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Control in Onion



Maximizing Pod and Seed Set in Succulent Green Peas in New York

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The Effects of Dry Conditions on Weed Management

Lynn Sosnoskie, Cornell

The current weather patterns we have been/are experiencing could significantly impact crop establishment and development; it could also affect weed control success. Although fewer weed seeds may germinate in response to the hot and dry conditions, weeds that do emerge may be more difficult to manage with post-emergence (POST) herbicides. Moisture-stressed weeds are likely to have thicker cuticles (e.g., the waxy coating on the surface of the leaf), which can inhibit the absorption of foliar-applied products. Additionally, plant architecture can be altered if fewer leaves are produced and/or they start to droop; consequently, herbicide capture and retention may be reduced. When weeds are not actively growing, systemic herbicides (such as glyphosate (WSSA 9), growth regulators (WSSA 4), and grass-specific products (WSSA 1)), may not be effectively translocated to their target sites. Although contact herbicides, like paraguat (WSSA 22), could be less affected by hot and dry conditions, herbicide efficacy may still be reduced if spray droplets dry rapidly (either in the air or on plant surfaces) and sufficient coverage is not achieved.

Advice for Post-Emergence Herbicide Applications

If you are going to make POST herbicide applications, consider the following advice:

- Herbicides are most effective when applied at 70 to 85°F, and to vigorously growing plants. Consider making applications to weeds early in the morning, as opposed to the afternoon and evening, when plants have recovered from the previous day's heat may help improve weed control success.
- Crop plants may also experience more severe injury when herbicides are applied under high temperature conditions; always read the label to become familiar with registrant recommendations with respect to crop safety. Additionally, under hot and dry conditions, crop plants may be much slower to recover from injury, so pay attention to weather forecasts and time treatments accordingly. If crop injury is a significant concern from an herbicide application, consider an evening treatment, when temperatures are falling instead of rising. This may be a safer option, especially when using contact products.
- Treat weeds when they are small (this is a good practice, regardless of weather conditions) to maximize control. Smaller weeds are likely to be more succulent than older and larger ones and may respond better to herbicide applications.
- Use adjuvants wisely. Adjuvants may improve weed control but could also enhance crop injury potential. Always read the label for recommendations regarding adjuvant selection and use under hot and dry conditions.

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: CCE Cornell Vegetable Program 480 North Main Street, Canandaigua, NY 14224 Email: cce-cvp@cornell.edu Web address: cvp.cce.cornell.edu

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The next issue of VegEdge newsletter will be produced on June 14, 2023.

Accumulated Growing Degree Days, 6/5/23

Julie Kikkert, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - June 5, 2023

Location**	2023	2022	2021
Albion	397	469	417
Appleton	371	419	375
Arkport	362	385	349
Bergen	369	437	385
Brocton	417	474	430
Buffalo*	424	462	436
Ceres	319	366	348
Elba	349	419	369
Fairville	373	440	383
Farmington	395	446	404
Fulton*	379	436	370
Geneva	424	465	418
Hammondsport	375	450	392
Hanover	374	463	401
Jamestown	382	393	370
Lodi	465	451	385
Lyndonville	383	346	390
Niagara Falls*	448	486	388
Penn Yan*	438	477	444
Rochester*	419	456	411
Romulus	426	485	422
Sodus	437	486	436
Versailles	394	458	388
Waterport	379	403	361
Williamson	337	421	352
* Aimort stations			·

Airport stations

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

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- Warm temperatures and reduced soil moisture can also affect the performance of residual, pre-emergence (PRE) herbicides. Without precipitation or irrigation, many soil-applied herbicides cannot be effectively activated (e.g., being moved into the soil water solution so that they can be taken up by emerging weed seedlings). Some herbicides can be mechanically incorporated, although product distribution may be uneven in dry soils. Additionally, the potential for photo-degradation or volatilization may be increased under hot and dry conditions, resulting in reduced herbicide efficacy and/or unintended off-target movement. Wind erosion of dry soils could also result in surface-applied products moving off target.
- Cultivation of small weeds (e.g., white thread stage) under dry conditions can be effective for eliminating emerged vegetation and moving some PRE herbicides into the soil. However, it can be very difficult to evenly mix soil-applied herbicides into dry soils.
- Diligent scouting is critical during this time. It is important to understand what weeds are up and what growth stages they are at to best choose a management plan. Pay attention to the evenness of crop development to better understand the potential impacts of herbicide applications on injury development.

Additional Information

https://crops.extension.iastate.edu/cropnews/2021/04/preemergence-herbicides-dry-soils-and-rain https://crops.extension.iastate.edu/blog/bob-hartzler/what%E2%80%99s-happening-my-pre-herbicide-soil-surface https://www.ndsu.edu/agriculture/ag-hub/ag-topics/crop-production/diseases-pests-and-weeds/plant-diseases/herbicide-applications-hot

https://growiwm.org/mechanical-weed-control/

Farmers: What's in Your Weed Seedbank?

Bryan Brown, New York State Integrated Pest Management Program, Cornell

We have funding to analyze weed seedbanks of 50 farms in this region. As a participant, you would get:

- a weed seedbank density and composition analysis of one field at your farm
- photos of identifying characteristics of each species
- a tailored weed management plan that addresses your seedbank based on your current equipment and crop selection
- a bar graph depicting the seedbank density of your farm compared to the other anonymous participating farms
- soil nutrient test results from the sample we collect
- a one-time participation payment of \$550

We would need to collect a half-gallon of your soil in 2023; some info about your crop/weed management; an hour of your time in 2025 to discuss the results; and 5 minutes for a phone evaluation. Indicate your interest in participating as soon as possible by emailing Bryan Brown at <u>bjb342@cornell.edu</u> or leaving a message at 315-787-2432. We're hoping to select a wide range of farms and locations, so **please tell us a bit about your farm**. We'll select participants by July 1. There will be a couple forms to fill out, but we'll try to make it as easy as possible for you.

This work is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number LNE23-470-AWD00001024.

Sweet Corn Pheromone Trap Network Report, 6/6/23

Marion Zuefle, NYS Integrated Pest Management Program, Cornell; https://sweetcorn.nysipm.cornell.edu/

Statewide, six sites reporting this week. European corn borer (ECB)-E and the hybrid were caught at both the Stanley and Hurley sites. ECB-Z was also caught at two sites: Hurley and Tivoli. Corn earworm (CEW) was caught at two sites: Eden and Tivoli. No fall armyworm (FAW), or western bean cutworm (WBC) were caught at any of the reporting sites.

ECB moths are attracted to the most advanced corn, especially fields started under plastic or row cover. In these early plantings, larvae don't feed in the whorl and emerge in the tassel as they do in bare ground corn and the usual scouting and threshold recommendations do not apply. For management recommendations for ECB in early corn, please see "Managing ECB in plastic, row cover, or transplanted sweet corn".

WNY Pheromone Trap Catches: June 6, 2023							
Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	wвс	DD to Date
Batavia (Genesee)	NA	NA	NA	NA	NA	NA	517
Bellona (Yates)	NA	NA	NA	NA	NA	NA	543
Eden (Erie)	0	0	NA	2	0	0	523
Geneva (Ontario)	0	0	1	0	0	0	536
Hamlin (Monroe)	NA	NA	NA	NA	NA	NA	475
Leroy (Genesee)	NA	NA	NA	NA	NA	NA	515
Lyndonville (Orleans)	NA	NA	NA	NA	NA	NA	478
Oswego (Oswego)	NA	NA	NA	NA	NA	NA	433
Panama (Chautauqua)	NA	NA	NA	NA	NA	NA	473
Penn Yan (Yates)	0	0	0	0	NA	NA	530
Portville (Cattaraugus)	NA	NA	NA	NA	NA	NA	537
Ransomville (Niagara)	NA	NA	NA	NA	NA	NA	505
Stanley (Ontario)	1	0	1	0	0	0	498
Williamson (Wayne)	NA	NA	NA	NA	NA	NA	435
ECB: European Corn Borer; CEW	ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean						

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm; DD: Degree Days; NA: not available; DD: Degree Day (base 86/50) accumulation starting April 1 from Climate Smart Farming

CR P Insights

Observations from the Field and Research-Based Recommendations

ASPARAGUS

Asparagus beetle larvae are active and causing some defoliation. Seeing some rust developing after harvest, treat with chlorothalonil or Rally (see Veg Guidelines). Now is the time to do a perennial weed assessment and spot treat. You will not have a good opportunity once the ferns close. – EB

BEETS

<u>Black cutworms</u> are of concern for any young plants in the field through the end of June. <u>Leaf miners</u> 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 don't affect the roots. See page 6 of the <u>June 16, 2021 VegEdge</u> for more information on management. Beets that were planted in high tunnels are beginning to be harvested. Field grown processing table beets that were sown early in the season have nice stands. Later planted beets have more uneven stands and more <u>weed escapes</u> because of the dry weather not activating the herbicides. Timely cultivation, post-emergence herbicides, and hand-weeding may be needed. – JK

CARROTS

Begin <u>leafhopper</u> scouting and management. Insects can build quickly in hot, dry weather. The main concern with leafhoppers is the spread of <u>aster yellows</u>. See page 174 of the 2023 Cornell Vegetable Guidelines for management options. <u>Weed</u> <u>management</u> is also important at this time. – JK

COLE CROPS

Imported cabbage worm eggs and small larvae and flea beetles continue. Starting to see some diamond back moth larvae. Temperature swings have been hard on some plantings. Buttoning is occurring in some fields exposed to excessive cold a few weeks ago. Scorch showing up in others, particularly on tender plants put out under row cover shortly before last week's heat. Drought leading to uneven and poor development post transplant in unirrigated, broad acreage fields. – EB

CUCUMBERS

Striped cucumber beetles are back! - EB

GARLIC

Turn on the water if you haven't already. - EB

LETTUCE AND GREENS

Aphids and slugs continue to plague plantings. Rain will make the slug problem worse especially where organic crop residues are still on the soil surface. If using slug baits, apply with care to avoid getting any onto the leaves where it could get stuck down towards the base of the plant. Follow chemical recommendations found in the Veg Guidelines. – RH

ONIONS

The biggest news of the week is that pre-emergent herbicides, especially Prowl, are not working well under these dry soil conditions. More so than Outlook, Prowl needs to be "rain-activated" by at least a half inch of rain/irrigation water within 5-7 days of application. When it is working properly, Prowl is a powerhouse for controlling Lamb's quarters (LQ) within the onion pre-emergent herbicide program. Thus, LQ escapes are a tell-tale sign of Prowl not working properly. Without rainfall, Prowl will not reach its full potential and irrigating to activate it is an approach that some growers are taking.

Although various methods of applying Goal in onions less than 2-leaf stage has done a great job of burning off and holding back emerged weed seedlings, over the past week, the weeds that were just big enough to escape these early holds have shot up. Fields have partially injured escapes of ragweed, Lamb's quarters and pigweed that are 2-4 inch in size. If these weeds are not controlled now and they grow to exceed 3-4 inch in size, they will likely have to be hand weeded. It has also become apparent that recent post-emergent herbicide applications of Goaltender, Goal 2XL and Chateau were not as effective as usual under these hot and dry conditions, because the weeds have become tough. The good news is that crop injury from these herbicides has also been much less than we normally see at this time of year. The 2-3 leaf stage is the safest for high rates of Goal 2XL 4 fl oz, Buctril 8 fl oz and combinations of the two. Higher water volume (50-60 gpa) and coarse droplet size reduces crop injury, but also lessens weed control. I use 40 gpa with medium droplet size for my post-emergent herbicide sprays, which delivers both good weed control and crop safety. Six-leaf stage is the maximum for Chateau and 5-leaf stage is the maximum for Buctril and crop injury (leaf burn) increases substantially when these herbicides are applied past these crop stages. See article on post-emergent weed control in last week's issue of VegEdge. I have made a lot of post-emergent herbicide sprays to 2.5-3 leaf onions in my trials this week, as have growers, and I'm so curious to learn the results over the next week.

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Direct seeded onions are mostly in 2-leaf to 3-4 leaf stages this week. Transplanting is complete and earliest planted early-maturing varieties are starting to bulb. Not surprisingly in this dry weather, Botrytis leaf blight was not detected in our scouting program this week. Alternatively, onion thrips continue to show up in fields where onions are 3-4 leaf stage and larger. Earliest transplants (7-leaf) had to be treated with Movento last week, the first application of which is triggered by 0.6 to 1.0 thrips per leaf or early bulb swell, whichever comes first. See tips for scouting for onion thrips and article on new insecticide spray decision scheme in this issue of VegEdge. – CH

PEAS

Daytime temperatures above 78°F at flowering and pod fill such as were experienced in our region last week can significantly decrease yields. Continued dry soils are limiting pea growth at this time. Any peas that were planted into compacted soils (think back on that wet period we had in early May) will have smaller root systems to support top growth. Root rot can also limit plant growth. These areas will show up as yellow patches in fields. Another issue with dry soil recently is lack of herbicide activation. Weed scouting and management is critical until the crop begins flowering. The best chance for control is when weeds are small. Basagran and Thistrol don't have any soil residual, so the best time to spray is when the majority of weeds have emerged. Ideally, the first flush of weeds would have one or two leaves and the next flush would be in the cotyledon stage. Keep in mind that rain will stimulate new flushes of weeds. If you have nightshades, pigweed or mustard in your field, a better choice may be Raptor or Pursuit. Basagran will only control hairy nightshade, whereas Raptor and Pursuit will control both hairy and eastern black nightshade. Poast, Assure II/Targa and Select Max all provide good to excellent control of the most prevalent annual grasses in NY. – JK

<u>Black aphids</u> (*Aphis fabae*) on peas. It seems with the onset of the couple of cool spells experienced between the hot spells, some pea and fava bean plantings have had some black aphids settle it. These pests are slow moving and congregate in masses on stems and undersides of leaves. The real problem comes when they get up onto new leaf buds, flower/ pod stems or into the flowers. Their feeding usually causes the flowers to abort. Natural enemies can knock down the populations and higher temperatures seem to slow down their activity. A heavy rain can also reduce numbers. – RH

PEPPERS

High levels of aphids are to be found on recently transplanted pepper crops. There are several species of aphids that attack pepper, and identification can be a challenge in the field. However, species ID shouldn't deter management. Since aphids are so damaging to peppers, farmers often choose to manage immediately with sprays. For organic production Molt-X (azidiractin) and Mycotrol (*Beauvaria bassiana*) are viable options if applied multiple times in succession. Conventional materials include Fulfill (pymetrozine) and Beleaf (flonicamid), both with 0 D PHI and intended to be used early during infestation (now). Less labor and expense than sprays, natural enemies will often bring an aphid outbreak under control. Look for 'mummies'—hollow brown shells of parasitized aphids—as evidence of natural enemies at work. To increase a population of aphids, repeat sprays of pyrethroids will do the trick. This class of insecticides (3a) will increase aphid populations and knock out beneficial insects. This is costly and environmentally unsound. – JR



Black aphids are seen on the stem and around flowers and flower buds. *Photo: R. Hadad, CCE*



Hollow brown shells of parasitized aphids are evidence of natural enemies at work. *Photo: J. Reid, CCE*

POTATOES

Encountered Colorado potato beetle larvae (1st and 2nd instar) on this week. These slimy pests kill best when they are little. Scout your volunteers and any solanaceous weeds near last year's potato field for an early indication of your pressure and insect stage. – EB

SNAP BEANS

Dry soils and lack of herbicide activation continue to make snap bean planting a challenge. See the article on herbicide use during dry weather on page 1. – JK

Slug damage on emerging seedlings. These small plants can't sustain much feeding damage at such an early stage. - RH

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Berry Scouting Update: Insect Activity

Anya Osatuke, Western NY Berry Specialist, CCE Harvest NY

Blueberries

Cranberry and cherry fruitworm adults were found in pheromone traps on June 5 in the Finger Lakes. Pheromone traps are useful for identifying periods of peak activity; though the pests cause similar damage, separate traps must be used for each. Adults will lay eggs on green, immature blueberry fruitlets after petal fall. The larva of both species resembles a small green worm that weaves clusters of blueberry fruits together, eats the berries and deposits frass. In the absence of pheromone traps, growers can scout their blueberry fields for clusters of blueberries that have been woven together.



Left: Adult cherry fruitworms are grayish-black moths around 5mm in length. Right: Adult cranberry fruitworms are larger (11mm in length) and have an attractive brownish-tan mottling. *Photos: John C. Wise, Ryan VanderPoppen, and Rufus Isaacs, Michigan State University*

Spongy moths have not met our expectations this year, which is to say, the alarming emergence of spongy moth larvae was quickly followed by a decline in their populations. The culprit? A virus, or a fungus, or the shock from the cold temperatures in late May. Any survivors should be managed with sprays or hand-picked off bushes before they can lay eggs for next year.



Maturing spongy moth caterpillars develop bright-colored spots on their hairy bodies. *Photo: Anya Osatuke, CCE Harvest NY*

Strawberries

Cyclamen mites have been a recurring issue in strawberry plantings. This year, we've observed cyclamen mites in a new planting of 'Cabot'. Cyclamen mites are more difficult to manage than spider mites, the most common mite pest in strawberry—they are sensitive to different products, and the tendency of cyclamen mites to burrow into the newest growth of strawberries makes it hard for sprays to reach them.

Belowground, **root weevils and strawberry rootworms** can cause symptoms that resemble phytophthora root rot (also known as red stele): reddening leaves and stunted plant growth. Cutting the crowns of symptomatic plants, however, will reveal

tunnels from the grubs.



Deformed and stunted leaves in strawberry may be an indication of cyclamen mite feeding. *Photo: Esther Kibbe*



Root weevil tunnel in strawberry crown. *Photo: Anya Osatuke, CCE Harvest NY*

Raspberries and Blackberries

Spotted wing drosophila monitoring efforts are underway, but this pest has not yet been spotted in Upstate New York this year. We encourage growers interested in monitoring to set up traps this week in raspberries, blackberries, and blueberries, as the pest will attack green fruit.



Spotted wing drosophila males trapped on a red sticky trap used for monitoring. *Photo: Juliet Carroll, NYS IPM Program*

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Who knew **spotted lanternfly** love brambles? Although populations are only starting to hitchhike into Upstate New York, urban gardens in New York City have observed spotted lanternfly nymphs feeding on blackberry plants with gusto.

Resources and Further Reading

Fruitworm Factsheet | John C. Wise, Ryan VanderPoppen, Rufus Isaacs | n.d.

<u>The Spongy Moth: Outbreaks and Natural History</u> | Connecticut Department of Energy and Environmental Protection | 2022

<u>Managing cyclamen mite in strawberries</u> | Ontario Ministry of Agriculture, Food and Rural Affairs | 2022

<u>Understanding Strawberry Root Problems That Impact Berry Farm Profitability:</u> <u>Results of Eastern NY Survey</u> | Laura McDermott, Elston Shields, James O'Connell | 2019

<u>Spotted Wing Drosophila</u> | New York State Integrative Pest Management | 2022 <u>Spotted Lanternfly</u> | Cornell College of Agriculture and Life Sciences | n.d.



Spotted lanternfly nymphs feeding on a blackberry bush in May in New York City. *Photo: Makela Elvy, CCE Harvest NY*

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TOMATOES

In high tunnels this spring we have seen an uptick in cases of foliar oedema. Plant cells that experience moisture fluctuations can expand, rupture and then scarify. This creates a blister-like symptom on the leaf that will decrease photosynthesis. The conditions that contribute to oedema include high ambient relative humidity, higher root zone moisture and low light. To reduce this disorder avoid excess irrigation, particularly during cool, low light conditions. Frequent greenhouse ventilation helps with relative humidity, even during cool spells. Oedema can lead to increase Botrytis gray mold. – JR



Symptoms of oedema on the upper leaf surface can be confusing, and similar to several diseases. *Photo: J. Reid, CCE*

Further cool weather can lead to nutrient deficiencies in tomatoes. Phosphorus deficiency in particular is influenced by cool root zone temps. Visible deficiency symptoms include purpling of leaves. Since phosphorus is not mobile in solution, roots must make physical contact for absorption. During cool spring conditions we often see poor uptake, even though there may be an abundance of phosphorus in the soil. Additional applications of high phosphorus fertilizers, such as 12-48-8, can help, if the material is applied directly to the root zone. However, excess phosphorus applications can lead to long term nutrient imbalances, that are not easily corrected, particularly in high tunnels. Thus, waiting out a cold spell is often the preferred approach. – JR



Blister-like symptoms on the leaf from oedema will decrease photosynthesis. *Photo: J. Reid, CCE*



Purpling of leaves can indicate phosphorus deficiency. If this continues, signifigant yield loss will occur. *Photo: J. Reid, CCE*

Insecticide Programs to Consider for Onion Thrips Control in Onion in 2023

Brian Nault, Cornell AgriTech, and Christy Hoepting, CCE Cornell Vegetable Program; last updated June 5, 2023

Guidelines for using insecticides to manage onion thrips in onion fields in the Great Lakes region continue to evolve as we gain more experience using them under various situations. The following guidelines provide multiple scenarios for managing onion thrips over the season. The major factors used to create these guidelines are efficacy of products under varying levels of thrips pressure and the desire to follow insecticide resistance management principles.

Disclaimer: There are other insecticides labeled for use on onion for onion thrips management that also may be effective, but that are not included in these guidelines. These guidelines have been developed based on our personal experience assessing the efficacy of many different products in commercial onion fields or by assessing their performance after application by New York onion growers in their fields.

General Information

- Insecticides that are preferred for onion thrips control should be considered before following these 2023 guidelines. For example, guidelines that include insecticides that no longer provide effective thrips control on your farm should be avoided.
- The same insecticide should not be used more than twice consecutively, typically applied one week apart, in the same field during the season. If the thrips population is below the action threshold, skip an application that week and resume scouting the following week. If the thrips population exceeds the action threshold the following week, select a product belonging to a different class of chemistry than the previous product applied in that field.
- Efficacy of most insecticides are enhanced when a) co-applied with a surfactant, b) not tank mixed with chlorothalonil • containing fungicide, c) applied at a moderate to high gallonage (e.g., 20 - 60 gpa), d) applied at a moderate pressure (40-60 psi), and e) applied using twin flat fan nozzles.

How to Use the 2023 Onion Thrips Management Guidelines for Onion

A flow chart diagram of the following insecticide spray decisions for managing onion thrips is available at CVP.CCE.CORNELL.EDU.

Start with Movento® or Senstar[™] Insecticide – Begin management of onion thrips using two sequential applications of 1. Movento® (spirotetramat) at 5 fl oz per acre. Movento® is one of the best products to use early in the season for controlling thrips because it kills larvae and may cause females to lay fewer eggs. Movento® is systemic even when applied to foliage, so it moves to new foliage tight in the neck to kill thrips that might not come in contact with other products. In many cases, two weeks of thrips control occurs after the second application of Movento®. Because Movento® is not as effective after bulbing (e.g., 1-2 inch bulbs), make sure that Movento[®] is applied before onions are bulbing or when the thrips population reaches at least 0.6 thrips per leaf.

An alternative to Movento[®] is Senstar[™] Insecticide, which also contains spirotetramat (the active ingredient on Movento) plus pyriproxyfen (generally used to control whiteflies). While onions are not infested with whiteflies, this product is as effective against onion thrips as Movento[®]. The Senstar[™] label indicates 14 days between applications; however, research has shown that performance of spirotetramat is best when applications are spaced 7-10 days apart. Therefore, starting with Senstar[™] and following with Movento[®] 7-10 days later would be a viable option.

- After Movento[®], follow action thresholds and rotate insecticide classes After Movento[®] and/or Senstar[™] Insecticide 2. applications, there are several options. Knowledge about efficacy of insecticides used previously to manage onion thrips and the relative size of the thrips population will help inform which option might be best. Based on previous research, action thresholds are determined by how well the insecticide performs against thrips at different infestation levels. In many research trials conducted in commercial onion fields in New York from 2015-2021, action threshold-based insecticide programs offered the same level of thrips control as weekly insecticide programs, but the action threshold-based insecticide programs used an average of 2.3 fewer insecticide applications as compared to the weekly insecticide program.
- 3. The following insecticide options should be considered based on the thrips pressure. See "Scouting Tips for Onion Thrips in Onions" on page 9 to learn how to calculate the number of onion thrips per leaf.

Option A: Low thrips pressure (0.6 – 1 thrips per leaf):

Agri-Mek® SC (and generics) is an affordable option that is effective for controlling low to moderate populations of onion thrips when applied at a threshold of 0.6 to 1 per leaf. Also, because Agri-Mek® SC has a 30-day pre-harvest interval, it should be considered as an option earlier in the season. If Agri-Mek® SC has underperformed on your farm in recent years, select one of the other options below. If you are not sure how well Agri-Mek® SC performs on your farm and it performs poorly after one application, consider switching to Minecto® Pro instead of making another application of Agri-Mek® SC. Minecto® Pro is typically more effective than Agri-Mek® SC when thrips infestations are moderate to high (see more below).

A tank mix of Lannate® LV (48 fl oz per acre) and Warrior II with Zeon Technology® (1.92 fl oz/acre) (and generics or other pyrethroids) is an alternative option that also can be effective for controlling low to moderate populations of onion thrips when applied at a threshold of 0.6 to 1 per leaf. Because this option is the weakest choice for thrips management, its use has been recommended near the end of the season when the desire is to hold a thrips population at a non-economically damaging level until the crop lodges and thrips damage is no longer a concern.

Option B: Moderate thrips pressure (1.1 – 2.0 thrips per leaf):

Minecto® Pro, a pre-mix of Agri-mek[®] SC (abamectin) and Exirel[®] (cyantraniliprole), is a good option for a moderate thrips infestation. The cost of Minecto[®] Pro may be higher than some other options (i.e. Agri-Mek[®] SC), but Minecto[®] Pro will likely offer superior control of thrips. Consider applying Minecto[®] Pro at 7 - 10 fl oz per acre twice early to mid-season because it has a 30-day pre-harvest interval, just like Agri-Mek[®] SC. **Because Minecto[®] Pro contains abamectin and cyantraniliprole, neither Agri-Mek[®] SC nor Exirel[®] can be used in that field for the remainder of the season because this would violate the label and insecticide resistance management plans. This can be a serious limitation of using Minecto[®] Pro in a season-long thrips management program when high thrips infestations span most of the summer.**

Option C: Moderate to high thrips pressure (1.5 $- \ge 4.0$ thrips per leaf):

There are two excellent options, **Exirel®** and **Radiant® SC**, that should be considered for managing moderate to high populations of thrips. The cost of Exirel® and Radiant® SC will likely be higher than other insecticide options (i.e., Agri-Mek® SC and Minecto® Pro), but worth the extra cost because of their effectiveness against higher populations of thrips.

- If the thrips infestation averages 1.5 2.5 thrips per leaf: Exirel[®] should be used at a low to moderate rate (13.5 16 fl oz/acre) and Radiant[®] SC at a moderate to high rate (8 10 fl oz/acre).
- If the thrips infestation averages 2.6 ≥4 thrips per leaf, consider Exirel® at a high rate (20.5 fl oz/acre). Only in fields where Radiant® SC is known to be highly effective should it be considered as a viable option at this higher threshold. Use Radiant® SC at the same moderate to high rate of 8 10 fl oz/acre. In fields where the high rate of Radiant® SC no longer effectively controls high populations of thrips, consider using Exirel®.

2023 Insecticides and Action Thresholds Recommended for Onion Thrips Management in Onion

Trade Name	Active Ingredient	Recommended rate/acre (Maximum rate/crop/season)	IRAC ¹ Group	Action Threshold (Average number of thrips per leaf)
Movento®	spirotetramat	5 fl oz (Max: 10 fl oz)	23	0.6 – 1.0; or pre-bulbing ²
Senstar™³	spirotetramat + pyriproxyfen	10 fl oz (Max: 20 fl oz)	23 + 7C	0.6 – 1.0; or pre-bulbing ²
Agri-Mek [®] SC (and generics)	abamectin	3.5 fl oz (Max: 12.25 fl oz)	6	0.6 - 1.0
Minecto [®] Pro	abamectin + cyantraniliprole	7.5 – 10 fl oz (Max: 20 fl oz)	6 28	1.1 – 2.0
Exirel®	cyantraniliprole	13.5 – 20.5 fl oz (Max: 61.6 fl oz)	28	1.5 – 2.5: 13.5 – 16 fl oz 2.6 - ≥4.0: 20.5 fl oz
Radiant [®] SC	spinetoram	8-10 fl oz (Max: 30 fl oz)	5	1.5 – ≥4.04
Warrior II w/ Zeon Technology (and generics or other pyrethroids)	lambda-cyhalothrin	1.92 fl oz (Max: 15.36 fl oz)	3A	0.6 – 1.0 Only use in tank mix with Lannate LV
Lannate [®] LV	methomyl	48 fl oz (Max: 12 pt)	1A	0.6 – 1.0 Only use in tank mix with a pyrethroid like lambda-cyhalothrin

1 IRAC: Insecticide Resistance Action Committee - Mode of Action

2 Movento and Senstar do not work very well when the onion plant is bulbing. To take advantage of this highly effective chemistry, make the first application either at threshold or at the pre-bulbing crop stage, whichever comes first.

3 Senstar requires 14 days between applications, whereas Movento applications can be spaced 7-10 days apart

4 **Radiant** should be used at a moderate to high rate (8 – 10 fl oz/acre) when population averages 1.5 - 2.5 thrips per leaf; for populations known to be highly susceptible to Radiant SC, the same rate can be used at a threshold of $2.6 - \ge 4.0$ per leaf.

Scouting Tips for Onion Thrips in Onions

Christy Hoepting, CCE Cornell Vegetable Program

To find the first thrips of the season, look deep into the leaf axils. Inspect 20 to 30 plants and count the total number of onion thrips (OT) per plant and divide by the average number of leaves per plant to get the number of OT per leaf. Thrips feeding causes silvery streaking along the leaves. If you can already see thrips feeding damage that is also a good indication that it is time to spray. If there is a lot of feeding damage, than you likely missed a timely first spray.



Adult onion thrips are the first thrips of the season. They are tiny brown, sliver-like insects up to 2 mm in length. *Photo by C. Hoepting, CCE Cornell Vegetable Program*



Onion thrips nymphs are yellow and 0.5 to 1.2 mm in length. *Photo by Whitney Cranshaw, Colorado State University.*



Subtle streaking along leaves is an early indication of early onion thrips feedling. This plant has reached the spray threshold. *Photo by C. Hoepting, CCE CVP*

Maximizing Pod and Seed Set in Succulent Green Peas in New York

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

Pea crop yields depend on the genetic makeup of the variety and the growth environment. Generally, the number of pods per plant and berries per pod is determined by the variety. However, adverse factors during production can reduce yield.

Flowering, Pod and Seed Set

Most varieties initiate flowers regardless of day length but will flower earlier under long days. Flower buds form approximately 20 days before they become visible (Davies and Muehlbauer, 2020). Flowers arise from leaf axils and new flowers are produced as the stem grows (an indeterminant growth habit). The node at first bloom and duration of flowering differs with variety. Pollination often occurs before the flowers are fully open.

After pollination, the pods grow longer and wider. The pod walls thicken and inflate to form a hollow envelope. The action of two specific genes reduce lignification of the pods and result in edible podded varieties (Davies and Muehlbauer, 2020). Growth of the berries within the pods of shelled peas begins about 15 days after flowering.

Environmental Factors

Peas that mature during the coolest part of the season, as determined by planting date and variety, will have the highest yields. Appropriate plant spacing, good stand establishment, fertility and weed control are important (see the 2023 Cornell Vegetable Guidelines).

The most detrimental factors that affect yield are:

- 1. <u>Soil compaction</u> can reduce crop establishment and result in smaller plants with shallow, less branched root systems. Peas in compacted soils are more susceptible to root rot pathogens. Moreover, the plants will be smaller and have less opportunity for flower and pod production.
- 2. <u>High temperatures</u>: Peas grow best when temperatures do not exceed 68 to 70°F. Daytime temperatures above 78°F at flowering and pod fill will significantly decrease yields. Additionally, high temperatures near harvest will mature the peas quickly and shorten the harvest window.
- 3. <u>Water stress</u>: Peas may require as much as 0.25 inches of water per day when flowering and setting pods. Under high temperatures, maximum yields are reported when soil moisture content is kept at 60% of field capacity from emergence to just prior to flowering, and at least 90% field capacity during flowering (Davies and Muehlbauer, 2020). Peas are sensitive to waterlogging just before flowering and during pod fill.

Genetics: Choose the Variety

Seed catalogs will indicate several of the following genetic traits that affect yield:

- Market or season (early, mid, late): Later maturing varieties often have higher yield potential because they can set more nodes with pods and more peas per pod.
- Approximate days to maturity (heat units base 40°F): use these to plan successive harvest dates.
- Leaf type: Standard (wild-type) or afila (semi-leafless). The afila type has many tendrils instead of leaflets. The tendrils hold the plant upright so there is a more open plant structure with little shading of the pods and higher yield potential.
- Node at first bloom
- Pods per node
- Average sieve size (pea berry size class)
- Peas (or berries) per pod

Recent Variety Trial Reports

Annual processing pea variety trial reports

Fresh market pea variety trials in 2020 and 2021

References

Davies, P.J. and F.J. Muehlbauer. 2020. Peas. In: Physiology of Vegetable Crops 2nd edition (eds H.C. Wien and H. Stützel), CAB International. Pp. 287-316.



Upcoming Events



Vegetable Pest & Cultural Management Field Meetings for Auction Growers

Ontario Produce Auction Meeting June 27, 2023 (Tuesday) A. Zimmerman Farm, Rushville, NY

Finger Lakes Produce Auction Meeting July 12, 2023 (Wednesday) Finger Lakes Produce Auction, 3691 NY-14A, Penn Yan

Seneca Produce Auction Meeting August 2, 2023 (Wednesday) Seneca Produce Auction, 2295 Yerkes Rd, Romulus, NY

These meetings will feature pest management in fresh market vegetables in both field and greenhouse (high tunnel) vegetables, primarily for those growing for wholesale auction. A hands-on demonstration of weed, insect and disease identification in vegetables including management options such as inter-row cover crops, grafting and, where appropriate, spray options will be used to educate growers. Judson Reid, Senior Extension Associate with the Cornell Vegetable Program, along with CCE staff will instruct participants and facilitate peer-based learning. Details on each topic will focus on field observations at the farm. DEC recertification credits will be offered (1.75 credits in categories 10, 1a, 23, 24). Exact time of the evening meetings will be released soon. For more information, contact Judson Reid at 585-313-8912.

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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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