

Watermelon seedlings are emerging but then the cotyledons yellow and die

off. What is causing this to happen?

PAGE 1



It's a bad year for flea beetles. Want to know more about this pest? We've produced a short

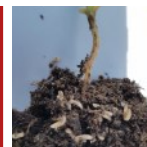
new video on flea beetles called Better Know a Pest: Flea Beetles.

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2016 post-emergent herbicide trials in muck-grown onions focused on ragweed and yellow nutsedge in direct-seeded onions. See our trial highlights.

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Seed corn maggot, onion maggot, and cabbage maggot are showing up across the state.

Learn more about these differences between them.

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Volume 13 | Issue 7 | May 24, 2017



Cornell University
Cooperative Extension
Cornell Vegetable Program

Photo: Christy Hoepting

Watermelon Transplants Struggling?

Robert Hadad, CCE Cornell Vegetable Program

We've received several reports of problems from farms growing their own watermelon transplants this year. Some varieties have had many seedlings emerge then the cotyledons yellow then die off. Leaf spots and lesions have also been seen. After ruling out other possibilities, the most probable cause of the problem might be seed borne disease(s).

When purchasing watermelon seeds from most seed companies, a waiver is usually required to be signed by the grower acknowledging that the seed could be contaminated with several seed borne diseases and the company isn't responsible. Gummy stem blight, anthracnose, bacterial fruit blotch, and cucumber green mottle mosaic virus are the most common.

Starting off with a preventative fungicide program



Diseased watermelon cotyledons (left) and leaf spots on leaves (right).
Photos: Robert Hadad, CCE Cornell Vegetable Program

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VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension regional agriculture team, serving 13 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.

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 Parr at aep63@cornell.edu. Total readership varies but averages 700 readers.

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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 May 31, 2017.



It's proving to be a bad year for flea beetles. These pests are going after brassicas and potatoes ferociously.

We've created a short video to give you a bit more information about flea beetles. You can find the video on our YouTube channel at <https://youtu.be/11LNyfQnCB4>.

labeled for greenhouse use is a start. Getting the transplants that show no symptoms into the ground and treating them with fungicides could help with a couple of these problems. ●

Three National Programs Available to Track Major Vegetable Diseases

Darcy Telenko, CCE Cornell Vegetable Program

Our team is receiving regular updates from three national programs designed to help monitor and predict major diseases on vegetable crops in the United States. These include:

1) **USAblight** – A national project on tomato and potato late blight in the United States (<https://usablight.org/>). This is a national website that acts as an information portal. You can report disease occurrences, submit a sample online, observe disease occurrence maps, and sign up for text disease alerts. There are also useful links to a decision support system, and information about identification and management of the disease. Late blight has been confirmed on potato and tomato in southwestern Florida (Fig. 1). In all reported cases, the pathogen genotype was US-23.

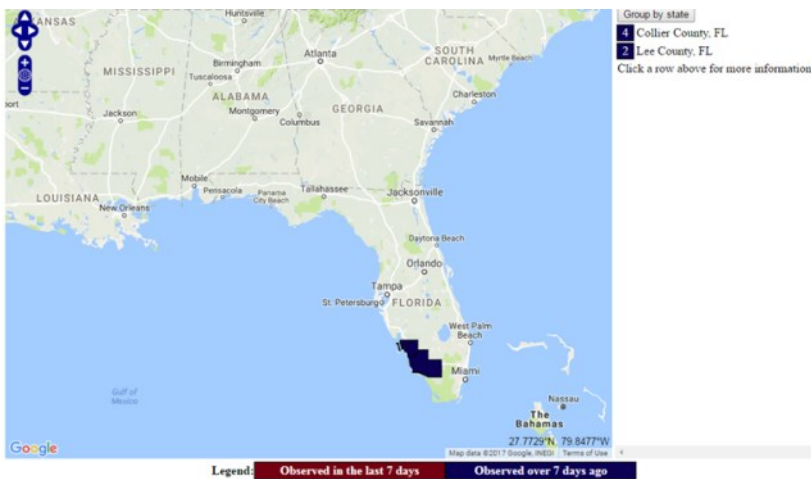
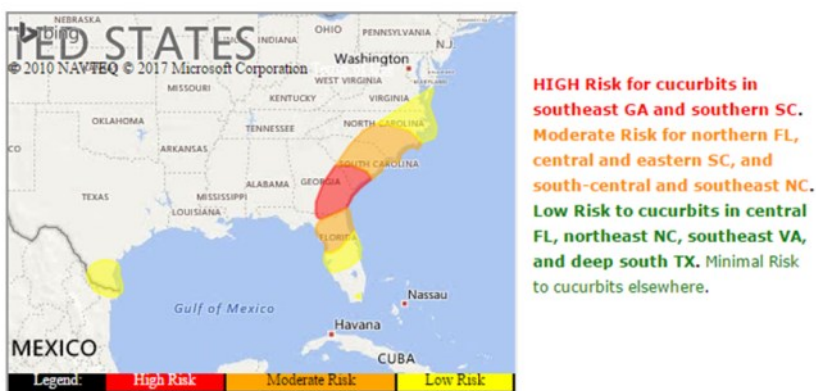


Figure 1: Source: <https://usablight.org/map>

2) **Cucurbit Downy Mildew Forecasting** – A national program that provides updates on cucurbit downy mildew (CDM). The website (<http://cdm.ipmpipe.org/>) provides up to date reports/maps of CDM, forecasts and risk assessment of where the epidemic will spread, information on detection, and control recommendations. On May 15, 2017, downy mildew was confirmed on cucumber from Echols Co. Georgia. Other recent reports of the disease have come from western Florida on cantaloupe, watermelon, and cucumber. The current forecast has low risk for our area, while moderate risks in Florida, Georgia and Texas (Fig. 2).

Risk prediction map for Day 2: Tuesday, May 23



Forecaster: TK at NCSU for the Cucurbit ipmPIPE - 2017

Figure 2: The Cucurbit Downy Mildew forecast for Tuesday, May 23. Source: <http://cdm.ipmpipe.org/current-forecast>

3) **iPiPE** – Integrated Pest Information Platform for Extension and Education is a program that works to enhance integrated pest management (IPM) and food security. It promotes collaboration and sharing of pest (pathogen, insect, or weed) observations between researchers, extension agents, growers and their consultants. Growers, extension agents, and experienced interns enter pest data into iPiPE's online database via a computer or any smart device. The data then organized and displayed on interactive maps and used to create pest risk and forecasting models for use in agribusiness and research. Telenko and her summer interns will be contributing to iPiPE season long to as part of the Vegetable Crop Pest Program, from this they will be able to view pest observation, risk maps, and provide commentary. If you are interested participating and receiving customized summaries, maps, and pest alerts on your computer and directly to your mobile devices contact Darcy Telenko to become part of the iPiPE team. Additional information is also available at <http://ed.ipipe.org/home> ●



Spray Water Quality and Herbicide Efficacy

Pratap Devkota, Weed Science Advisor, University of California Cooperative Extension, Imperial and Riverside Counties, Holtville, CA 92250

[Dr. Devkota is an expert on spray water quality, having recently completed his Ph.D at Purdue University on the subject. Make sure to pay attention to water quality and mixing guidelines to get the most out of your herbicide applications this season. ed. J. Kikkert, CCE CVP.]

Background information on spray water quality

Crop growers rely on herbicide as a primary tool for weed management in the conventional agronomic and vegetable crop production system. Water is the primary solvent for herbicide application and comprises about 99% of the herbicide spray solution. However, a critical factor that is routinely ignored is the appropriate spray water quality for herbicide application. Therefore, water quality factors such as turbidity, pH, and hardness are very important aspect to consider while preparing herbicide spray-mix.

Water turbidity refers to the concentration of suspended particles, such as soil and organic debris, present in water. Water pH refers to the amount of acidity or alkalinity present in water. Whereas, the amount of dissolved minerals cations such as calcium, magnesium, iron, zinc, sodium, potassium constitutes water hardness. These water quality factors could be variable depending upon the geographical location and the season of the year.

Effect of spray water quality on herbicide activity

Various research studies have illustrated that efficacy of Roundup and some other herbicide products are significantly reduced by turbidity, inappropriate pH, and presence of hardness cations in the spray water. Turbidity affects the performance of herbicide which have higher Koc value, i.e. herbicide which binds strongly to the solid particles. Herbicides products which contains active compounds such as paraquat (Grammoxone) and glyphosate (Roundup) are highly affected by water turbidity.

Effect of water pH on herbicide activity is variable depending upon herbicide chemistry. Some herbicide products are most effective at acidic pH, while other product are most effective at neutral or alkaline pH. The herbicide product containing weak-acid compound such as glyphosate (Roundup) perform better at acidic water pH; whereas. the product containing mesotrione (Callisto) performs better at neutral pH, and product containing saflufenacil (Sharpen) is more effective at alkaline pH. These results illustrate that

depending upon the chemistry and product formulation, the performance of herbicide is inconsistent when sprayed at unfavorable water pH. Some herbicide has poor solubility in inappropriate spray water pH; whereas, weak-acid herbicides form charged compound at unfavorable spray water pH.

When considering effect of water hardness, most of the herbicide products are affected by presence of hard water minerals in the spray water. Moreover, the increase in water hardness reduces efficacy in a linear trend for some of the herbicide products. Hard water minerals bind to the herbicide molecule and form a stable herbicide-mineral complex and cannot get through the leaf barriers into the plant.

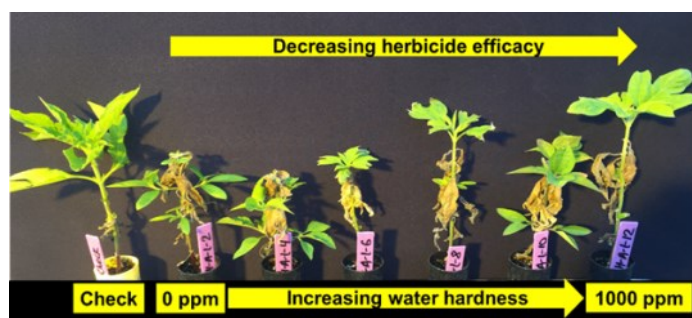


Fig: Effect of spray water hardness on glufosinate (Rely) herbicide efficacy. As water hardness increases there is reduction in weed control.

Guidelines for optimizing spray water quality for improving herbicide activity

First and important thing is to know the quality of water used for mixing and spraying herbicide. Simple test of water with some test strips could provide information on turbidity, pH, and hardness. Another important information is about the herbicide chemistry such as Koc value, is it a weak-acid herbicide, is there any information in the product label about preparing spray solution. After we know the water quality and information on herbicide then it is important to adjust water pH at appropriate level for the herbicide. Water pH could be adjusted to the desired level using commercially available pH adjuster products and buffer solutions. For amending spray solution against hard water cations it is very critical to add water conditioning adjuvants in the spray-mix. The benefit from added water conditioning adjuvant will only be achieved by following the proper mixing procedure. The proper mixing procedure should be as follow: 1) add water in the tank; 2) add water conditioning adjuvants; 3) add herbicide products; 4) add surfactants, defoamer, drift retardants.

References:

1. Buhler DD, Burnside OC (1983) Effect of water quality, carrier volume, and acid on glyphosate phytotoxicity. *Weed Sci* 31:163-169.
2. Devkota P, Spaunhorst DJ, Johnson WG (2016) Influence of carrier water pH, hardness, foliar fertilizer, and ammonium sulfate on mesotrione efficacy. *Weed Technol.* 30: 617-628.
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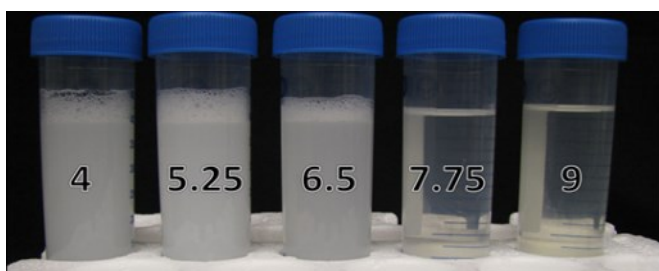


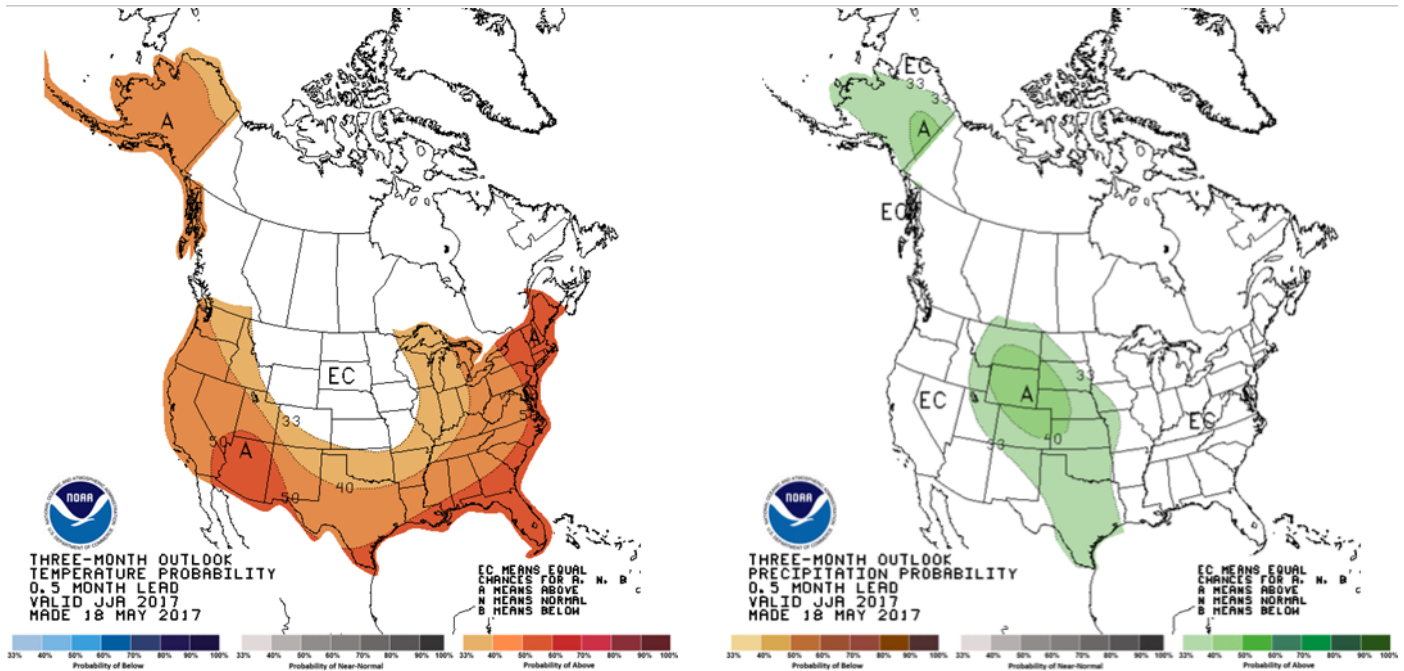
Fig: Effect of water pH on solubility of saflufenacil. At acidic water herbicide has a solubility issue but at alkaline pH there is no issue. Source: Roskamp et al. (2013), *Weed Technol.* 27: 527-533

Seasonal Outlook from NOAA Climate Prediction Center

Darcy Telenko, CCE Cornell Vegetable Program

The Climate Prediction Center (CPC), under the National Oceanic and Atmospheric Administration (NOAA) gives a three-month outlook on the temperature and precipitation based on real-time data and information that predict and describe climate variations, thereby promoting effective management of climate risk. The products cover time scales from a week to seasons, and are available for use by the public or private sector where outlook forecasts are important, such as in agriculture.

Three-Month Outlook Official Forecasts for June, July and August 2017



To read the temperature outlook map created May 18, 2017:
White –EC equal chances of above or below normal temperature for the next three months

Red regions –A greater chance of above normal temperature for the next three months.

Blue regions – B greater chance of below normal temperatures for the next three months. (There are no areas on the current map indicating this probability.)

To read the precipitation outlook map created May 18, 2017:
White –EC equal chances of above or below normal precipitation for the next three months

Green regions –A greater chance of above normal precipitation for the next three months.

Brown regions – B greater chance of below normal precipitation for the next three months. (There are no areas on the current map indicating this probability.)

The prediction for our region of NY shows a three-month outlook with a 40-60% chance of greater than normal temperatures through June, July, and August 2017. The outlook for precipitation in NY shows an equal chance of above or below normal precipitation.

For more information and to access updated maps see: http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1 ●

FSA Accepting Emergency Loan Applications

Genesee, Livingston, Niagara and Orleans Counties have been declared eligible for Farm Service Agency (FSA), formerly Farmers Home Administration, disaster emergency loan assistance effective May 8, 2017 due to damages and losses caused by winter storms, excessive snow and high winds that occurred March 8, 2017 through March 20, 2017. Family farmers who have suffered of at least 30 percent of their physical loss due to the winter storms, excessive snow and high winds may be eligible for FSA loans. Proceeds from crop insurance and any FSA programs are taken into account when determining eligibility for physical losses only. Losses must be supported with documented records. Under the FSA Emergency Loan Programs farmers may be eligible for physical loss loans only of up to 100 percent of their actual losses, or the operating loan amount needed to continue in business, or a maximum principal balance outstanding of \$500,000, whichever is less. Farmers must be unable to obtain credit from private commercial lenders. The interest rate on Emergency Loans is 3.75%.

Application for loans under this emergency designation will be accepted until January 8, 2018. The FSA office is located at 29 Liberty Street, Suite 4, Batavia, NY 14020. ●

Highlights from 2016 Post-Emergent Herbicide Trials in Muck-Grown Onions: Focus on Control of Ragweed and Yellow Nutsedge

Christy Hoepting, CCE Cornell Vegetable Program

In 2016, post-emergent herbicide trials focused on control of **ragweed (RW)** and **yellow nutsedge (YNS)** in direct-seeded onions. Trials were conducted in commercial onion fields in the Elba muck land. The growing season of 2016 was very hot and dry and under these conditions, generally, the weeds were tougher to kill and the onions more tolerant to herbicide injury than experienced in trials previously.

Goal 2XL provided better control of ragweed (RW) than Chateau: Although these treatments did not result in RW mortality within 7 days after each application, overall RW control (stunted and injured weeds) more than doubled with Goal 2XL compared to Chateau after single (% control: Goal – 38%, 57%; Chateau 2.0 oz – 6%, 18%) and double (% control: Goal – 41%, 47%; Chateau – 16%, 12%) applications. Goal 2XL also resulted in slightly more onion injury, especially when it was applied at the 1-leaf stage. **Compare trt #2 to #3 and trt. #19 to #5 in Table 1.**

Waiting until 2-leaf to apply 4 fl oz of Goal 2XL was as good as 2 fl oz applied at 1-leaf: With RW gaining size very quickly, it is tempting to pull the trigger early in an attempt to hold it back. Results from 2016 trial showed that the same level of RW control was achieved by waiting until 2-leaf stage to apply a higher rate (Goal 2XL 4 fl oz at 2-leaf & 3-leaf: 41% control) than starting earlier at a lower rate (Goal 2XL 2 fl oz at 1-leaf, 4 fl oz at 2-leaf: 47% control). Although onion injury was minimal, waiting until the 2-leaf stage to apply Goal was safer. **Compare trt #2 to #19 in Table 1.**

Buctril for RW control – split app better than single app of full rate: In this trial, Buctril 4E was first applied at the 3-leaf stage when RW was 4-8" tall. Again, RW mortality was low. Although after the first application, the full rate (12 fl oz) resulted in slightly better control (46%) than 8 fl oz (33%), the split application of 8 fl oz followed by 4 fl oz 1 week later resulted in better weed control (60%) after the second application (**Compare trt #7 to #8 in Table 1**). At harvest, the split application had only half as much RW biomass (data not shown). We had similar results in 2015 with pigweed (PW), smartweed (SW) and lamb's quarters (LQ). The single application of the high rate of Buctril also resulted in more crop injury than the split application.

Table 1: Evaluation of Post-emergent herbicides for control of ragweed, field trial, Elba, NY, 2016.

First Application:	7 DAT ¹ First App		Second Application:	7 DAT Second App		Jun-17
Onion Stage	% RW Control	% Onion Injury	Onion Stage	% RW Control (% RW Mortality)	% Onion Injury	% RW Mortality
At 1-leaf (RW cotyledon to 2"²):			At 2-leaf:			
2. Goal 2XL 2 fl oz	38.3	9.3	Goal 2XL 4 fl oz	41.0	1.0	--
3. Chateau 2.0 oz	6.2	4.2	Chateau 1.0 oz	16.2	2.7	--
4. Chateau 2.0 oz + Nortron 16 fl oz	25.0	8.7	Chateau 2.0 oz ³ + Nortron 16 fl oz	51.7	5.0	--
At 2-leaf (RW 2-4"):			At 3-leaf:			
19. Goal 2XL 4 fl oz	56.7	1.7	Goal 2XL 4 fl oz	46.7	3.7	0.0
5. Chateau 2.0 oz	18.3	1.0	Chateau 1.0 oz	12.0	2.7	0.0
6. Chateau 2.0 oz + Nortron 16 fl oz	15.0	1.7	Chateau 1.0 oz + Nortron 16 fl oz	58.6 (5.3)	5.3	3.7
23. Chateau 2.0 oz + Bicyclopyrone 6.8 fl oz	95.0	0.7		96.7 (91.7)	1.0	96.7
At 2-leaf (RW 2-4"):			At 4-leaf:			
12. Reflex 8 fl oz	86.5	10.0	Reflex 8 fl oz	70.0	5.0	6.0
14. Reflex 8 fl oz + Nortron 16 fl oz	89.0	13.5	Reflex 8 fl oz + Nortron 16 fl oz	85.7	7.3	46.7
15. Stinger 4 fl oz	51.5	0.0	Stinger 8 fl oz	66	5.0	0.0
17. Stinger 4 fl oz + Chateau 2.0 oz	63.3	0.0	Stinger 8 fl oz + Chateau 1.0 oz	67.7	5.0	0.0
18. Stinger 4 fl oz + Goal 2XL 4 fl oz	63.3	6.7	Stinger 8 fl oz + Goal 2XL 4 fl oz	79.3	7.3	0.0
At 3-leaf (RW 4-8"):			At 4-leaf:			
13. Reflex 16 fl oz	82.7	11.0	--	--	-	18.3
7. Buctril 4E 12 fl oz	46.0	1.0	--	46.7 (10)	5.0	10.0
8. Buctril 4E 8 fl oz	33.3	2.7	Buctril 4E 4 fl oz	60 (3.7)	5.0	3.7
9. Buctril 4E 8 fl oz + Goal 2XL 4 fl oz	53.3	7.7	Buctril 4E 4 fl oz + Goal 2XL 4 fl oz	77.7 (66.7)	19.3	66.7
11. Buctril 4E 8 fl oz + Bicyclopyrone 6.8 fl oz	70.0	4.0	Buctril 4E 4 fl oz + Bicyclopyrone 6.8 fl oz	96.7	5.0	96.0

¹DAT: days after treatment applied.

²Size of ragweed (RW) in inches, tall or wide, whichever comes first.

³Spray error: should have been Chateau 1.0 oz, not 2.0 oz.

Improved weed control with Buctril + Goal 2XL: Adding Goal 2XL 4 fl oz to each split application resulted in the best RW control (67% RW mortality), but it also had unacceptable onion injury in 2016 (**Compare trt #8 to #9**). In 2015, this treatment resulted in improved control of PW, SM, LQ and purslane. Buctril is known for its efficacy on certain annual mustards and RW, while it is weak on PW and purslane, so it makes sense to tank mix it with Goal to achieve more broad-spectrum weed control. In 2015, the Buctril treatments caused more onion injury than Goal 2XL and Chateau, but the addition of Goal 2XL to Buctril did not increase onion injury beyond Buctril split alone.

Stinger mixed with Goal 2XL/Chateau improved RW control: Stinger is a growth regulator, which is in the process of being labeled in onion for control of perennial sowthistle (PST). In this study, we wanted to see if Stinger could effectively be tank mixed with Goal 2XL and Chateau, since it is likely that both would need to be applied at the same time for broad-spectrum weed control. After a single application at 2-leaf, Stinger 8 fl oz + Chateau 2.0 oz and + Goal 2XL 4 fl oz had about 10% better RW control than Stinger alone. At harvest, Stinger + Goal (26 g/3ft²) had only a quarter and Stinger + Chateau had about a third (38 g/3 ft²), respectively, of the RW biomass of

continued on next page

Stinger alone (106 g/3ft²) (**Compare Trt #15 to #17 #18 in Table 1**). In our 2016 PST trial, tank mixing Stinger with Goal 2XL improved control of PST, while tank mixing with Chateau significantly reduced PST control.

Reflex: Reflex is in the same herbicide group as Goal and Chateau. It is in the IR-4 program for future registration on onion. In this trial, Reflex initially looked better than Goal 2XL with 8 fl oz at 2-leaf resulting in 86% control (**Compare trt #19 to #12 in Table 1**). Just as we observed with Buctril, split application (8 fl oz 2-leaf & 4-leaf) resulted in better long-term control than single application of full rate 16 fl oz at 3-leaf (**Compare trt #12 to #13 in Table 1**). Ragweed quickly outgrew Reflex injury and RW biomass at harvest was similar to that in Stinger treatment, but better than Goal (data not shown). Generally, these rates of Reflex caused more injury than Goal 2XL.

Addition of Nortron improved RW control: In 2015, addition of Nortron to Chateau, Buctril 4E 12 fl oz and Buctril split + Goal 2XL 4 fl oz increased overall weed control of PW, SW, LQ and purslane for greater than 95% mortality of mixed broadleaf weeds. In this trial, Chateau + Nortron 16 fl oz (**trt #6**) resulted in 5-times better RW control than Chateau alone (**trt #5**). Similarly, Reflex + Nortron (**trt #14**) had 7-times higher RW mortality than Reflex alone (**trt #12**) and about half as much RW biomass at harvest (data not shown). Addition of Nortron increased onion injury slightly. In 2015 trial, addition of Nortron to the Buctril treatments resulted in excessive injury, while addition to Chateau did not increase injury. **Note:** Addition of Nortron to Goal 2XL did NOT improve control of mixed broadleaves in 2015 trial, or improve YNS control in 2015 and 2016 trials.

Although Nortron is labeled in onion in other states, it is questionable whether this use will become available in New York.

New pipeline active ingredient, bicyclopyrone, a superstar for RW control: Best treatments in the trial included new active ingredient, bicyclopyrone, which is being developed by Syngenta for use in onion. A single application of Chateau 2.0 oz + bicyclopyrone 6.8 fl oz at 2-leaf (trt #23) resulted in 97% RW mortality on Jun-17, which held for the entire season with excellent crop tolerance. Bicyclopyrone 6.8 fl oz added to Buctril split app at 3- and 4-leaf (trt #11) resulted in 96% RW mortality of 4-8" tall RW. Although improved RW control resulted in larger onion plants than the other Buctril treatments, onions were

smaller than in the best treatments. At any rate, plans are to continue to work with Syngenta to develop this new active ingredient for use in onion.

Control of yellow nutsedge (YNS) with Chateau and Goal

Chateau better than Goal 2XL for YNS control: Mortality of YNS following 1-2 herbicide applications resulted in <3 to about 20% YNS mortality. Again, overall control (stunting and injury) was 4-times better after two herbicide applications of Chateau (73%) compared to Goal 2XL (17%) (data not shown). On Jul-22, a treatment with 6 applications of Chateau resulted in 85% YNS mortality and 97% reduction in YNS biomass compared the untreated. Similarly, a treatment with 7 applications of Goal 2XL had 42% YNS mortality and 41% reduction in YNS biomass. Onions tolerated these excessive number of applications surprisingly well (Fig. 1).

Critical timing for first application for YNS control is 1-leaf when YNS is 2-4" tall: Chateau 2.0 oz applied at 1-leaf when YNS was 2-4" tall resulted in 75% control with 15% YNS mortality compared to when it was applied at 2-leaf when YNS was 4-8" tall, which resulted in only 33% control with 4% YNS mortality (Fig. 1). When both of these treatments were followed by a second application of Chateau 1.0 oz a week later and then 3-4 applications of Goal 2XL, YNS biomass was reduced by 42% and 56%, respectively. Similarly to our results in the ragweed trial, waiting until 1-leaf to apply higher rate of Chateau 2.0 oz to larger YNS (2-4") resulted in similar control (73% with 13% mortality) as applying lower rate of Chateau 1.0 oz to smaller YNS (1-2") at flag leaf (63% control with 13% mortality).

Chateau and Goal 2XL can reduce YNS by 40-50% by mid-July: Although not a silver bullet, two applications of Chateau followed by weekly to bi-weekly applications of Goal 2XL 4 fl oz (until PHI) will reduce YNS biomass production by 40-60%, based on our two years of study (Fig. 2). Then, it will have to be hand weeded. There will be less YNS biomass to hand weed, YNS injured from Chateau and Goal will be easier to pull and less destructive when pulled. It will also have produced much fewer nutlets, because the plants' resources had to be allocated to re-growth of herbicide-injured leaves instead of reproductive growth.

Next Steps:

- Trial tank mixes of Chateau and Buctril with **Goaltender** for improved broad-spectrum weed control and improved crop safety.
- In an effort to prevent development of resistance to PPO inhibitors (WSSA group 14 herbicides) including Goal 2XL, Chateau and Reflex, it is best to use herbicides with multiple modes of action. Since availability of Nortron (WSSA group 8) is uncertain, tank mixes and programs with bicyclopyrone (WSSA MOA group 27) will be trialed.
- Continue to incorporate pipeline products, Stinger (WSSA MOA group 4) and Reflex in onion herbicide program.
- Optimize pre-emergent control of YNS with Outlook, Dual Magnum and Zidua.

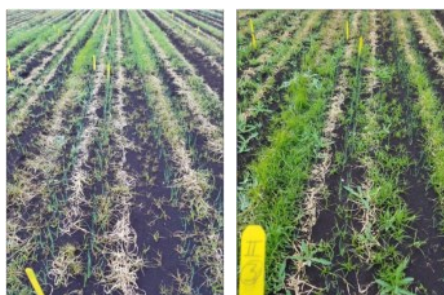
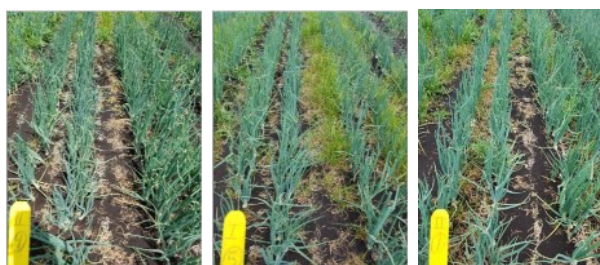


Figure 1. Onions at 2-leaf stage. Left: Chateau 2.0 oz applied 1 week ago at when onions in 1-leaf and yellow nutsedge (YNS) 2-4" tall. This treatment will get Chateau 1.0 oz and then follow up with Goal 2XL to continue to burn it back. Right: Chateau 2.0 oz about to be applied, now YNS is 4-6" tall and harder to kill and control. Best to make first application at 1-leaf when YNS is smaller.

Photos: C. Hoepting, Cornell Vegetable Program



4. Chateau 1.0 oz @ flag+
Chateau 2.0 oz @ 1, 2, 3, 4, 6 leaf
Goal 2XL 4 fl oz @ 7-8 leaf

5. Goal 2XL 1 fl oz @ flag+
Goal 2XL 2 fl oz @ 1-leaf
Goal 2XL 4 fl oz @ 2, 3, 4, 6, 7-8 leaf

9. Chateau 2.0 oz @ 1-leaf
Chateau 1.0 oz @ 2 leaf
Goal 2XL 4 fl oz @ 3, 4, 6, 7-8 leaf

Figure 2. Treatment plots on Jul-22. Chateau is better than Goal 2XL for control of yellow nutsedge (YNS) (left compared to middle). Right: Combination of two applications of Chateau starting at 1-leaf followed by Goal 2XL until PHI resulted in 65% YNS mortality and 41% reduction of YNS biomass, which will reduce YNS nutlet production, and make hand weeding easier and less destructive. It was amazing how well the onions tolerated so many applications of Chateau and Goal. Photos: C. Hoepting, Cornell Vegetable Program

CROP INSIGHTS

ONIONS

A trialing planting season is nearing completion! The majority of the direct seeded crop is in the 1-leaf stage, regardless of whether the field was planted a month ago or 2 weeks ago! Earliest transplants are in the 8-leaf stage. Unfortunately, there have been some losses due to prolonged saturated soil conditions in some fields and parts of fields. Overall, fields have dried out and the crop is finally on its way: barley kill is well under way and

herbicide programs are getting caught up. In fields where timely application of Buctril pre-emergent to onion was missed, there are a lot of annual mustard escapes, especially marsh yellowcress and Shepherd's purse and others. It has been my experience that both Chateau and Buctril can do a great job of cleaning up annual mustards. It is now a race between the onions getting big enough before the weeds get too big for timely first applications of Chateau, Goal or Buctril. Over the past couple of years in my herbicide trials, I have worked a lot on early timings of Chateau and Goal 2XL – see article on results highlights from 2016 post-emergent trials. Note, Goal is much better against ragweed than Chateau, and that Chateau is much better against yellow nutsedge than Goal. Last year I got the same level of control by waiting a week to apply a higher rate of herbicide to larger onions and weeds as I did by going in early with a lower herbicide rate on smaller weeds (see article). This year, I am trialing a Goaltender + Chateau tank mix for improved broad-spectrum weed control, as this combination has worked well in Michigan trials. No thrips or leaf diseases have been detected in early transplants yet.

Please note the following announcements and upcoming meetings:

- **Suchlor with the active ingredient sodium hypochlorite is now registered in onion** as a Special Local Needs Label for reducing bacterial bulb rot in New York – see announcement. Also, look for a more detailed article in a future issue of Veg Edge.
- **Minecto Pro**, which is essentially a pre-mix of Exirel and Agri-Mek is **now labeled in onions in New York for control of onion thrips**. Look for a detailed article in a future issue of Veg Edge.
- **Muck Donut Hour to start Tuesday June 6** at the corner of Transit and Spoilbank Roads in the Elba muck from 8:30 am to 9:30 am.
- **CVP "research scouting" program featuring onion thrips 2016 debriefing and 2017 season ramp-up with Brian Nault** are planned for June 13 at Muck Donut Hour in Elba and **June 15 in Wayne Co.** (time and location TBA). DEC credit will be available. More info to follow.
- **Oswego Onion Twilight Meeting** featuring herbicide demonstration is planned for Thursday, **June 22** at John Dunsmoor Farm in Oswego. DEC credits will be available. More info and invitations to follow.

Contact Christy for more information on any of these items.

VINE CROPS

Early summer squash that was set out within the last couple of weeks have really been battered. Heavy winds, cold temps, lots of rain, and scorching sun. Then there are the early cucumber beetles starting to show up.

With so much potential damage to the leaves, starting out with some fungicide protection is recommended. Angular leaf spot has been found on several plants in separate fields this week.



Angular leaf spot.

Product Approved for Reducing Bacterial Bulb Rot in New York Onions

Steven V. Beer, Professor Emeritus, Plant Pathology & Plant-Microbe Biology, Cornell University

Bacterial rot is perhaps the most challenging and costly problem NY onion growers face. No effective material for reducing annual grower losses of 2% to 20% had been available. Grower trials conducted under a Cornell experimental use permit (EUP) were overseen by dedicated Cornell Cooperative Extension (CCE) personnel. Growers who added sodium hypochlorite to their routine weekly insecticide and fungicide sprays, starting in late June, experienced less rot at harvest than onions without sodium hypochlorite in "check" plots.

Based on the grower trial results, Surpass Chemical Co., a century-old chemical manufacturer based in Albany, successfully applied to NYS DEC to register SURCHLOR, its brand of sodium

hypochlorite. Application of SURCHLOR to growing onions was approved under FIFRA 24(c) as a Special Local Need (SLN). Arrangements have been made for distribution of SURCHLOR, the only registered sodium hypochlorite approved for application to growing plants, through Crop Production Services (CPS). That firm has outlets throughout NY, for easy access by onion growers.

The research and registration has been directed by Professor Emeritus Steven Beer of Cornell's Section of Plant Pathology and Plant-Microbe Biology, part of the School of Integrated Plant Sciences. Essential assistance had been provided by the Beer lab team of technical experts, Jean Bonasera and Jo Ann Asselin, CCE associates Christy

Hoepting, Maire Ullrich and Ethan Grundberg, and several part-time undergraduate student researchers. Critical financial support was supplied by the onion industry and New York State through the Onion Research and Development Program, a NY Specialty Crops Block Grant and the New York Farm Viability Institute.

Additional testing to optimize efficiency is underway during the 2017 season. Growers who wish to participate should contact their respective CCE associate. The program will supply SURCHLOR needed for trials. Additional suggestions and regulations for use of SURCHLOR will be published soon. ●

Maggot Trifecta

Robert Hadad, CCE Cornell Vegetable Program

Seed corn maggot, onion maggot, and cabbage maggot are showing up across the state and throughout the Northeast. Look for the blooming of the brassica weed, Yellow Rocket. Cabbage maggot activity usually isn't far behind. Just prior to cabbage maggot, seed corn maggot can be active. Some years, onion maggots come a bit later than cabbage maggot but onion maggot has already been found in garlic and green onions for several weeks. Instead of



reinventing descriptions etc. there is a handy chart that was recently published by UMass Extension in their VegNotes a week and half ago and then reprinted in the Cornell Eastern NY Commercial Hort team Vegetable News, 5/17/17.

Table 2. Maggot Comparative Table			
	Seed Corn	Cabbage	Onion
Host	40 different plants, large germinating seeds, seedlings (including allium and brassica!)	Brassicas	Alliums
First peak flight	360 GDD base 40°F	452 GDD base 40°F	735 GDD base 40°F
Adult	Small: ~3mm, 3 stripes on the thorax	Medium: ~5mm, 2 stripes on the thorax.	Large: ~6mm.
Eggs	Hatch in 2-4 days	Hatch in 7-10 days	Hatch in 2-5 days
Larvae (maggot)	Active for 3 wks	Active for 2-4 wks	Active for 2-3 wks
Pupae	In soil for 1-2 wks before next gen adults emerge (last gen pupae overwinter)	In soil for 2-3 wks before next gen adults emerge (last gen pupae overwinter)	In soil for 3-4 wks before next gen adults emerge (last gen pupae overwinter)
Notes	Short, 21-day lifecycle. 3 gen per year. Usually only spring gen is damaging.	Long, 60-day lifecycle. 4 gen per year. Spring and Fall gen most damaging.	Medium, 30-day lifecycle. 3 gen per year. Usually only spring gen is damaging.



Cabbage maggots infestation on organic cole crop. Photos: Judson Reid, CCE Cornell Vegetable Program

Precision Agriculture Specialist Position Available

Cornell Cooperative Extension seeks a qualified candidate to provide leadership and educational programming to advance precision agriculture and new technology applications to production and management practices that will sustain and enhance the profitability of the field crops and vegetable industries in Western New York.

The position is a joint appointment with two Cornell Cooperative Extension Regional Agriculture Teams, the Cornell [Vegetable Program](#) and the [Northwest New York Dairy, Livestock & Field Crops Team](#). With this position, we are adding capacity to our Extension program. We hope to find a candidate who will bring additional skills in crop management to complement our respective teams as well.

More information and application instructions are available at:

Cornell Careers: https://apps.hr.cornell.edu/recruiting/facultyview.cfm?posting_id= Precision-Agriculture-Specialist--Extension-Associate---Cooperative-Extension---Western-New-York_WDR-00010146

Questions may be directed to CVP Team Leader, Julie Kikkert at jrk2@cornell.edu or 585-313-8160.

Cornell Cooperative Extension is an employer and educator recognized for valuing AA/EEO, Protected Veterans, and Individuals with Disabilities and provides equal program and employment opportunities.

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

Baskets or Pallets – Wholesale Market Field Day

May 31, 2017 | 5:00 PM - 7:00 PM

Genesee Valley Produce Auction, 8855 County Road 3, Centerville, NY 14029

The Baskets or Pallets series of field days to aide in understanding how to determine quality and grade of agricultural products is co-hosted by CCE Allegany, Erie and Wyoming Counties. The sessions are designed to prepare farms in NY, both beginning and experienced, to enter new markets. Wholesale Market Field Day will review concepts of wholesaling marketing and addressing the importance of quality and uniformity. In addition, we will discuss the importance of tracking products, packaging and overview labeling requirements.

The field days are open to 25 participants; preference given to active or retired NYS Military Veterans on a first-come, first-served basis. COST: \$10/person, veterans may apply for stipend to cover cost of attending. For more info or to apply, contact Lynn Bliven, CCE Allegany County at 585-268-7644 x18 or email lao3@cornell.edu.

Elba Muck Donut Hour Every Tuesday

June 6 - August 15, 2017 | 8:30 AM - 9:30 AM

Elba muck, corner of Transit and Spoilbank, Elba, NY

Meet with Cornell Vegetable Program Specialist Christy Hoepting every Tuesday morning to ask questions and share your observations. Grower experience is combined with research and scouting information for a whole lot of talk about growing ONIONS! Questions? Contact Christy Hoepting at 585-721-6953.



Fresh Market Minutes - Every Other Tuesday in Eden Valley

June 6 - August 29, 2017 | 9:00 AM - 10:00 AM

Across from W. D. Henry & Sons, Inc., 7189 Gowanda State Rd, Eden, NY 14057

New this year! Meet with the Cornell Vegetable Program Specialist Darcy Telenko every other Tuesday morning to ask questions and share your observations in fresh market vegetables. Darcy will be in Eden Valley on the first and third Tuesdays June - August. Questions? Contact Darcy Telenko at 716-697-4965.



Fresh Market Minutes - Every Other Tuesday in Niagara County

June 13 - September 5, 2017 | 9:00 AM - 10:00 AM

Kneed the Dough, 3678 Ransomville Rd, Ransomville, NY 14131

New this year! Meet with the Cornell Vegetable Program Specialist Darcy Telenko every other Tuesday morning to ask questions and share your observations in fresh market vegetables. Darcy will be in Niagara County on the second and fourth Tuesdays during the 2017 season. Questions? Contact Darcy Telenko at 716-697-4965.



Produce Safety Alliance Grower Training Course

June 13, 2017 | 8:00 AM - 5:15 PM

CCE Wayne County, 1581 NYS Rt 88 N, Newark, NY 14513

Fruit and vegetable growers and others interested in learning about produce safety, the Food Safety Modernization Act (FSMA) Produce Safety Rule, Good Agricultural Practices (GAPs), and co-management of natural resources and food safety should attend this food safety training. Individuals who participate in this course are expected to gain a basic understanding of microorganisms relevant to produce safety and where they may be found on the farm, how to identify microbial risks, practices that reduce risks, and how to begin implementing produce safety practices on the farm, parts of a farm food safety plan and how to begin writing one, and requirements in the FSMA Produce Safety Rule and how to meet them.

In addition, the PSA Grower Training Course is one way to satisfy the FSMA Produce Safety Rule requirement outlined in section 112.22(c) that requires *'At least one supervisor or responsible party for your farm must have successfully completed food safety training at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration.'*

COST: \$25 for NY grower/attendee; \$140 for out-of-state attendee. (Price for NY growers low because of a grant from NYS Dept of Ag & Markets.) For more info and to register, visit <https://lof.cce.cornell.edu/event.php?id=747>



Baskets or Pallets – High Tunnel Field Day

June 15, 2017 | 6:30 PM - 8:30 PM

CCE Wyoming County, 36 Center St, Warsaw, NY 14569

The Baskets or Pallets series of field days to aide in understanding how to determine quality and grade of agricultural products is co-hosted by CCE Allegany, Erie and Wyoming Counties. The High Tunnel Production session will be an introductory class on growing vegetables in high tunnels. We will cover basics from choosing structure, potting materials and plant varieties through to marketing produce.

The field days are open to 25 participants; preference given to active or retired NYS Military Veterans on a first-come, first-served basis. COST: \$10/person, veterans may apply for stipend to cover cost of attending. For more info or to apply, contact Lynn Bliven, CCE Allegany County at 585-268-7644 x18 or email lao3@cornell.edu.

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 5/16 – 5/22/17

Location	Rainfall (inch)		Temp (°F)	
	Week	Month May	Max	Min
Albion	0.36	4.39	84	46
Appleton, North	NA	NA	NA	NA
Baldwinsville	0.83	4.37	89	43
Buffalo*	0.30	4.22	82	45
Ceres	0.46	2.41	83	36
Elba	0.15	3.50	84	43
Fairville	0.62	3.81	88	45
Farmington	0.68	3.93	85	44
Gainesville	0.73	3.30	82	40
Geneva	0.91	3.86	86	47
Interlaken	0.07	2.68	89	43
Lodi	0.17	2.53	88	42
Niagara Falls*	0.61	4.78	86	47
Penn Yan*	0.45	3.08	90	46
Phelps	0.34	3.34	88	47
Portland	0.38	3.34	84	49
Rochester*	0.19	3.24	86	46
Silver Creek	NA	NA	82	45
Sodus	0.52	3.49	88	46
Versailles	1.03	4.38	83	40
Volney	1.20	4.85	87	44
Williamson	0.35	3.22	88	44

Accumulated Growing Degree Days (AGDD)

Base 50°F: April 1 – May 22, 2017

Location	2017	2016	2015
Albion	210	121	287
Appleton, North	160	68	211
Baldwinsville	254	135	301
Buffalo	224	153	304
Ceres	237	80	249
Elba	205	59	208
Fairville	215	96	NA
Farmington	219	105	304
Gainesville	173	63	229
Geneva	241	117	306
Interlaken	265	112	NA
Lodi	305	139	357
Niagara Falls	249	158	258
Penn Yan	270	122	332
Phelps	234	110	306
Portland	277	116	271
Rochester	250	135	337
Silver Creek	255	98	246
Sodus	217	112	257
Versailles	273	124	263
Volney	217	NA	NA
Williamson	207	79	223

* 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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