspberry and blueberry, while also containing its own distinctive flavor. What makes the fruit unique is that it ripens from the middle of June through early July. This allows the fruit to sit comfortably between the strawberry and blueberry season. The conference will cover the history of the fruit, best growing practices, processing, value-added production, and marketing. Guest speakers will include growers and researchers from the US and Canada, including Dr. Bob Bors from the University of Saskatchewan. Attendees will also be able to network and attend an optional farm tour immediately after the conference.

COST: \$40. Registration required. To [learn more about the conference or to register](#), please go to the CCE Oswego website.

### Cornell / USDA Potato Field Day

July 1, 2024 (Monday) | 9:30 am - 4:00 pm  
Thompson Vegetable Research Farm, 133 Fall Creek Rd, Freeville, NY 13068

More information will be provided in the next issue of VegEdge, or call Margie Lund at 607-377-9109.

## Lambsquarters vs Pigweeds

Elizabeth Buck, CCE Cornell Vegetable Program

Real quick – it really does pay to correctly figure out whether you’ve got lambsquarters, pigweeds, or both coming up in your fields. A number of common vegetable herbicides manage one species well but not the other. For example:

- Dual is particularly bad with lambsquarters but can pick up some pigweeds
- Matrix PRE and POST can’t handle lambsquarters and is very good against pigweeds
- Prowl performs better on lambsquarters than pigweeds
- Goal is a great choice for pigweeds, PRE and POST. It is a decent choice PRE for lambsquarters and falls short POST against lambsquarters.
- Reflex POST will struggle with lambsquarters but not pigweeds
- Sencor (metribuzin) is stronger on lambsquarters than pigweeds

Functionally, these herbicides that have limited activity on one species will separate out considerably as you apply in situations that inherently limit control. Conditions that will exacerbate the effects of a mis-ID:

- Poor activation of PRE applied herbicides
- Large weeds (big can mean 3-4 inches!)
- Tough weeds with thick cuticles (sunny, windy conditions)
- Lower rates due to crop tolerance limitations

### Pigweeds can be ID’d by:

1. Long cotyledons are slightly oval shaped. Usually have a distinct central vein.
2. Cotyledons usually connect to the stem in a “poor artist’s flying bird” shape relative to the rather flat and tight-to-stem connection on lambsquarters
3. True leaves, including the first ones, have a notch in the tip. A small hair may be present in the notch.
4. Leaf margins may become up-down wavy but remain smooth and entire along the edge, never scalloped.



Pigweed (top) and lambsquarters (bottom) seedlings. Note the different cotyledon shapes. The lambsquarter has a mealy, white characteristic in the growing point, which made the photo look fuzzier. The lambsquarter is already developing scalloped edges on the first true leaf while the pigweed has a distinctive central vein on the first true leaf.

Photo: E. Buck, CCE Cornell Vegetable Program ●

### Lambsquarters can be ID’d by:

1. Long, linear, narrow cotyledons (seed leaves)
2. Mealy, white or pink look to the center growing point, even when very young.
3. True leaves become scalloped along the edges.

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# Cornell Cooperative Extension Cornell Vegetable Program

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# VEGEdge

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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 Cooperative Extension Cornell Vegetable Program

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