Effective Post-Emergent Weed Control in Onion: Knocking Back and Knocking Out

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Knocking Back

Even before barley-kill herbicides are applied, growers should take a peek to see what weed escapes may be lurking below the cereal nurse crops. When onions are in flag-leaf or ideally flag-leaf with first true leaf starting to grow, Goal 2XL 0.25-0.5 fl oz/A may be applied with barley-kill herbicides, Select EC or Fusilade (or their generics) and crop oil concentrate (COC) or non-ionic surfactant (NIS) to kill seedlings in cotyledon stage (~0.25”) and “burn back” other slightly larger weed escapes (0.5-1”). Outlook and Prowl EC that contain greasy petroleum distillates, are also included in the barley-kill tank mix, the Goal 2XL becomes even “hotter” (Fig. 1). In trials, Goaltender 1-2 fl oz has been used at similar onion stage to control early weed escapes (Example 1 on page 4). See article in last week’s issue of VegEdge (page 6) about killing weeds with post-emergent herbicides in small onions.

Knocking Out

The 2.5-3 leaf stage tends to be the minimum most tolerant leaf stage for post-emergent herbicide injury. By the time onions are this big, weed escapes from pre-emergent programs may range from cotyledon stage to 4-6” in height/diameter. Table 1 provides some very general information on the ability of single application of post-emergent herbicide to kill the

Figure 1. Left: Onions in flag to flag-start (first true leaf just starting to come) stage with pigweed in cotyledon to 0.5” stage when barley nurse crop is ready to kill. They were treated with Select EC 8 fl oz + COC 0.5% v/v + Goal 2XL 0.5 fl oz + Prowl EC 2 pt + Outlook 13 fl oz. Right/middle (below): 13 days later: Treated onions are weed-free and healthy compared to the untreated (far-right). Photos by Christy Hoepting, CCE Cornell Vegetable Program

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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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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 newsletter will be produced on June 8, 2022.

Accumulated Growing Degree Days, 5/30/22
Emma van der Heide, CCE Cornell Vegetable Program

Accumulated Growing Degree Days (AGDD)
Base 50°F: April 1 - May 30, 2022

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* Airport stations
** For other locations: http://newa.cornell.edu
most common weed species in muck-grown onion. Most often, if after a week and the weeds are not yet dead and the onions can tolerate another herbicide application, make a second application. You may need to switch post-emergent herbicides or rates to tailor to which species are not dying. Maximum leaf stage for Buctril is 5-leaf and for Chateau it is 6-leaf. The risk of crop injury should always be weighed against the risk of an out-of-control weed problem. Sometimes there are not enough weed escapes to warrant hurting the onions. Other times, injured onions are a small price to pay for excellent weed control.

Table 1. General weed size that post-emergent herbicides kill in onion, from herbicide trials conducted 2017-2019 (Hoepting).

<table>
<thead>
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<th>Herbicide Treatment (single application)</th>
<th>Maximum Size of Weed Killed</th>
<th>PRE-emergent Activity</th>
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<tr>
<td></td>
<td>PW</td>
<td>LQ</td>
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</tr>
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<td>Goal 2XL 4 fl oz</td>
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<tr>
<td>Goaltender 2 fl oz</td>
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<td>none</td>
</tr>
<tr>
<td>Buctril 2E 8 fl oz + Goal 2XL 4 fl oz</td>
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<td>1-3”</td>
</tr>
<tr>
<td>Buctril 2E 8 fl oz + Goaltender 2 fl oz</td>
<td>3”</td>
<td>1-2”</td>
</tr>
</tbody>
</table>

PW: pigweed; LQ: Lamb’s quarters; SW/LT: smartweed/Lady’s thumb; RW: ragweed; MYC: marsh yellowcress; YNS: Yellow nutsedge.

*have not tested.

**Chateau 2 oz (WSSA Group 14) – Excellent mortality of species within its size limit**
- Excellent on controlling select small weeds (less than 1”). Great utility for killing small marsh yellowcress (MYC), ragweed (RW) and smartweed/Lady’s thumb (SW/LT).
- Pigweed is the only species that it can kill larger sizes, sometimes up to 4”.
- Generally, Chateau results in a very high mortality rate of the species and size of weeds that it is good at, but beyond that it has very little burning, stunting or ability to “hold back” the weeds. See example 2 & 3.
- Exception to this is yellow nutsedge, where Chateau can do a great job burning back (but not killing) this perennial weed. See example 4.
- Weak on Lamb’s quarters (LQ), which will escape when Chateau is used alone.
- The rates used for post-emergent weed control have very good pre-emergent control as well.
- Do not apply past 6-leaf stage.

**Goal 2XL (WSSA Group 14) - Broad-spectrum weed control, less weed mortality, more burn**
- Compared to Chateau, Goal 2XL has more broad-spectrum weed control, but tends to have lower mortality rates.
- Instead, it causes much more “injury” to the weeds that it does not kill and has better ability to “hold back” a weed flush.
- Multiple applications progressively kill more individuals and continue to burn back the population, but larger weeds (>3-4”) can be tough to kill.
- Leaves can be burned up all the way up the stem, but the growing point at the top is still green. I call this the “green eye”. See example 3.
- Goal 2XL is notably weaker on mustards compared to Chateau and Buctril.

**Goaltender (WSSA Group 14) – Safer on onions and weeds, higher rate of active ingredient can be delivered to small onions with much more safety than Goal 2XL**
- Compared to Goal 2XL at equivalent rates (Goal 2XL 4 fl oz = Goaltender 2 fl oz), Goal 2XL provides better weed control including better burn and ability to kill larger weeds.
- Single app of Goaltender does not kill anything except for PW, although it can hold back other weed species.
- Notably safer on the onions, so it can be used on young onions or in tank mixes where Goal 2XL is too injurious.
- To achieve similar weed control as 2XL, Goaltender needs to be used at higher rates.

**Buctril/Broclean/Brox (a.i. bromoxynil, WSSA Group 6) – best for ragweed**
- Strength of Buctril is its activity on RW and mustards.
- Weak on PW, LQ and purslane.
- Compared to Chateau and Goal 2XL, Buctril is the safest to the onion at 2-leaf. Buctril label specifies 50-70 gpa for improved crop safety.

**Buctril + Goal 2XL – best for overall broad spectrum weed control, crop injury variable**
- Buctril 2EC 8 fl oz + Goal 2XL 4 fl oz will kill PW, LQ, SW/LT, RW and MYC (and other mustards) up to 3”, as well as other weed species. Example 5.
- Follow-up application of Buctril 2E 4 fl oz + Goal 2XL 4 fl oz may finish off what was not killed with the first app, including some 6-8” weeds (such as RW, MYC, SW/LT).
- These rates can cause greater than 10% injury to onion. Do not apply past 5-leaf stage.

**Buctril + Goaltender**
- Sometimes slightly safer than Buctril + Goal 2XL
- Comparable for RW and SW/LT control/mortality, but not quite as good on PW and LQ.

continued on page 4
Examples of Post-emergent Weed Control in Onion

**Knocking back:** This plot got Goal 2XL 0.25 fl oz with barley-kill herbicides when onions were just past flag (1st true leaf same size or taller than flag) and then Goaltender 2 fl oz at 1-leaf. Mixed broadleaves including many smartweed/Lady's thumb are dead or severely injured while the onions look good.

**Example 2**

Left: These onions had Goal 2XL 0.5 fl oz/A with barley-kill herbicides and Chateau 2 oz at 1.25-leaf, which killed pigweed in cotyledon to 0.5” (yellow circles) and burned back/knocked back ragweed. Now in the 2.25 to 2.5-leaf stage they are ready for Buctril 2EC 8 fl oz + Goal 2XL 4 fl oz/Goaltender 2 fl oz to knock out the up to 3” ragweed. Right: Transplanted onions in 3-4 leaf stage got Buctril 2EC 8 fl oz + Goal 2XL 4 fl oz which killed or severely injured all of the ragweed in cotyledon to 1.5 inch.

**Example 3**

Left: This 2” ragweed is too big for Chateau. In this case, Goaltender 2 fl oz would work better in these 1 to 1.25-leaf onions to burn it back until a “knock-out” herbicide may be applied at 2-3 leaf stage. Right: Goaltender/2XL can do a great job of burning back weed seedlings, but they often do not die and the growing point is still green, the “green eye”.

**Example 4**

Onions growing in a yellow nutsedge (YNS) patch not treated (left) and treated with Chateau (right). Chateau is the best option for burning back YNS. It can kill above-ground plants 1-3”. Although it continues to grow back, it accumulates a lot less biomass both above- and below-ground and results in less destructive hand weeding.

All of these 2-3” weeds are too big for Chateau and Goal. Although Buctril would be good on the mustard (yellow), it would miss the smartweed/Lady’s thumb (blue) and Lamb’s quarters (pink). Buctril 2E 8 fl oz + Goal 2XL 4 fl oz would be the most effective to knock out this weed population, which would also knock out ragweed and pigweed. For improved safety, Goal 2XL may be switched out for Goaltender, but it may not be as good on the LQ. 5-leaf is the maximum leaf stage for this heavy hitter.

All photos by Christy Hoepting, CCE Cornell Vegetable Program

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**Vegetable Pesticide Update**

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

**Supplemental Labels**

**CEVYA Fungicide:** (FRAC 3; a.i. mefentrifluconazole; EPA No. 7969-407; BASF Corporation). For control of Alternaria, Powdery mildew, Anthracnose, Gummy Stem Blight, etc. in leafy vegetables (brassicas including broccoli, cabbage, kale, collards, etc. and lettuce, spinach, cilantro, etc.), bulb vegetables (onion, garlic, leek, etc.), cucurbits (melons, cucumbers, summer and winter squash, etc.) and root vegetables (beets, carrots, turnips, radishes, etc.). Restricted use in NYS.

**Federally/NYS Restricted Use** status means that the pesticide is only permitted to be purchased, possessed, used, or applied by a certified pesticide applicator.

**FRAC:** Fungicide Resistance Action Committee

See article in last week’s issue of VegEdge for more vegetable pesticide updates.

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Strawberry Mold Management During Harvest

Anya Osatuke, Cornell Cooperative Extension, Harvest NY

Strawberry season is just around the corner. We are seeing red fruit in early Junebearing varieties, such as Annapolis, AC Wendy, Earlglow, and Galletta, and dayneutrals such as Albion, Evie, Mara Des Bois, and Seascape.

Strawberries have a thin skin, and diseases such as gray mold can easily grow through that skin and cause market losses. While the primary way that gray mold enters a strawberry patch is through the open blossoms, we can prevent its spread after fruit set by limiting contact between moldy berries and ripe berries.

As berries are harvested, future disease in the patch can be limited by having two harvests, or assigning different tasks to members of the harvest crew. First, pass through a row and try to harvest only the marketable berries. Wearing disposable gloves can be particularly helpful in case a moldy berry is unintentionally handled. The moldy berry can be placed in a separate bucket for rots, and the gloves changed out for new ones. After the ripe and marketable berries are harvested, pass through the row again and remove any moldy, pecked, or bug-infested berries. Removing these berries second can prevent juices from dripping onto ripe berries.

New Study on Farm and Residential Ponds: Examining Pond Greenhouse Gases and Carbon Burial

Meredith Holgerson, Cornell

Do you own a pond? Are you curious to learn more about its ecology, and are you willing to let Cornell researchers come sample? If so, consider participating in this new project measuring pond greenhouse gas emissions and carbon burial. The aim of the project is to better understand the drivers of carbon emissions and burial so that we can identify strategies to reduce pond greenhouse gas emissions.

Requirements for a Pond to be Included in the Study

- Pond must be human-made (though natural ponds are needed for a separate study).
- We need to know year of pond construction.
- We need to know if the pond has been dredged, and when the last dredging occurred.
- Pond is less than 5 hectares (12 acres) in surface area.
- Pond depth is less than 5 meters (16 feet) in maximum depth. (It’s okay if depth is currently unknown.)

Pond Sampling

If your pond is included in the study, Cornell researchers will sample your pond between three (extensive survey, 22 sites) and eight times (intensive survey, 8 sites), with each sampling event happening over two days. Sediment coring may occur in 2022; other sampling will occur in 2023. Sampling will include:

- Collecting 2-3 sediment cores
- Mapping sediment thickness
- Collecting water samples for water chemistry and greenhouse gas concentrations
- Measuring greenhouse gas flux off the pond using chambers and bubble traps
- Vegetation surveys
- Fish surveys
- Outfitting a subset of sites with temperature sensors, oxygen sensors, and methane bubble traps continuously for 5-8 months

Do you want your pond to be considered for this study?

If so, email Meredith Holgerson (meredith.holgerson@cornell.edu). Include your pond’s location (address or latitude/longitude) and surrounding land use, pond age, and if the pond has been dredged. Please include a pond photo if you have one.
ASPARAGUS
As harvest ends and fields fern there is a window for applying several herbicides. Established asparagus has many herbicide options, matching herbicide to weed species gives the best success. Walking the field to understand what your most common and most troublesome weeds are, and if they are localized or widespread in the field. It is a great time to look for asparagus beetles, too. Watch for lines or clusters of small black eggs on the stems. – EB

BEETS
- Black cutworm larvae continue feeding this week, so make sure to scout your fields. Conventional growers can apply a pyrethroid, with bifenthrin recommended by R. Groves at Univ. Wisconsin. Sniper LFR (bifenthrin alone) or Hero (bifenthrin + zeta-cypermethrin) are labeled for table beets in NY. According to Dr. Groves: “The bifenthrin will have the longest residual (and acute) activity of any pyrethroid. And generally yes, you will get a slight increase in residual with higher vs lower rates. If the application is made to the soil surface (predominantly), and targeting the area where cutworm larvae are residing during the day, then the bifenthrin should have a reliable 2-3 week residual. Especially if it were watered in as much as possible (> 0.25”) immediately after application. I don’t think it will be necessary for re-applications.” For organic growers, a mixture of azadirachtin and pyrethrin provides the best chance of control. Recent rain showers have brought on a flush of annual weed seedlings. It is critical to manage these weeds when they are small. Make sure to scout for weeds and perform timely cultivation or herbicide applications (or both). Choose the post-emergence herbicides based on the weed species present. Stinger herbicide is effective on small ragweed, while UpBeet is best suited for velvetleaf. It is common to tank mix herbicides for beets because low rates are used, and the combination may be more effective. Spin-Aid can be “hot” and injure young beets, so be cautious with rates used at the 2-4 leaf stage. – JK

CARROTS
Scout carrots for any seeding issues such as wirestem disease, wind and heat damage, etc. Weed management is also critical at this stage. Scouting for black cutworm should commence this week and through June (see note in the beet section and the general article in last week’s VegEdge). – JK

ONIONS
Receiving several reports of seed corn maggot damaging young plantings in small-scale fresh market production. Not much to be done once they get after the transplants. – EB

Yellow nutsedge, ragweed and perennial sowthistle – yikes! These weeds are more rambunctious than usual this spring. As barley nurse crops have turned brown, now we see the healthy green foliage of these and other weed escapes. Earliest direct seeded onions are at 2.5-leaf, almost at 3-leaf stage with many fields at 2 leaf stage. Earliest transplants are at 9-leaf stage. Transplanting should be completed by the end of this week. Onion thrips were detected in Elba this week in transplants 7-9 leaf, but not really in any plantings with fewer leaves. Although the weather is expected to cool, which could slow down thrips progress, scout your early transplanted fields to make sure you do not miss the spray threshold of 0.6 thrips per leaf for the first application of Movento insecticide.

The date for the Muck Onion Twilight Meeting, which is a collaborative effort between the Oswego Growers Vegetable Improvement Association and CCE Cornell Vegetable Program, is set for Thursday, June 16, 2022 in Wolcott with herbicide trial demonstrations hosted by Williams Farms, 4:30 pm to 7:00 pm, with dinner to follow. More details coming soon.

Muck Donut Hour in Elba will open for the season next Tuesday, June 7 at 8:30 am at the corner of Transit and Spoilbank in Elba muck – welcome to all. – CH

Regarding weed escapes, I have also seen less “looping” injury from Outlook than I have seen in at least the past four seasons. Often, less crop injury is an indication of less weed control. Outlook is essential for control of yellow nutsedge (YNS) and contributes to the control of ragweed. Pre-emergent weed control is a team effort among Outlook, Prowl and Buctril, and for whatever reasons (too dry? too warm? poor timing, Etc.) weeds are escaping and growing rapidly – see cover article for post-emergent weed control options. My go-to at 2.5-3 leaf to clean up escapes continues to be Buctril 2E 8 fl oz + Goal 2XL 4 fl oz, because it covers the most broad-spectrum of weed escapes 2-4” in size. It is not the solution for YNS or perennial sowthistle, unfortunately. Although not a silver bullet, Chateau 2 oz f.b. Chateau 1 oz 7 days later applied to YNS 1-3” often does a good job of burning YNS back. That is the best that I can recommend in young onions. Note, that Chateau can be “touchy” and give variable results from one treatment to the next. Remember that Chateau + Prowl EC can be toxic. Application of Prowl EC and Chateau should be separated by 1-2 days, definitely not be applied in the same day and absolutely not in the same tank mix. Similarly, to be prudent, application of Chateau and other “greasy” products like Outlook, or barley-kill herbicides, especially when surfactants are in the tank mix, should also be separated by 1-2 days. Alternatively,
Chateau and Prowl H2O are totally compatible and make an excellent team for residual control of pigweed and mustards (e.g. marsh yellowcress). – CH

After studying perennial sowthistle for almost 10 years, this weed continues to amaze me. I do not know why it is off to the races so early this year, but I hope that it can be tripped up. Good news is that **Stinger, a.i. clopyralid is now available as a FIFRA Section 24(C) Special Local Needs label in dry bulb onion for control of perennial sowthistle.** A maximum of 4 fl oz may be applied at the 4-leaf stage followed by a maximum of 8 fl oz a minimum of 14 days after the first application. A maximum of 12 fl oz may be used per season. The grower assumes all the risk for crop injury, crop yield reduction and crop loss. The trick is going to be that perennial sowthistle is most susceptible to Stinger when it is in the early-rosette to late-rosette stage (ER-MR), which typically occurs when direct seeded onions are in the 2-leaf stage. Thus, to ensure sowthistle is at ER-MR stage when onions are at 4-leaf; Chateau or Goal 2XL/tender needs to be used to keep it burned back, or it can be hand-weeded at 2-leaf to re-set the weed stage to ER-MR by 4-6 leaf. Sometimes the thistle and onion stage can be better aligned when onions are grown from transplants. As this weed has become more tenacious, my trial experience has shown that starting with the high rate of Stinger 8 fl oz first is more effective. The second application should be made just as the thistle is starting to recover from the first application, because weeds need to be actively growing for this herbicide to be taken up. – CH

**PEAS**

Fresh market peas are looking good out there. Coming into bloom. – EB

Processing pea planting finished up this past week. Post-emergence weed control is important before the bloom stage. See the Cornell Vegetable guidelines for herbicide options. – JK

**PEPPERS**

Mixed species of aphids seem to be the most common pest of peppers right now. As hay fields are mowed across the region, it is common to see aphid populations spike in vegetable fields. Peppers in particular are susceptible to aphid damage, as the pests feed deep in the growing point and emerging foliage is distorted, often in symmetrical patterns. Aphids can also transmit viruses to peppers such Cucumber Mosaic Virus, which will lead to season long crop loss. Grower’s commonly ask, “What can I spray?” Before we go down that path, let’s highlight a quote from the Cornell Veg Crop Production Guidelines: “Green peach aphids are notorious for developing resistance to insecticides especially in the pyrethroid, organophosphate or carbamate classes.” With this knowledge we would like to avoid insecticide classes 3A, 1A and 1B. Fortunately, there are some effective materials available that fall outside these classes. Fulfill (9B) and Beleaf (29) have a 0 day pre-harvest interval, and Assail (4A) has a 7 day pre-harvest. These three are non-restricted use and represent a strong rotation. For organic sprays, consider Mycotrol or similar biological products. We will share here, that often left alone, an aphid outbreak can resolve itself if naturally occurring biological control isn’t interfered with insecticides. – JR

**SNAP BEANS**

Planting continues. Make note of any stand issues and scout for weeds! – JK
New Podcast Series on Organic Strategies for Cucurbit Crops

For the past few years, researchers, extension specialists, and growers in Iowa, New York, and Kentucky, funded by NIFA's OREI program, have been exploring some new options for organic management of cucurbit crops. **Mesotunnels**—larger than low tunnels but smaller than high tunnels—are 3 1/2 feet tall and covered with a nylon-mesh fabric that keeps out pest insects and the pathogens they carry. Our field experiments and on-farm trials with muskmelon and winter squash have had varied results: some encouraging, some not. But we've learned some valuable lessons about how to use these protective structures effectively. We've also set out to develop **biological controls** for cucurbit bacterial wilt and cucurbit yellow vine disease (CYVD).

Contact: Mark Gleason, Iowa State University (mgleason@iastate.edu; office phone 515-294-0579)
Website: https://www.cucurbit.plantpath.iastate.edu/
Podcast series:
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Upcoming Events

**Muck Donut Hour Begins**
June 7, 2022 (Tuesday) | 8:30 am  
Corner of Transit and Spoilbank in Elba muck  
Meet with Onion Specialist Christy Hoepting every Tuesday morning in the Elba muck to catch up on everything ONIONS! All are welcome!

**Muck Onion Twilight Meeting**
June 16, 2022 (Thursday) | 4:30 pm - 7:00pm with dinner to follow  
Williams Farms, Wolcott  
A collaborative effort between the Oswego Growers Vegetable Improvement Association and CCE Cornell Vegetable Program, this event will feature herbicide trial demonstrations. More details coming soon!

**Erie Regional Produce Meetings**
July 7, 2022 (Thursday) | 6:00 pm - 8:00 pm  
Curvin Martin Farm, 12829 Eagle Harbor, Knowlesville Rd, Albion NY 14411

July 12, 2022 (Tuesday) | 6:30 pm - 8:30 pm  
Hidden Valley Produce, 324 Warren Rd, Frewsburg, NY 14738

July 13, 2022 (Wednesday) | evening event  
Agle's Farm Market, 7952 Gowanda State Rd, Eden, NY 14057  
More information will be available soon.
NY Sweet Corn Trap Network Report, 5/31/2022
Marion Zuefle, NYS IPM Program; from http://sweetcorn.nysipm.cornell.edu

This is the first post for the 2022 season. Statewide, seven sites reported this week. European corn borer (ECB)-E was caught at the Seneca Castle (5) site. The hybrid ECB was caught at Hurley (8) and Seneca Castle (14). Corn earworm (CEW) was caught at three sites with a high of 26 moths at the Eden site. No other moths were caught this week. Degree day accumulation for ECB-E would put their development at first spring moths or first eggs for most of the sites.

A new interactive map was developed by Dan Olmstead (NEWA Coordinator) and is located at the bottom of the Sweet Corn Pheromone Trap Network Report. You can select to view the map based on species, week, region, county or town. And when I begin reporting on WBC in dry beans you will also be able to select the crop. I will present both the usual trap catch table as well as the new interactive map for users to become familiar with. Please email me if you have any questions (Marion Zuefle: mez4@cornell.edu).

WNY Pheromone Trap Catches: May 31, 2022

<table>
<thead>
<tr>
<th>Location</th>
<th>ECB-E</th>
<th>ECB-Z</th>
<th>ECB Hybrid</th>
<th>CEW</th>
<th>FAW</th>
<th>WBC</th>
<th>DD to Date</th>
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</thead>
<tbody>
<tr>
<td>Batavia (Genesee)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Bellona (Yates)</td>
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<td>NA</td>
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<tr>
<td>Collins (Erie)</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td>Eden (Erie)</td>
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<td>0</td>
<td>NA</td>
<td>26</td>
<td>0</td>
<td>0</td>
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</tr>
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<td>Farmington (Ontario)</td>
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<td>NA</td>
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<td>Panama (Chautauqua)</td>
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<tr>
<td>Penn Yan (Yates)</td>
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<tr>
<td>Portville (Cattaraugus)</td>
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<td>Ransomville (Niagara)</td>
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<td>Seneca Castle (Ontario)</td>
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<td>Williamson (Wayne)</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>356</td>
</tr>
</tbody>
</table>

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm; DD: Degree Days; NA: not available

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