Cornell Cooperative Extension | Cornell Vegetable Program

VEGEdge

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Volume 20 • Issue 7 • May 15, 2024

Controlling Volunteer Potatoes in Onion: Start Early

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Volunteer Potatoes Grow Fast!

It is common for onions to be rotated with potatoes in muck-grown onions in the Elba muck (and periphery muck lands in Genesee Co.) and in Wayne Co. When onions follow potatoes in rotation, they always have volunteer potatoes in them. Not surprisingly, when being fed by the nutrients provided by the overwintered tubers, volunteer potatoes grow really fast. When onions are in the flag-leaf stage, volunteer potatoes can already be 4 inches tall. By the time onions are at 1-leaf stage, volunteer potatoes can be 8 inches tall.

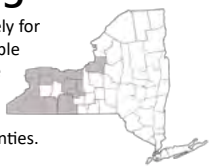
Looking for Something Better than Goal

Repeated applications of Goal 2XL post-emergent herbicide is the grower standard for controlling volunteer potatoes in onion, along with hand weeding and feeding them to Colorado potato beetles. Multiple applications of Goal 2XL can result in considerable onion injury. So, upon the request of onion growers and with funding from the New York Onion Research and Development Program, I set out to see if I could find something better. From 2021 to 2023, I have been conducting herbicide trials in direct seeded onion, trying to optimize control of volunteer potato with post-emergent herbicides. In

Figure 1. In a research trial, Goal 2XL 0.5 fl oz/A + Crop oil concentrate 1% v/v was first applied to onions in the flag leaf stage with the first leaf just starting to come, to burn back volunteer potatoes to keep them 4-6 inches in size. *Photo: C. Hoepting, CCE Cornell Vegetable Program*

continued on page 3

About VegEdge



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

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

We're interested in your comments. Contact us at:
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VegEdge is published 25 times per year, parallel to the production schedule of Western New York growers. Enrollees in the Cornell Vegetable Program receive a complimentary electronic subscription to the newsletter. Print copies are available for an additional fee. You must be enrolled in the Cornell Vegetable Program to subscribe to the newsletter. For information about enrolling in our program, visit cvp.cce.cornell.edu. Cornell Cooperative Extension staff, Cornell faculty, and other states' Extension personnel may request to receive a complimentary electronic subscription to VegEdge by emailing Angela Ochterski at aep63@cornell.edu. Total readership varies but averages 700 readers.

Help us serve you better by telling us what you think. Email us at *cce-cvp@cornell.edu* or write to us at Cornell Vegetable Program, 480 North Main Street, Canandaigua, NY 14424.

Contents

Our next issue of VegEdge newsletter will be produced on May 22, 2024.

continued from page 1

the first year, I trialed the post-emergent herbicide roster that we have in New York including Goal 2XL, Goaltender, Chateau, (all WSSA group 14), Buctril (WSSA group 6) and Stinger (WSSA group 4), as well as some novel products including Optogen (a.i bicyclopyrone, WSSA group 27), Reflex (a relative of Goal and Chateau), Rinskor and Starane (relatives of Stinger) and Nortron (WSSA group 8). And of course, I tried a bunch of tank mixes.

The top performing treatments in the 2021 trial were:

- Buctril 2EC 8 fl oz + Goal 2XL 4 fl oz @ 2.5-leaf and again 1 week later @ 3.5-leaf
- Buctril 2EC 8 fl oz + Goaltender 2XL 2 fl oz @ 2.5-leaf followed by (fb.) and Buctril 2EC 8 fl oz + Goaltender 2XL 4 fl oz @ 3.5-leaf
- Buctril 2EC 8 fl oz + Optogen 3.42 fl oz @ 2.5-leaf and again 1 week later @ 3.5-leaf
- Chateau 2 oz + Optogen 3.42 fl oz @ 2.5-leaf and again 1 week later @ 3.5-leaf

Amazingly in this trial, the onion injury was less than 5% 10 days after the 3.5-leaf sprays. Unfortunately, for as good as these treatments were for control of volunteer potato, I used too much herbicide than is/would be allowed by the label. One of the reasons why I made the second applications was that I was having trouble killing volunteer potatoes that were 6-8 inches tall and larger in size.

"Staging" Volunteer Potatoes to Keep Them Small

The following year, I learned how to "stage" volunteer potatoes to keep them 4-6 inches or less until the 2.5-leaf stage. In my 2022 trial, I started burning back the volunteer potatoes when the onions were in the flag-leaf stage with the first true leaf just starting to form (Fig. 1) with Goal 2XL 0.5 fl oz + crop oil concentrate (COC) 1% v/v and then again 7 days later when the onions were at 1-leaf stage with the flag leaf still intact. These treatments kept the volunteer potatoes fairly small compared to how much they would have grown naturally without Goal (Fig. 2). And I did burn the flag leaves back a little bit, which delayed early onion growth.

After these two very early applications of Goal 2XL, I then compared Goal 2XL 2 fl oz, Goaltender 4 fl oz (= amount of oxyflufen in Goal 2XL 8 fl oz), Chateau 2 oz and Chateau 2 oz + Optogen 3.42 fl oz applied at the 1.25 leaf stage. Goal 2XL 2 fl oz (= amount of oxyflufen in Goaltender 1 fl oz) was the most effective at burning the volunteer potatoes back resulting in 40-65% control 7 days after treatment, which was closely followed by Chateau + Optogen (40% control), Chateau alone (30% control) and lastly Goaltender 4 fl oz (20% control). Chateau and Goaltender (despite the high rate of oxyflufen) only slightly injured the volunteer potatoes and did not stop them from growing. Goal 2XL and Chateau + Optogen caused enough injury to volunteer potatoes that most did not grow very much and some of the smallest ones (1-3 inches) even died.

Figure 2. Comparison of burning volunteer potatoes back with low rates of Goal 2XL (left) and natural potato growth (right). Photo taken 4 days after the second application of Goal 2XL was made. For the most part, the Goal treatments kept the volunteer potatoes 4-6 inches or less in size. *Photo: C. Hoepting, CCE Cornell Vegetable Program*

continued on page 4

continued from page 3

Apply "Heavy Hitters" at 2.5-leaf and 3.5-leaf (7 days later)

In 2023, I combined Goal 2XL "staging" with just a single application of a "heavy" tank mix (such as Chateau 2 oz + Optogen 3.4 fl oz) and an application of Goal 2XL 4 fl oz at the 2.5- and 3.5-leaf stages.

Last year, there was a frost that killed many emerged volunteer potatoes, so I had to wait until they started to re-grow before starting the trial when onions were at 1.25-leaf stage. To "stage" the volunteer potatoes, I applied Goal 2XL 2 fl oz at 1.25-leaf and Goal 2XL 4 fl oz at 1.5-2 leaf stage 6 days later. Then, I trialed the following treatments at 2.5 leaf and 3.5 leaf 7 days later (Table 1).

Table 1. Post-emergent herbicide treatments trialed for control of volunteer potatoes in in 2023.

Product and Rate/Acre	
2.5-leaf Timing	**3.5-leaf (7 days later) Timing**
Goal 2XL 4 fl oz	Goal 2XL 4 fl oz
Chateau 2 oz + Optogen 3.42 fl oz	Goal 2XL 4 fl oz
Goal 2XL 4 fl oz + Optogen 3.42 fl oz	Goal 2XL 4 fl oz
Buctril 2EC 8 fl oz + Optogen 3.42 fl oz	Goal 2XL 4 fl oz
Goal 2XL 4 fl oz + Buctril 2EC 8 fl oz	Chateau 2 oz + Optogen 3.42 fl oz

In the 2023 trial, 9 days after the 3.5-leaf application, all of the treatments resulted in 77-91% control of volunteer potato and ~ 18% crop injury. By 18 days after the 3.5-leaf application, all treatments had 98% control of volunteer potatoes and 5-8% crop injury. None of the novel treatments were any better than Goal 2XL 4 fl oz. However, in 2023 at the end of May, conditions were unusually hot and dry and Goal 2XL appeared to be the only post-emergent herbicide that worked well under these conditions (in all of my trials). In other years that have had more moisture, Chateau, Buctril and Optogen have had much more post-emergent activity. I hope to repeat this trial again this year.

Whether I come up with anything more effective than repeated applications of Goal 2XL or not, the key to best control of volunteer potato in onion is to start burning them back as early as possible.

Greenhouse Jottings May 2024

Judson Reid, Cornell Cooperative Extension, Cornell Vegetable Program

Greenhouses are full of flowers and vegetables this month. Here are some of the current challenges we see on farms around the region.

Gray Mold (Botrytis)

With many tomato growers seeking the early market premiums, there is fruit well on its way to maturity this week. This means large plants, and heavy fruit load at a time of year of high relative humidity. Add baskets of flowering annuals above the tomatoes, and we increase shade and relative humidity further. The spent flowers from these baskets, in these conditions can become 'Botrytis Bombs' on the tomatoes below. This fungus is found naturally in the environment, and becomes destructive in the presence of high humidity and dead or decaying tissue. When there is a full-blown outbreak it can infect healthy tissue of tomatoes, including leaves, stems and fruit.

Overhead baskets shed flowers that become infection points of Botrytis on tomatoes. Moving these baskets out as early as market conditions allow is a good idea to reduce risk. *Photo: Judson Reid, CCE Cornell Vegetable Program*

Reducing relative humidity via ventilation and leaf pruning and plant density are the first steps in managing Botrytis. During spells of cloudy weather, a fungicide application may be the next option to prevent fruit losses. Decree (fenhexamid group 17) has a label for indoor tomatoes (prohibited from field use for Gray Mold) with 0 days pre-harvest. This is a unique fungicide label, that also includes ornamentals.

Some growers are seeking less conventional fungicides such as Regalia, as material derived from plant extract (Giant Knotweed). Regalia does include both tomatoes and bedding plants on the label, at the same application rate as tomatoes. It is important to view this and similar sprays as preventative and not curative materials. Regalia is OMRI (organic materials) listed.

Food Safety News – FDA Publishes Pre-Harvest Agricultural Water Final Rule

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

On May 2, FDA published the long-awaited final rule for agricultural water. This is the water used for irrigation and uses prior to harvest. As expected, a big focus for ag water will be assessing water quality from the water sources using a systems-based approach to identify potential hazards and risk management decision-making.

Produce Safety Regulation (PSR) trainings that many farms that fall under the rule have taken has been focusing on this type of risk assessment analysis. Whether it is for land use, manure handling, animal intrusion, or cleaning and sanitation, assessing where the risks might come from or have come from provides the fundamentals for prevention and management.

Here is a chart that gives a very short overview of the newly revised regulations.

Agricultural Water Assessment

Factor	Description
Agricultural water system(s)	• The location and nature of the water source (for example, whether it is ground water or surface water) • The type of water distribution system (for example, whether it is open or closed to the environment) • The degree to which the system is protected from possible sources of contamination, including: ◦ other users of the water system ◦ animal impacts (such as from grazing animals, working animals, and animal intrusion) ◦ adjacent and nearby land uses related to animal activity, the application of biological soil amendments of animal origin (BSAAOs), or the presence of untreated or improperly treated human waste
Agricultural water practices	• The type of application method (such as overhead sprinkler or spray, drip, furrow, flood, and seepage irrigation) • The time interval between the last direct application of agricultural water and harvest of the covered produce (other than sprouts)
Crop characteristics	• Susceptibility of the covered produce to surface adhesion or internalization of hazards
Environmental conditions	• Frequency of heavy rain or extreme weather events that may impact the agricultural water system (such as by stirring sediments that may contain human pathogens) or that may impact or damage produce. Damage can increase the susceptibility of produce to contamination. • Air temperatures • Sun (UV) exposure
Other relevant factors	• Including, if applicable, results of testing to inform the assessment

==> Compliance Dates: Large Farms – 4/7/2025; Small Farms – 4/6/2026; Very Small Farms – 4/5/2027

This is just a brief overview with more to this revised regulation to come from further FDA guidance. For more information, contact Robert Hadad – rgh26@cornell.edu, 585-739-4065.

We will be holding a grower food safety meeting to update everyone on this and other important parts of the FSMA PSR later in the fall. Stay tuned for that. ●

Onion Update, 5/15/24

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

It's been another good planting season for onions with just enough moisture (not too little or too much), and moderate temperatures with no heatwaves or frosts. Onions have emerged with great stands. The earliest direct seeded onions are at the first true leaf stage and the earliest transplanted onions have 4-5 green leaves. Barley nurse crops are typically killed with WSSA group 1 post-emergent herbicides, Fusilade and Select (and their generics) before barley reaches 6-8 inch tall and begins to tiller. Usually, onions are in various stages of flag-leaf from loop-flag to flag+ (1st true leaf same size or slightly larger than flag leaf) when the barley-kill herbicides are applied. If you have weed escapes in direct seeded onions that are in the flag leaf stage, addition of Goal 2XL 0.25 – 0.5 fl oz/A to barley kill herbicide tank mix may kill or significantly injure/hold back such escapes. Onions in the flag leaf are the most vulnerable to crop injury, and it is my preference that the majority of the onion population have the first true leaf starting to come before Goal 2XL is applied. The Goal can burn the tips of the flags and these tiny seedlings tend to recover quicker when the next leaf in line (1st leaf) is there to push it through. Early applications of low rates of Goal 2XL are important for controlling volunteer potato in onion – see cover article on page 1.

We plan to start the onion scouting program the week of June 3rd, and Muck Donut Hour in Elba is set to start Tuesday, June 4th. ●

Using Row Covers for Pest Management on Urban Farms

Lori Koenick and Judson Reid, CCE Cornell Vegetable Program, and Sam Anderson, CCE Harvest NY

Row covers can be an effective pest management and season extension tool for growers. They act as barrier physically preventing pests—insects, birds, mammals—from reaching their host plant. Row covers are typically a temporary pest management tool designed to be put on and taken off during the growing season, often early in crop cycles. Row covers are fabric barriers placed either directly over crops or supported on frames (creating low tunnels). There are a variety of fabrics available that differ in weight, permeability, durability, and costs.

- Row cover commonly refers to non-woven polyester or polypropylene (poly) materials that vary in weight offering different levels of frost protection that is used for season extension and pest management. This is also referred to as floating row cover.
- Insect netting commonly refers to a mesh netting that is lightweight; permeable to light, water, and air; and is used for pest management (but not season extension). Insect netting is generally a finer mesh, more durable and more expensive than floating row cover.

Cornell Cooperative Extension has engaged in a multi-year research project exploring sustainable pest management approaches on urban farms. Here we share best practices based on our experiences using row covers for pest management on urban farms in New York.

Learn About the Pest's Biology and Life Cycle

When using row cover to manage a specific pest, it is helpful to do some research on the pest's biology and life cycle. Certain pests, like flea beetles and swede midge, overwinter in the soil or nearby the growing area in weeds and plant debris. It is much more effective to use row cover in areas that are not already infested by the pest you are trying to manage. Remember: Row cover is a protective measure; be sure to install it before the pest arrives on the crop!

When using insect netting, it is important to note the pest's size to make sure the mesh "grade" (size) is small enough to exclude your target pest. For example, for a tiny pest such as swede midge with adults being 1.5mm in length, a mesh size of 0.35mm (25 gr/m^2) is recommended.

Think About the Crops

Beyond the pests, you should think about the crops that will be covered: how tall they get, ideal temperature range and pollination. Depending on fabric and weight, row covers can significantly increase temperature of the growing environment and other conditions such as moisture. It is important to scout regularly under the row cover, making note of any pest pressure and environmental conditions such as temperature and moisture. If any pests are present under the row cover, their population can increase rapidly without presence of natural enemies. In addition, weed management can be a challenge under row cover. It's helpful to plan ahead such as mulching before installing the row cover.

Timing

Row covers are applied at time of planting or at time when plants are most vulnerable to a pest. They can be removed at flowering or at a specific time of year or left on for the duration of the season. For crops that require pollination such as cucumbers and peppers, growers typically either remove row cover prior to pollination, regularly open cover to allow pollinators in, or bring in pollinators.

When installing, make sure row cover edges are sealed and secure to the soil. Rock, sandbags, bricks, or burying the fabric edge in the soil can be helpful. If you need to get under the row cover for weeding or harvesting, be sure to reseal the edges afterward. Repair holes in fabric if possible.

Example 1

An urban farm hosted a demonstration trial looking at using row cover to manage flea beetles on collards and eggplant (Figure 1). As flea beetles emerge and start causing damage to seedlings in late spring, row cover (0.5 oz weight) was stretched over 64" wire hoops to form low tunnels at time of planting. Row cover was removed from eggplant plots at the end of June, when plants started to flower, and from collards in early July, when leaves began touching the row cover. It's important to keep fabric from touching the plants as this can cause sunburn and insects can nibble through the mesh. After row cover was removed and as the season progressed, flea beetle damage levels appeared to even out in covered and non-covered plots. Yet despite similar damage levels, farmers qualitatively reported horticultural benefits to plants from row cover. The farmer observed more flowers and darker green foliage on plants under row cover. Plots covered early in the season produced higher yields than plots without row cover.

Thoughts from the farmer: Row cover might not be worth it for every crop—Do you have to consider pollination? How big do the plants get? How often are harvests?

Figure 1. Managing flea beetles on collards and eggplant with row cover demonstration trial. *Photo: Lori Koenick, CCE Cornell Vegetable Program*

continued on page 7

continued from page 6

Example 2

An urban farm hosted a two-year demonstration trial of using insect netting on a caterpillar tunnel (14'x50') for exclusion of cucumber beetles on squash and cucumbers (Figure 2). In both years, insect exclusion netting (ProtekNet Exclusion Netting, FIINTE3, 2x50-47) was applied prior to cucumber beetle emergence. This multiyear trial showed there are trade-offs and there is a learning curve with insect netting.

Both years showed that insect netting appeared to provide sufficient protection of squash and cucumber plants from cucumber beetles. Yet in year one, the farmer reported any time saved in harvesting and sorting was offset by time spent installing the netting, and dealing with pollination and pest issues. The cucumber plants struggled from lack of pollination due to not being a parthenocarpic (not requiring pollination) variety and the exclusion netting further inhibited pollinators from entering the tunnel. To remedy this, the farm moved frames of bees into the tunnel (Figure 3). Pollination thereafter seemed adequate but noticeably lower. Another approach would be to grow parthenocarpic varieties under the netting. Twospotted spider mite (TSSM) damage was noted to be significant in the latter part of the season.

Learning from experience in year two farmers grew parthenocarpic cucumber varieties and released a predatory mite, *Phytoseiulus persimilis*, to manage TSSM damage. In year two, the farmer reported increased crop quantity and quality, length of harvest window, and income from growing cucumbers under exclusion netting.

Thoughts from the farmer: This approach might work better for some crops than others. They would not recommend growing zucchini or summer squash with insect exclusion netting due to pollination concerns and the extra labor did not feel worth it for lack of return in yield. They are interested in trying insect exclusion netting with different crops sharing, "I would like to try growing eggplants using insect exclusion netting to manage flea beetles and tarnish bug. Since eggplant doesn't necessarily need insect pollination to produce, it may be the perfect candidate, especially if you have a good market for eggplant."

Figure 2. Managing cucumber beetles on cucumbers and summer squash with insect exclusion netting demonstration trial. *Photo: Caitlin Tucker*

Figure 3. Inside caterpillar tunnel with insect exclusion netting and plastic rolled up on sides with frames of bees inside to help with pollination. *Photo: Caitlin Tucker*

Interested in Learning More?

Contact project team members Sam Anderson (swa39@cornell.edu) of CCE Harvest NY, Lori Koenick (lbk75@cornell.edu) or Judson Reid (jer11@cornell.edu) of the CCE Cornell Vegetable Program.

This work is funded by a NESARE Research and Education Grant "Sustainable Pest Management for New York Urban Farmers."

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

Asparagus Beetles

Elizabeth Buck, Cornell Cooperative Extension, Cornell Vegetable Program

Mid-May is here and asparagus season is well underway! As you're out harvesting your field, you might be starting to see evidence of a common pest concern: Asparagus Beetle!

What's it look like?

Asparagus beetles come in two types. Spotted asparagus beetles are about ¼ inch long, orange, and have black spots on their backs. They are more-narrow bodied than a ladybug and their midsection and head are less distinctly wide than their spotted backs. Eggs are laid singularly and larvae are creamy to orange. Since larvae feed only on the asparagus fruits (the red berries), and since most modern varieties are nearly all male (excepting open pollinated varieties like Mary Washington) and therefore produce few fruits, it is unlikely that most growers will see spotted asparagus beetle.

The common asparagus beetle is, unsurprisingly, much more common than the spotted asparagus beetle. This is the asparagus beetle that **can defoliate your ferns**. **The cream-to-gray colored, chunky larvae have black head sections and cling with small feet.** Overall, they look like smaller, grayish versions of a Colorado potato beetle larvae. Common asparagus beetle larvae feed on ferns and stems, stripping them of the little leaflets and removing the outer layer of leaf stems. **Adults are colorful with red-brown sides and mid-section, black-blue heads, and white-cream and black patches on their backs.** Adults are ¼ inch long with narrow bodies and get abruptly skinnier as you go from the back to the mid section to the head. The females lay **short rows of rice-shaped, gray eggs that stick straight out** from the spear. Adults feed on the spears. **Their actual bites tend to be small holes or scraped areas, but the asparagus reacts by scarring and developing hooked spears, so there can be definite reduction in marketability.**

Adult Common Asparagus Beetle (on right) and row of freshly laid eggs (on left). *Photo: Elizabeth Buck, CCE Cornell Vegetable Program*

Timing

Common asparagus beetle adults overwinter in/near the asparagus field. The overwintering **adults emerge around the same time as the spears**, so expect to start seeing some as you begin cutting. **The adults will lay eggs shortly after emergence. Eggs take about a week to hatch**, give or take based on how warm it is. After that, **larvae feed for 2 weeks**, then drop to the soil and pupate for 1 week before re-emerging as a new batch of adults. There can be 2-3 generations a year, meaning that **you should expect at least 2 rounds of larval feeding**, with the second round starting about 1 month after the peak of the first one. Each round of feeding will last 3-4 weeks because not all eggs are laid at exactly the same time.

There is a **degree day model for common asparagus beetle development**. The model counts degree days on a base 50/86 (GDD 50/86). For the first generation, **eggs start hatching around 105 GDD, larvae feeding peaks around 250 and lasts until about 405 GDD, and the second generation of adults will peak around 570 GDD**. You can track your local GDD 50/86 online. I particularly like using the Climate Smart Farming tool because it provides highly localized counts (~2 mile grid) based on very trustworthy weather data.

Scouting, Thresholds and Preventative Control

Scout for common asparagus beetles while you harvest. Train your pickers and packers to recognize the eggs. Adults and larvae are most active in the mid-afternoon, so concentrate scouting efforts for these stages in the warmest part of the day.

The control threshold is lowest for the egg stage. Action should be taken when **2% of the spears have eggs on them**. Treatment thresholds for all other stages are based on percent of plants, not percent of spears. **Treat adults at 5-10% of plants infested and larvae when 50-75% of plants** are infested. Treatment is also warranted **when 10% of plants are defoliated**.

Preventative controls include thoroughly mowing or otherwise destroying last year's crop residue well before spears emerge. This will reduce the number of adults able to overwinter and survive until spear emergence. **Frequent harvests (daily if over threshold) that remove all marketable and mechanical cull (misshapen) spears will help reduce pressure by removing eggs from the field.**

Biological Control

Eggs are subject to **biological control by *Tetrastichus asparagi***, a miniscule, metallic green parasitic wasp. The wasp both **eats the eggs and lays eggs in them**. A strong population of beneficial wasps **can control 50-70% of the eggs**. You can promote wasp

continued on page 9

continued from page 8

populations by providing them nectar as an alternative food source during the growing season. They seem to like umbel type flowers. **Larvae may be eaten by immature ladybugs.** Because there is strong potential for biological control, **it is important to scout for beneficials and asparagus beetles, and to use cultural control practices rather than relying primarily on insecticides.**

Chemical Control for Organic and Conventional

If your asparagus beetle population is exceeding the above thresholds and you do not see evidence of active biological control, there are effective sprays that can be used. You must pay close attention to the preharvest interval!

For the spear period: There are no soft insecticide options available. **I don't like recommending the use of Sevin or Lannate**, even though both are labelled and have a 1 day PHI. Both products are carbamates, have high environmental impact and are non-discriminate so they'll hurt your beneficials. Carbamates also have applicator safety concerns, so **if you're going to use them read the label and carefully follow all PPE, handling, and REI instructions**. Much better to use preventative controls and promote beneficials. **Perm-up 3.2 EC at 2-4 fl oz/A is a restricted-use pyrethroid option that also has a 1 day PHI**. It has a better environmental and applicator safety profile, though it is harsh on bees. This is an option for spear or fern, but avoid its use during bloom.

For the fern period: **Radiant (conventional) or Entrust (organic)** are both group 5 materials. Radiant is applied at 4-8 fl oz/A and Entrust at 4-6 oz/A. These both have **60 day PHIs**, so do not use these during harvest. These are the best options for gaining control of generations 2 and 3.

Want more asparagus content? Come to our Asparagus Variety Trial Open House in Batavia from 4-5:30pm on Thursday, May 23! Full details in the Upcoming Events section. ●

Vegetable Crops Susceptible to Seedcorn Maggot

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

Warm temperatures have been conducive to emergence and mating of the first generation of seedcorn maggot flies. Depending on the temperature, the resultant larvae can feed on seeds and seedlings of a variety of crops—**beans, beets, cruciferous crops, cucurbits, onions, peas, spinach, and sweet corn**—for several weeks until they pupate and the next generation begins. Periods of cool, wet weather are conducive to maggot feeding and coupled with slow plant growth can cause significant crop damage.

Scout Fields for Damage

Areas of poor emergence or growth may indicate seedcorn maggot injury. Dig up 5 to 10 seedlings or transplants in a suspect area. Infested seeds and stems are often hollowed out. Seeds may be killed and fail to germinate. Infested seedlings are often weak and die. They may have damaged cotyledons or lack a growing point. Onion plants infested early may not emerge, whereas, later damage to pre-bulbing plants may cause misshapen bulbs from which the foliage tends to grow from the side of the bulb. Finding the maggots in association with the damaged tissue is the best evidence. Full grown seedcorn maggot larvae are yellow-white, tough skinned, legless, about ¼ inch long. They have wedge-shaped heads and two black hooks for feeding.

Attack is most severe when cool, moist spring conditions slow seed germination and growth of young plants. Seedcorn maggot adults emerge from overwintering pupae. Mated females fly close to the ground in search of suitable egg laying spots – preferably near decaying organic material or germinating seed to provide a food source for the newly hatched larvae. Eggs hatch 2-3 days after being laid, and the maggots feed on and burrow into the seed and stems. Maggots develop through larval stages for 2 – 3 weeks depending on the temperature. If damaged plants aren't killed outright, the injury provides wounds for plant pathogens to attack, causing root and stem rots to develop.

Prevention is the key to control, because there are no effective rescue treatments. Here is a list of steps you can take:

- Encourage fast germination by planting high quality seeds in a well prepared seedbed at the minimum depth consistent with soil moisture.
- Handle seeds carefully since cracked seed coats can provide entry points for maggots.
- Using transplants may reduce your risk, but maggots can tunnel in stems of young plants, especially if growth is delayed by cold weather after planting.
- Avoid planting in low, wet areas.
- Incorporate crop residues/cover crops 2 to 3 weeks prior to planting.
- Avoid manure applications right before planting as this attracts egg-laying adults.
- Time early plantings to avoid periods of peak adult emergence and/or plant after the first generation maggots have pupated (typically mid-June) as this generation is often most damaging. Degree day models and other methods for estimating fly emergence are described in the reference from the University of Wisconsin below.
- Row covers may prevent egg laying and subsequent plant damage, but will not protect crops where pupae are already in the soil.
- Use insecticide and fungicide treated seed to protect seeds/seedlings –see the Cornell Vegetable Guidelines for individual crops.
- In-furrow or planter-box insecticide treatments are available in some crops.

MORE INFORMATION can be found at Seedcorn Maggot | Wisconsin Vegetable Entomology ●

2024 Cabbage, Dry Bean, Onion and Processing Vegetable Crops Grants Awarded

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

The following projects were awarded by the respective industry funding programs for applied research and extension in 2024. Sincere thanks to the growers and processors who contributed to these funds and to those who served on the advisory committees/boards to review the project proposals.

NY Cabbage Research and Development Fund

Researcher	Project Title	Award
C. Hoepting	Optimizing Herbicide Weed Control and Crop Safety in Transplanted Cabbage	$11,660
B. Nault, C. Hoepting	Developing New Insecticide Programs to Advance Cabbage Insect Pest Management	$8,245
	TOTAL AWARDS	**$19,905**

NYS Dry Bean Endowment

Researcher	Project Title	Award
P. Griffiths	Breeding, Evaluation and Development of Dry Bean Varieties that are Highly Adapted to NYS Growing Environments and Markets	$11,000
S. Reiners, M. Rosato	2024 Cornell/NYS Dry Bean Cultivar Trial	$9,000
S. Pethybridge, J. Kikkert, M. Lund	Fungicide-Based White Mold Control in Dry Bean in New York	$5,000
M. Lund, M. Zuefle	Determine the Magnitude and Distribution of Western Bean Cutworm and the Risk to Dry Beans, in the Major Production Areas in New York	$3,368
B. Nault	Identifying Effective Management Tactics for Major Pests in Dry Bean	$4,258
	TOTAL AWARDS	**$32,626**

NY Onion Research and Development Program

Researcher	Project Title	Award
B. Nault, A. Taylor, C. Hoepting	Identifying Effective Management Tactics for Onion Maggot, Onion Thrips and IYSV in Onion	$30,215
C. Hoepting, F. Hay	Sustainable Fungicide Use for Managing Stemphylium Leaf Blight in Muck-Grown Onion	$29,000
C. Hoepting	Late-Season Applications of Pre-Emergent Herbicides for Extended Weed Control	$14,700
E. Grundberg	Evaluating Herbicides for Palmer Amaranth Management and Improved Late-Season Pigweed Suppression in Direct Seeded Dry Bulb Onions on Muck Soils	$11,057
E. Grundberg	Screening Biofungicides with Novel Modes of Action for Activity on Stemphylium Leaf Blight	$7,137
	TOTAL AWARDS	**$92,109**

New York Vegetable Research Association and Council (processing vegetables)

Researcher	Project Title	Award
B. Nault, C. Duplais	Improving Management of Major Insect Pests of Sweet Corn and Snap Bean	$33,991
S. Reiners, M. Rosato	2024 Cornell/NYS Processing English Pea, Snap Bean and Sweet Corn Cultivar Trials	$60,594
L. Sosnoskie	Weed Control Research in Vegetables	$19,432
S. Pethybridge, J. Kikkert	Towards a Durable Management Strategy for Foliar Diseases of Processing Carrots in New York (PHASE 2)	$13,759
S. Pethybridge, J. Kikkert	Development of a Preparedness Strategy for Tar Spot of Processing Sweet Corn in New York (PHASE 2)	$13,942
	TOTAL AWARDS	**$141,718**

Upcoming Events

Asparagus Variety Trial Open House

May 23, 2024 (Thursday) | 4:00 pm - 5:30 pm
Fenton's Produce, 3323 Pratt Rd, Batavia, NY 14020

Come see 10 varieties of asparagus! The trial includes new releases, purple, frost avoidant, and expanded disease-resistant varieties. Compare the performance of asparagus planted from home-raised seedlings vs crowns. Participate in a weed control discussion and pick the brains of growers and industry reps!

FREE! Registration requested by noon on May 22 to Elizabeth Buck at 585-406-3419.

Tree Fruit and Small Fruit Twilight Meeting

May 30, 2024 (Thursday) | 6:30 pm - 8:30 pm
Coulter Farms, 3871 N Ridge Rd, Lockport, NY 14094

Join specialists Anya Osatuke, Janet Van Zoeren, Robert Hadad, and Anna Wallis for a conversation about fruit and berry phenology, pest management, food safety and water quality. This series of monthly meetings will examine seasonal changes in tree fruit and berry crops, demonstrate scouting techniques, and discuss integrative pest management solutions to maximize the health and productivity of berry and fruit plantings.

Meetings are held on the last Thursday of every month, from April through July. 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

Future meetings:

- June 27 at Lakeview Apple Orchards, 2336 Barnes Rd, Penn Yan, NY 14527
- July 25 at Simpelaar Fruit Farms, 6018 State Rt 3, Mexico, NY 13114

Indoor Mushroom Cultivation, Post-Harvest Handling, and Food Safety

June 6, 2024 (Thursday) | 9:00 am - 12:00 pm
Flat #12 Mushrooms, 37 Chandler St, Buffalo, NY 14127

This workshop is intended for mushroom producers and those considering mushroom production. Hosted by CCE Wyoming County, the workshop includes a tour and discussion of Flat #12 Mushrooms production process, from substrate to sales, including their food safety plan creation, implementation, and the audit process. Alternative production methods will also be discussed.

Speakers include Flat #12 Mushrooms staff, Lori Koenick and Robert Hadad from the Cornell Vegetable Program, Mark Scapena, NYS Ag & Markets Produce Safety/Food Inspector, and CCE Wyoming Educator Don Gasiewicz.

COST: $10/farm. Register online at https://reg.cce.cornell.edu/IndoorMushroomCultivation_256, by calling 585-786-2251 or email Don Gasiewicz, drg35@cornell.edu by June 2.

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.

Contact Us

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farm food safety, organic, business & marketing, fresh market vegetables

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

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

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

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

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Cornell Cooperative Extension
Cornell Vegetable Program

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