



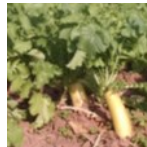
Two spotted spider mites have been found on field grown eggplant, sweet corn, beans, and even zucchini. Learn how to control them in your crop!

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WBC trap catches continue to increase and WBC egg masses were found in several fields this week. Scout your fields!

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If you've harvested early vegetables or wheat, and soil moisture permits, consider planting a cover crop. Read about some mid-late summer options.

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Conventional growers can apply post-emergent herbicides in Cole crops to control the flush of weeds that resulted from the rains last week.

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Cornell University
Cooperative Extension
Cornell Vegetable Program

Photo: Darcy Telenko

Two Spotted Spider Mites on Field Grown Produce

Judson Reid, CCE Cornell Vegetable Program

In the July 16 issue of VegEdge we highlighted the impact of Two Spotted Spider Mite on indoor crops, with a warning that field crops were at high risk due to hot, dry conditions. Unfortunately this past week, we saw that prediction realized in a wide range of crops; eggplant, sweet corn, beans, and even zucchini.

Spider mites overwinter in the soil and on weeds. A mild winter followed by continuous vegetable cropping is a recipe for infestation. Clean transplants, rotation and early control with appropriate sprays are the next management steps. **Mites are not insects, so most insecticides will not control them.** We suggest miticides with broad labels, short PHI's and rotating modes of action.



Two spotted spider mites and damage on sweet corn. *Photo: Judson Reid, CVP*

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VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension regional agriculture team, serving 12 counties in Western New York.

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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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.



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The next issue of VegEdge will be produced on August 10, 2016.



\$25 CVP enrollee, includes steak dinner. For more information, visit contact Darcy Telenko at 716-697-4965 or visit <http://cvp.cce.cornell.edu/event.php?id=565>

Material	PHI (days)	Comments
Acramite (bifenazate)	3	Limited to one application per season
Portal XLO (fenpyroximate)	1-cucumber, beans, tomato 3-melon	Toxic to fish and aquatic life.
Capture EC (bifenthrin)	1-Sweet Corn, 3-Cucurbits, Eggplant-9, Pepper-7, Tomato-1	Toxic to fish and aquatic life.

Organic? Some growers report success releasing predatory mites in field plantings of eggplant. With a lack of effective OMRI spray materials, prevention is even more important.



Two spotted spider mite damage on snap bean. Photo: Judson Reid, CVP



Two spotted spider mite damage on eggplant. Photo: J. Reid, CVP

WNY Sweet Corn Trap Network Report, 8/2/16

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

Twenty sites reported this week for Western NY. European corn borer (ECB)-E was caught at nine sites and ECB-Z was caught at seven sites this week. Corn earworm (CEW) reported at three sites, all high enough to require a 4, 5, or 6 day spray schedule (see table at bottom of post). Fall armyworm (FAW) was caught at ten sites. Western bean cutworm (WBC) numbers continue to increase with 16 sites reporting trap catches.

WBC trap catches continue to increase and WBC egg masses were found in several fields this week. Scout all fields that are in the whorl or early tassel stage. WBC will usually lay eggs on the upper side of the top 1-3 leaves of pre-tassel corn, close to the leaf base. After tasseling has finished WBC seek out younger corn or dry beans. The egg mass will become purple in color approximately 24 hours before egg hatch.

Degree-day accumulations in relation to percent moth emergence (beginning May 1, base 50°F)	
Accumulated Degree-days	% Moth Emergence
1319	25%
1422	50%
1536	75%

Percent WBC moth emergence based on degree day accumulation, data from University of Nebraska

WNY Pheromone Trap Catches: August 2, 2016

Location	ECB-E	ECB-Z	CEW	FAW	WBC	DD to Date
Baldwinsville (Onondaga)	22	15	0	1	30	1530
Batavia (Genesee)	7	7	46	0	37	1161
Belfast	1	4	0	0	3	1328
Bellona (Yates)	1	0	0	1	22	1615
Eden (Erie)	2	0	0	0	93	1398
Farmington (Ontario)	0	0	0	1	1	1431
Hamlin (Monroe)	NA	NA	NA	NA	NA	1462
LeRoy (Genesee)	NA	NA	NA	NA	NA	1427
Pavilion	0	1	0	1	60	1169
Penn Yan (Yates)	2	1	0	0	63	1576
Ransomville (Niagara)	0	0	0	4	41	1588
Seneca Castle (Ontario)	11	5	0	0	13	1479
Spencerport (Monroe)	0	4	3	3	2	1610
Waterport (Orleans)	NA	NA	NA	NA	NA	1466
Williamson (Wayne)	0	0	0	0	0	1384

ECB - European Corn Borer

CEW - Corn Earworm

FAW - Fall Armyworm

WBC - Western Bean Cutworm

NA - not available

DD - Degree Day (modified base 50F) accumulation

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

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

CROP INSIGHTS

Many insects love this dry weather. Leafhoppers, tarnished plant bugs, flea beetles are still substantial in pockets around the region. Spider mites are out in full force in most every type of vegetables (see Judson's cover article). Colorado potato beetles are having a field day in eggplants and other solanaceous crops.

CUCURBITS

DOWNY MILDEW CONFIRMED IN ERIE, NIAGARA COUNTIES THIS WEEK!!! All of western NY is under a Moderate Risk based on the weather forecast. Be on the lookout and if you suspect downy mildew please contact us to verify. Five to seven-day spray programs should be implemented in western NY. Remember to alternate between chemical classes and apply systemic fungicides (Ranman, Zampro, Forum, Revus, Phostrol, Presidio, Tanos, Zing!, Curzate, Previcur Flex) with protectants (chlorothalonil, copper, mancozeb). Powdery mildew continues to increase in cucumber and squash planting around the region. Symptoms of bacteria wilt are also starting to appear – this disease is spread by both the stripped and spotted cucumber beetle. If you had high populations earlier in the season when the plants were small, it is probably the time the plants were infected. Unfortunately, at this point there is not much that can be done.

Blights and wilts have been noted in a few areas. The best options to manage wilts caused by *Fusarium* and *Verticillium* include planting resistant varieties, three to five year rotations away from cucurbits depending on the specific pathogen, deep plowing immediately after harvest will help initiate decomposition and hasten destruction of infested crop debris. It is recommended to plow a second time before planting a cover crop. Clean equipment as movement of infested soil can spread these diseases to between fields. Topsin M is the only fungicide available to help control belly rots caused by *Fusarium*.

Gummy Stem blight is suspected in multiple watermelon plantings across Western New York and the Southern Tier. Symptoms vary with crop and variety, but water soaked lesions, leaf curl and wilt have been common on affected farms. An orange-red-black exudate on stems has been observed as well. This disease is most severe on watermelon and cantaloupe but can also affect cucumber and pumpkin. Wounding, cucumber beetle and aphid feeding, as well as powdery mildew infection make plants more susceptible. Crop failure may occur immediately before harvest as fruit fills/matures. The disease can overwinter in the soil on debris for 2 years and may also be seed borne. When infecting fruit, for some reason, the disease changes its name to Black Rot. Pristine (0D PHI), Switch (1D PHI), and Bravo (1D PHI) are conventional options that are best used as preventative management. Copper products are the best option for organic control; with rotation/cover crops strongly recommended for all cucurbit farms.



Gummy stem blight of Jade Star watermelon.
Photos: J. Reid, CVP

DRY BEANS

Leafhopper and Western Bean Cutworm Alert! The potato leafhopper (PLH) population is increasing on all host crops across the state. PLH is building on dry beans, so get out and scout your fields! The Cruiser seed treatment has worn off and the hot, dry weather favors high PLH populations. Adults can easily be seen by brushing the top of the foliage, and the very tiny flightless nymphs can be seen on leaf undersides. A hand lens may be needed. PLH feeding causes leaf curling, yellowing, bronzing and death, known as "hopperburn". Many conventional insecticides are effective for control. See the *2016 Cornell Pest Management Guidelines for Vegetables* for details. Organic growers can use azadirachtin or Azera.

The cumulative Western bean cutworm (WBC) moth catch has exceeded 100 moths/trap in the majority of the dry bean sites. The Riga and Attica traps caught 581 and 353 moths, respectively. Peak catch has likely been reached in the region. The moth catch is likely to remain high for another week. **All dry bean growers should begin scouting pods for WBC feeding early next week**, and should continue to scout for the next two to three weeks, especially if damage has been seen in recent years. If pod feeding is seen then a single insecticide spray is recommended. Pyrethroid insecticides are effective. Organic growers can use Entrust. The larvae will not be seen since they drop to the soil during the day, only feeding on beans at night. They remain on corn plants near the ear all day long.

ONIONS

It's going to be a tough week for onions in this heat. The crop has been racking up heat units and is finishing off ahead of time, at the expense of bulb size. Although long-season varieties are holding on well. Non-irrigated crops are under stress while the others are addicted to irrigation; root systems are weak. Onion thrips pressure is sky-rocketing, especially in Elba, but has also increased in Wayne. Stem-phyllium leaf blight (SLB) has increased everywhere and Iris yellow spot virus (IYSV) is lighting up in Elba. More on IYSV and SLB identification next week. See July 6th issue of *VegEdge* for SLB management. See last week's issue of *VegEdge* for onion thrips management.

Downy mildew (DM) was reported in Wayne County this week. Although it is not expected that DM is going to rage in this heat, a Ridomil Gold product is recommended to shut down this disease. Additionally, an SLB fungicide should be included in the tank mix, such as Luna Tranquility, Merivon, Inspire Super, Quadris Top or Scala + Rovral. **At this time, it is recommended that growers include a protectant for downy mildew (DM) in the tank mix.** Protectants for DM include mancozeb (Manzate, Dithane, etc.), phosphorous acid products (FRAC group 33; e.g. Phostrol, Rampart, etc.) or strobilurin fungicides (FRAC group 11) such as Quadris Top (3 & 11) or Merivon (7 & 11). So, if you are using Merivon or Quadris Top for SLB, there should be no need to add mancozeb to the tank mix at this time. If you are using Luna Tranquility (7 & 9), Inspire Super (3 & 9) or Scala (9) + Rovral (E3) for example, then mancozeb or phosphorous acid should be added to the tank mix. This protectant program does not prevent DM from occurring, but it helps to alleviate the spread and severity.

continued on next page

See you on Thursday, August 4th at Mortellaro's red barn for the Elba Muck Onion Twilight Meeting. It will be packed with the latest research results in pest management. 2.0 DEC credits.

POTATOES

Potatoes are suffering from the drought on lighter mineral soils and shallower muck, where irrigation hasn't been used regularly since it first got dry. Quite a few growers have the very early variety Envol, developed in Quebec, this year. The foliage is rapidly maturing, prematurely in some cases where the soil has remained dry. Growers are harvesting early potatoes for market. See the Late Blight section.

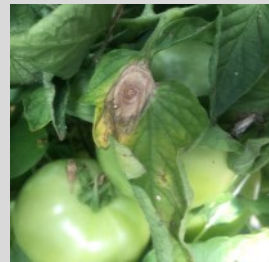
The population of potato leafhoppers (PLH) is increasing on host crops. All potato growers, including those who used Cruiser or other systemic insecticide at planting/on seed, should be scouting for the very tiny flightless PLH nymphs on the undersides of leaves. The threshold for treatment is just 15 tiny nymphs per 50 large compound leaves. Potato yield can be hurt before "hopperburn" shows up. Leafhopper feeding can cause leaf curling, yellowing, bronzing and death. See Brian Nault's table "Pesticides for Managing Arthropod Pests of Potato" with conventional and organic PLH control materials at: http://rvpadmin.cce.cornell.edu/uploads/doc_422.pdf

A field of Snowden from Maine seed in the CVP region was confirmed to have bacterial blackleg Dickeya, or *Dickeya dianthicola*, this past week. The disease continues to develop in some previously confirmed fields. Yukon Gold from New Brunswick, Canada, seed was confirmed with Dickeya out of state this past week. For photos of the disease on foliage and tubers go to: http://cvp.cce.cornell.edu/submission.php?id=345&crumb=crops|crops|potatoes|crop*24

We are interested in information from the North American Certified Seed Potato Health Certificate, obtainable from the seed producer, for seed lots affected. For more information contact Carol MacNeil at crm6@cornell.edu or 585-313-8796 (cell/text).

POTATOES & TOMATOES

We continue to find low incidence of early blight on tomato around the region. Keep a close watch on both your tomatoes and potatoes as this disease is appearing where dew and rainfall have occurred over the past week.



Early blight on tomato.
Photo: G. Seigworth, CVP

PROCESSING CROPS

Heat and drought stress continue to be seen in all processing crops. The incidence of disease has been low thus far this season. However, even passing storms can create plant damage and moisture enough to get diseases going. Furthermore, high dew points that typically occur in August and September can create the moisture needed for plant disease to develop. Be on the watch for bacterial diseases in beans and carefully consider fungicide sprays for white and gray mold in flowering beans based on field history, soil moisture, and weather conditions.

Insects have generally been abundant this year. I continue to find active Western flower thrips in snap bean plants in some areas. Thrips are generally more of a problem in southern states where they can cause pod scarring. They are of most concern at flowering and will be controlled by insecticides typically used for European corn borer control. Potato leaf hoppers, tarnished plant bugs, spider mites, pea aphids, Japanese beetles, and red-headed flea beetles are all being reported on multiple vegetable and field crops at this time.

Western Bean Cutworm (WBC) is being trapped at high numbers in various sites in WNY and processing sweet corn fields should be monitored. Some trapping sites are in conjunction with the NYS IPM Sweet Corn Trap Network which we report in VegEdge each week. The report and many pest ID and scouting resources are also available on-line. In addition, there are a large number of traps as part of a dry bean project and field corn network. Reports from these sites are provided each week in the NYS IPM Field Crops Report available at <https://blogs.cornell.edu/ipmwpr/>.

SWEET CORN

Wildlife continues to wreak havoc in sweet corn – raccoons, birds, squirrels and others. Darcy Telenko is collecting damage estimates, please e-mail or call her if you are willing to share your issues this season dep10@cornell.edu or 716-697-4965.

Mid-late Summer Cover Crops

Carol MacNeil, CCE Cornell Vegetable Program (info from T. Björkman, Cornell)

While many areas are still too dry to consider seeding cover crops other areas have had rain. If you've harvested early vegetables or wheat, and soil moisture permits, give strong consideration to planting a cover crop. Research has shown that consistent use of cover crops improves soil health and the soil's capacity to support good cash crop growth. Cover crops can crowd out weeds, loosen the soil and improve soil aggregation, scavenge leftover ni-

trogen, and legumes can "grow" nitrogen for next year's cash crop. Drilling results in the best results but broadcasting is a good alternative if shallow incorporation of the seed is done immediately.

Forage radish – Planting no later than Aug 15-20 is strongly recommended to ensure the growth of large plants with deep roots. The tap root can grow very deep, breaking through compaction, though the fleshy root does not. For-

age radish and turnip are not effective for bio-fumigation. Good varieties of forage radish include Cedar Meadow Forage Radish, Tillage Radish and Groundhog. If forage radish follows vegetables it often has sufficient nitrogen (N), but after wheat apply 50 lbs/A N for best growth. Loosen the soil surface. When radish is planted alone drill 6-8 lb/A. Roll lightly after seeding. An alternative to applying N is to cut the radish seeding rate back to a third and

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seed with the standard rate of red clover as an N source. Another tactic is to seed a third rate of radish with 40 lbs/A wheat or rye, and 50 lbs N/acre. After the forage radish dies the wheat or rye will carry the N over until your cash crop needs it. After mild winters radish survivors should be killed in early spring before seeds set. Do not use in close rotation with crucifer crops.

Medium red clover – When planted from mid-August through mid-September red clover can grow a substantial amount of the N that your cash crop will need next season. A good stand of red clover that gets established by late August, with good growing conditions, can produce 80 – 100 lbs/A of N. Most of the N is fixed during May, however. Seed at 15 lb/A with an inoculant for red clover. You can broadcast onto prepared ground or sow it with a grass seeder. A wheat nurse crop seeded at 40 lb/acre is recommended. The wheat keeps down

weeds during clover's slow establishment. Volunteer wheat in a recently harvested field should work. Another benefit: The grass's N uptake stimulates the clover to produce more N. Warning: Red clover is very difficult to kill chemically in the spring, though it can be buried with tillage.

Oats planted from mid-August to mid-September will grow some organic matter, crowd out weeds, and provide winter-killed ground cover that's easily incorporated for early spring vegetables. Oats are also useful as a nurse crop with legumes. Oats establish rather easily. For seeding after vegetables, or when using oats as a nurse crop with legumes, no nitrogen fertilizer is required. Drill 80-110 lb/A oats; broadcast 110-140 lb/A. Increase the rate 10% in late September. When seeding oats with a legume use a half rate of oats. *(Note: Some growers are seeding half or third rates of small grain cover crops for ease of manage-*

ment in the spring. CRM, CVP)

Annual ryegrass planted from late August to mid-September will overwinter, producing a dense sod which improves soil aggregation, reduces surface soil compaction, and picks up and carries over any leftover N. Ryegrass grows rapidly and is good for fall weed suppression. There is often enough N left in the soil after vegetables. If there is not, 30 lb/A of N can double fall growth of the ryegrass. If the soil surface is moist, broadcasting without covering is effective. Seed ryegrass at 10 lb/A if drilled into reasonably moist soil, and 15 lb/A in dryer soil. Broadcasting requires 15-20 lb/A. Ryegrass can be very difficult to kill chemically in the spring.

For seed sources, costs, and more details on these and many other cover crops go to the Cover Crops for Vegetable Growers website at: <http://covercrops.cals.cornell.edu/> ●

Late Blight Risk Jumps

Carol MacNeil and John Gibbons, CCE Cornell Vegetable Program

Late blight (LB) risk has jumped this past week with the high relative humidity (RH), warm temperatures, and the rainfall, though often just a trace. A 5 to 7 day spray interval would have been needed to fully protect the crop in the majority of weather station sites.

According to Cornell plant pathologist Bill Fry's Late Blight Decision Support System (DSS)/BlightPro, the threshold for the next fungicide spray is:

- 27 blight units (BU) after use of copper, Phostrol or Prophyt
- 30 BUs after chlorothalonil, mancozeb, metiram, Curzate, Forum, Tanos, Reason, Quadris, Cabrio, Gem or Super Tin
- 34 BUs after Gavel, Zing or Zoxium
- 37 BUs after Previcur Flex, Presidio, Ranman and Revus/Top
- 45 BUs after mefenoxam/metalaxyl (if the LB strain is sensitive).

LB develops more quickly the warmer it is during the high RH period. LB development only stops over 80°F. For example, at Penn Yan 38 blight units (BU) accumulated. Just 0.15" of rain fell, but the relative humidity (RH) was high for 8 to 17 hours nearly every night, and the nights were warm, 65–70°F. There was one new confirmation of LB on potato in MI this past week. There were no other LB confirmations in the East or Midwest.

If you have a DSS account its worth it to use it. Just input your last fungicide spray. If you don't have a DSS account it would be worth it to try the NYS IPM NEWA's lite version at: <http://newa.cornell.edu/index.php?page=potato-diseases> Note that it assumes the use of chlorothalonil. For more information, contact Carol MacNeil at 585-313-8796 or crm6@cornell.edu. ●

Late Blight Risk Chart, 8/2/16¹

Location ¹	Blight Units ² 7/27-8/02	Blight Units ³ 8/03-8/05	Location ¹	Blight Units ² 7/27-8/02	Blight Units ³ 8/03-8/05
Appleton	30	11	Lodi	36	17
Baldwinsville	24	17	Lyndonville	23	18
Bergen	17	11	Medina	23	12
Buffalo	12	5	Niagara Falls	12	10
Ceres	39	18	Penn Yan	38	18
Elba	0	6	Rochester	13	12
Fairville	18	6	Sodus	23	12
Farmington	17	12	Versailles	30	12
Gainesville	49	18	Wellsville	39	12
Geneva	23	17	Williamson	23	12
Kendall	23	12	Wolcott	18	12

¹ Assuming: last fungicide spray 1 week ago; residual like chlorothalonil; susceptible variety

² Past week's Simcast Blight Units (BU) (Threshold = 30 BUs)

³ Three day predicted Simcast Blight Units

Biological Control through Beneficial Insects

Robert Hadad, CCE Cornell Vegetable Program

There has been new interest in establishing habitat for beneficial insects. One in particular has been protecting native pollinators using diverse plantings of habitat plants. Attracting predatory insects and animals is another method of enhancing the environment around the farm to assist with reductions of pests.

On a recent farm visit we were on, it was interesting, for a change, to see beneficial insects at work in the field. In an onion planting, a little thrip damage was noticed but on closer inspection it was found that a native beneficial insect, Orius, was at work feeding on the thrips. Allowing for beneficial habitat can provide entry points into field plots. On this particular farm, vegetables were planted in long bed rows with a mowed cover crop in the walkways.

On another farm, strips of buckwheat had been planted by the farmer between every three rows of potatoes. Colorado potato beetle pressure was initially high but after beneficial insects, mainly the spined soldier bugs soon were feeding on the CPB larvae. The larvae numbers soon were reduced below threshold for spraying saving the grower a little money. Just be sure to mow down the buckwheat before half the flowers open to prevent seed formation.

Another good reason for establishing flowering plants near production fields is to offer areas for native pollinators. Mixed flower or wildflower plantings are important. A number of vegetable seed companies are now offering these mixes. Buckwheat also offers a great nectar resource for bees. Be sure to keep the plots away from spray drift.

The practice of establishing beneficial insect habitat and using this method of biocontrol is complex and requires some time and commitment. Here is the Introduction to a publication from ATTRA that will provide some basic information.

From **Farmscaping to Enhance Biological Control**, Pest Management Systems Guide, ATTRA, December 2000, <http://extension.oregonstate.edu/sorec/sites/default/files/farmscaping.pdf>

Introduction

Farmscaping is a whole-farm, ecological approach to pest management. It can be defined as the use of hedgerows, insectary plants, cover crops, and water reservoirs to attract and support populations of beneficial organisms such as insects, bats, and birds of prey. In some respects, beneficial organisms should be considered and managed as mini-livestock. The larger varieties of livestock are healthier and reproduce more readily when provided an adequate and nutritious diet.

Likewise, mini-livestock require adequate supplies of nectar, pollen, and herbivorous insects and mites as food to sustain and increase their populations. The best source of these foods is flowering plants. Flowering plants are particularly important to adults of the wasp and fly families, which require nectar and pollen sources in order to reproduce the immature larval stages that parasitize or prey on insect pests.

However, using a random selection of flowering plants to increase the biodiversity of a farm may favor pest populations over beneficial organisms. It is important to identify those plants, planting situations, and management practices that best support populations of beneficial organisms.

Farmscaping, like other components of sustainable agriculture, requires more knowledge and management skill on the part of the grower than conventional pest management. The investment in knowledge and management may yield such benefits as:

- A reduction in pesticide use
- Savings in pesticide costs
- Reduced risk of chemical residues on farm products
- A safer farm environment and more on-farm wildlife.

However, farmscaping is not a magical cure for pest problems. It is simply an ecological approach to pest management that can be an integral component of a bio-intensive integrated pest management (IPM) program. The use of farmscaping to increase beneficial organism habitat must be understood and practiced within the context of overall farm management goals. For example, when considering planting a perennial hedgerow the producer should evaluate the various costs and benefits likely to be associated with a hedgerow. Growers with farmscaping experience will likely be the best source for this kind of information. There are probably as many approaches to farmscaping as there are farmers. Some growers, after observing a cover crop harboring beneficial insects, plant strips of it in or around their crop fields. The advantages of this kind of approach are:

- It is simple to implement
- It is often very effective
- The farmer can modify the system after observing the results.

Problems arise when the beneficial insect habitat, unbeknownst to the grower, also harbors pest species.

Continue reading this Guide online at <http://extension.oregonstate.edu/sorec/sites/default/files/farmscaping.pdf> or contact Robert Hadad at 585-739-4065 to have a print copy mailed to you. 📄



Buckwheat strips being grown on a farm to attract beneficial insects. Photo: R. Hadad, CVP

Weeds Escaping You? Timely Herbicide Application Can Save Time and Labor in Hand-weeding Later

Christy Hoepting, CCE Cornell Vegetable Program

Last week's soaking rains resulted in a tremendous flush of weeds in a field of newly planted cabbage (Fig. 1). Although this field could be cultivated, there will still be weeds remaining within the row that will need to be hoed and hand weeded, which is labor-intensive. Alternatively, a conventional grower could apply post-emergent herbicides to control this weed problem. Goaltender and Stinger are labeled for selected Cole crops for post-emergent control of broadleaf weeds and products containing the active ingredients sethoxydim (e.g. tradename Poast) and clethodim (e.g. tradename Select Max) are labeled for post-emergent grass control.

Goaltender

- Available in New York as a Special Local Needs Label (<http://132.236.168.99/ppds/518814.pdf>).
- Labeled only on **broccoli, cabbage and cauliflower**, direct-seeded or transplanted.
- **Weeds controlled:** Provides excellent control of pigweed, good control of lambsquarters, purslane, Eastern black nightshade and Shepherd's purse.
- **Weeds it does not control well:** It is weak on ragweed, smartweed and mustards.
- **Crop Stage:** Apply to a transplanted crop after a minimum of 2 weeks after planting, and to direct seeded crops with at least 4 true leaves.
- **Rates:** 4 to 6 fl oz per acre per application. Up to 8 fl oz for a directed spray. A directed spray is applied in such a manner as to minimize contact with crop leaves.
- **Maximum usage:** Do not apply more than 8 fl oz per acre per season. If a pre-transplant treatment has previously been made, the combination of pre-plant and post-transplant treatments must not exceed 16 fl oz per acre per season.
- **Pre-harvest interval (PHI):** 35 days
- **Notes:** Do not add any adjuvant, liquid fertilizer or pesticides to the spray mixture. Avoid application if heavy rainfall is predicted to occur within 24 hours after planned application.
- **Potential injury:** Can cause leaf cupping, crinkling, stunting or necrotic lesions when applied during cool and cloudy weather. Injury is usually limited to treated leaves with new leaves emerging undamaged. Sometimes delay in maturity and yield reduction may result.
- **Be aware that application of Goaltender within a couple days of applying a spray containing an adjuvant may also result in injury – see article**



Figure 1. Rainfall triggers germination in new cabbage planting triggering a carpet of weed seedlings. A timely application of Goaltender and/or Stinger while the weeds are less than 2 inches should clean up the broadleaves nicely. Grass escapes can be cleaned up with a later application of Select. Photo: C. Hoepting, CVP

Stinger

- **Labeled on most Cole crops** including broccoli, Brussels sprouts, cabbage, cauliflower, cavalo broccoli, Chinese broccoli (gai lan), Chinese cabbage (napa), Chinese mustard cabbage (gai choy), rapini, collards, kale, mizuna, mustard greens, kohlrabi (all crop group 5).
- **Weeds controlled:** Provides excellent control of ragweed, galingsoga and thistles, and good control of nightshades.
- **Crop Stage:** not specified
- **Rates:** 4 to 8 fl oz per acre per application, up to a total of 12 fl oz per acre per season. Cornell studies have found that multiple applications of Stinger work better than a single high rate. For example, Stinger 8 fl oz followed by Stinger 4 fl oz 2 weeks later provided better control of Perennial sow thistle compared to Stinger 12 fl oz all at once.
- **Pre-harvest interval (PHI):** 30 days
- **Notes:** Be aware of crop rotation restrictions: 10.5 months for onions and 18 months for peas and potatoes. See label for other non-vegetable crop rotation restrictions.

Due to the issues with phytotoxicity when Goaltender is tank mixed with adjuvants or is applied within 3 days of a spray containing adjuvants, it would be best to not tank mix Goaltender with pesticides that are EC formulations such as Select-type (active ingredient cethoxydim) herbicides. Instead, apply grass herbicides or Stinger 7 days later. Herbicides work best when applied to actively growing weeds. 🍅

Caution When Applying Goaltender in Cole Crops

Christy Hoepting, CCE Cornell Vegetable Program

To avoid risk of crop injury, the Goaltender label for broccoli, cabbage and cauliflower states to not tank mix it with any adjuvant, liquid fertilizer or pesticides. A few years ago, significant crop injury resulted when an application of Goaltender 6 fl oz was applied by itself to broccoli one day after an application of Coragen + Nufilm-P (adjuvant) was made. Cornell studies in 2014 and 2015 showed that minor to moderate injury occurred when Goaltender was applied within 3 days of application of adjuvants with and without Coragen. When Goaltender was applied within 6 days of application of adjuvants with and without Coragen, significant injury did not occur (Fig. 1). Of the adjuvants tested, crop oil concentrate (COC) resulted in significantly the highest level of injury when proceeded by application of Goaltender; LI700 (a non-ionic surfactant) also resulted in significant injury, while Nufilm -P was not significantly different from no adjuvant (Fig. 2). The addition of Coragen did not increase the level of injury beyond that of which the adjuvant caused alone. Plants grew out of any crop injury within 20 days and there was no effect on yield. Cabbage was much less affected than broccoli. As a consequence, **it is recommended that application of Goaltender be separated by at least 7 days from any application that contains an adjuvant.** To be extra cautious, applications with products that are EC formulations or that contain petroleum distillates should also be avoided within 7 days of applying Goaltender.



Goaltender 6 fl oz applied
3 days after adjuvants



Goaltender 6 fl oz applied
6 days after adjuvants



Figure 1. Application of Goaltender 6 fl oz 3 days after application of adjuvants resulted in minor to moderate crop injury in broccoli (left side). Application of Goaltender 6 days after application of adjuvants was minor (right side). COC and LI700 (not shown) caused significantly more injury than Nufilm-P or no adjuvant (Bellinder and Hoepting, 2014). Photos: C. Hoepting, CVP

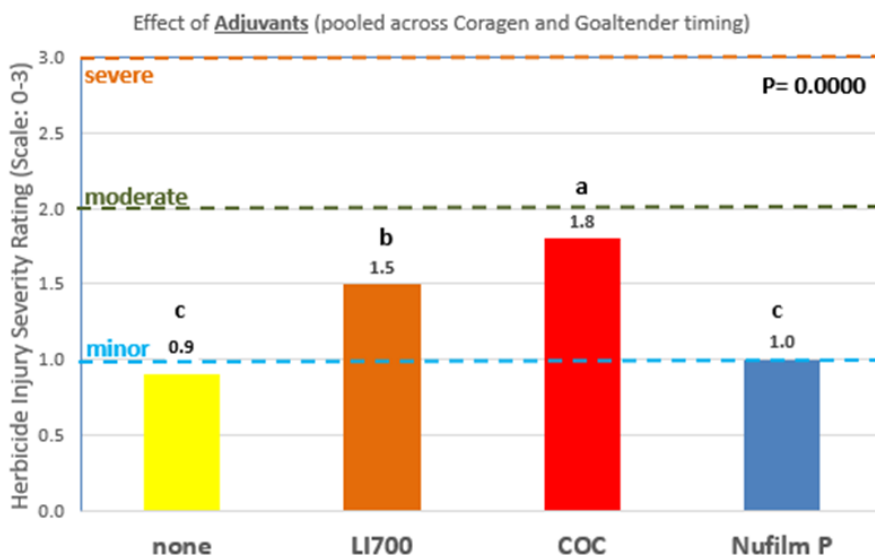


Figure 2. Application of Goaltender proceeding application of adjuvants with and without Coragen resulted in highest injury with crop oil concentrate followed by LI700 (nonionic surfactant). Nufilm-P did not result in injury beyond the minor injury caused by Goaltender (Bellinder & Hoepting, 2014). ●

UPCOMING EVENTS *view all Cornell Vegetable Program upcoming events at cvp.cce.cornell.edu*

Vegetable Pest and Cultural Management Field Meeting - Niagara County

August 8, 2016 | 6:00 PM - 8:00 PM

Robinson Farms, 3681 North Ridge Rd, Lockport, NY 14094

A hands-on demonstration of weed, insect and disease identification in fresh market vegetables including management options such as inter-row cover crops, grafting and, where appropriate, spray options. FREE! Contact Darcy Telenko for more info at 716-697-4965.

Cover Crops for Soil Health and Crop Success at Empire Farm Days

August 9-11, 2016

2016 Empire Farm Days, Rodman Lott & Son Farms, Seneca Falls, NY 13148



Join us for the 3 day program starting each day at the Soil Health Center building. There will be soil/water demonstrations comparing reduced till, conventional till and cover cropping practices. The Cornell Vegetable Program will have an exhibit and a list of Cooperative Extension staff around the state who can advise vegetable growers on improving soil health.

August 9, 2016 | 9:30 am - Cover Crop Interseeding | 10:30 am - Interseeder and Cover Crops in the Field | 11:30 am - Farmer Panel

August 10, 2016 | 9:30 am - Soil Biology and Its Impact on Soil Health and Crop Production | 10:30 am - Cover Crops in the Field | 11:30 am - Managing Reduced Tillage and Cover Crops - Farmer Panel

August 11, 2016 | 9:30 am - Utilizing Winter Grain Cover Crops for Forage | 10:30 am - Cover Crops in the Field | 11:30 am - Winter Grain Cover Crops for Forage - Farmer Panel

For more details on the Soil Health Seminar contact Paul Salon, Northeast Soil Health Specialist, USDA-NRCS, 607-562-8404 x103, or paul.salon@ny.usda.gov For more on Empire Farms Days go to: <http://empirefarmdays.com/> or call (877) 697-7837. *Organized by the NYS Soil Health Working Group, made up of USDA-NRCS and SWCD reps, Cornell/Cooperative Extension, and growers.*

Organic Dry Bean Discussion Group Meeting

August 12, 2016 | 1:00 PM - 4:00 PM

Klaas, Mary-Howell and Peter Martens farm, 1443 Ridge Rd, Penn Yan, NY 14527



There will be viewing and discussion of the dry bean crop, cultivation for dry beans, the benefits of certain cover crops ahead of dry beans, and the potential for organic reduced tillage. There will be ample time for open discussion regarding organic dry beans. Preregister by August 9 by contacting Carol MacNeil at crm6@cornell.edu or 585-313-8796. Cold juice, water and soda will be available.

Summer Vegetable and Cut Flower Grower Twilight Meeting

August 15, 2016 | 5:30 PM - 7:00 PM flower session | 7:00 PM - 8:30 PM vegetable session

Werner's Farm, 8427 West Henrietta Rd, Rush, NY 14543



The evening will begin with a field walk through Jeff Werner's Cut Flower field, with a discussion about the "How to" of Cut Flower farming. The discussion includes a question and answer format led by Dana Dore-Hadad, a Cut Flower Farmer and Floral Designer, and Michael Wells, Ornamentals Product Manager for Harris Seeds. Immediately followed by a crop walk and vegetable discussion on insects, diseases, and production by Judson Reid and Robert Hadad, fresh market specialists with the Cornell Vegetable Program.

DEC credits available 2.5 credits for the whole meeting. For more information, contact Robert Hadad, rgh26@cornell.edu, 585-739-4065.

Finger Lakes Soil Health Discussion Group Meeting

August 18, 2016 | 5:00 PM - 8:15 PM

Hemdale Farms, 2800 Orleans Rd, Seneca Castle, NY 14547



Why Hemdale Farms switched to zone tillage, and how they've been successful doing it for field crops and vegetables will be described. Equipment will be available for viewing. The many niches available for cover crop planting, and the benefits of different cover crops will be covered by Thomas Bjorkman, Cornell. There will be ample time for open group discussion on reduced tillage, cover crops, and all aspects of improving soil health. This event is FREE! DEC credits will be available. Preregistration by NOON on August 15 required. Contact Carol MacNeil at crm6@cornell.edu or 585-313-8796. A light supper will be provided.

Fresh Market Potato Varieties, Disease & Insect Management Twilight Meeting

August 25, 2016 | 5:00 PM - 8:15 PM

Williams Farms potato field, Decker Rd, Marion, NY 14505



Growers will have a chance to review the fresh market varieties and Cornell breeding lines, including four European/Canadian varieties, in Walter DeJong's, Cornell on-farm trial. There will be an update on the new, very serious seed-borne bacterial disease, Blackleg Dickeya, including how to identify it, and how to reduce the risk of getting it next year, as well as updates on late blight, potato insect management and the development of a quick test for determining nematode levels in soils before planting.

1.5 DEC recertification credits will be available in categories 1a, 10, 21, and 23. Dinner provided at 7:30 PM. Cost: FREE if enrolled in the Cornell Vegetable Program; \$10 for all others. Pre-register by contacting Carol MacNeil, crm6@cornell.edu or 585-313-8796 by August 22 so that we have a count for dinner. *We appreciate the generous support of Bayer CropScience for sponsoring this event.*

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 7/26 – 8/1/16

Location	Rainfall (inch)		Temp (°F)	
	Week	Month July	Max	Min
Albion	0.47	1.24	89	62
Appleton, North	0.20	1.18	88	62
Baldwinsville	0.22	1.03	88	61
Buffalo*	0.00	1.80	84	65
Butler	0.00	1.55	90	61
Ceres	0.41	2.00	86	55
Elba	0.08	1.95	82	58
Farmington	0.00	1.85	89	59
Gainesville	0.05	NA	81	56
Geneva	0.02	1.01	85	60
Lodi	0.68	1.84	93	59
Niagara Falls*	1.11	3.08	88	67
Penn Yan*	0.16	1.76	87	61
Rochester*	0.01	1.22	89	63
Romulus	0.81	1.11	88	61
Silver Creek	0.27	2.20	84	65
Sodus	0.00	NA	88	59
Versailles	0.22	2.35	85	58
Williamson	0.00	1.16	89	59

Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 – August 1, 2016

Location	2016	2015	2014
Albion	1601	1557	1426
Appleton, North	1394	1327	1242
Baldwinsville	1570	1560	1504
Buffalo	1629	1593	1466
Butler	1550	1573	1508
Ceres	1266	1383	1283
Elba	1176	1203	1160
Farmington	1464	1494	1425
Gainesville	1184	1246	1134
Geneva	1516	1522	1462
Lodi	1677	1665	1600
Niagara Falls	1749	1478	1403
Penn Yan	1620	1617	1556
Rochester	1650	1657	1559
Romulus	1530	1551	1501
Silver Creek	1473	1447	1387
Sodus	1375	1383	1376
Versailles	1438	1464	1376
Williamson	1403	1416	1372

* Airport stations

** Data from other station/airport sites is at: <http://newa.cornell.edu/> Weather Data, Daily Summary and Degree Days.

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



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