



Healthy Fruit, Vol. 31, No. 9, May 30, 2023

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor

## Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (NEWA, since January 1, 2023)	29-May [2022]
Base 43 BE	774 [820]
Base 50 BE	419 [444]

## Upcoming meetings

**June 7, Wednesday** – The next RIFGA Twilight meeting is June 7th at 6:30 at Rob and Jackie Swanson's Hard Pressed Cider Orchard at 930 Hopkins Hill Road, West Greenwich, RI 02817. You will love seeing their young, organic cider orchard and the NEWA weather station Rob has installed! Two hours of pesticide recertification credits are available.

**June 13, Tuesday** – The CT Pomological Society will hold a summer field day with vendors/exhibitors, free dinner, educational program. Our speakers include Evan Lentz, UConn; Dr. Jaime Pinero, UMass; Colleen Kisselburgh, Arthur Carroll Insurance; and Micheale Williams, Bishops Orchards. Pesticide credits have been applied for. This event begins at 4 pm on Tuesday June 13, at Belltown Hill Orchards, 483 Matson Hill Rd, South Glastonbury, CT. Registration is required for dinner. To register please click this link <https://bit.ly/42lcTZv>

# The way I see it

Jon Clements

Seems to me we are in a bit of a wait and see mode to ultimately determine the effects of the May 18 freeze. During our noon Zoom today it was suggested things were looking a little better now that fruit is sizing up. By now it's either sizing up or not sizing up and will drop. I am seeing a lot of damaged apples, however, that appear to be growing. Damaged being cracked, mis-shapen, or mottled in color. Probably not a good year to be growing x-fancy apples for packing? Although they will probably be worth a lot of money given the region-wide – including New York – freeze and resultant crop reduction. I predict USDA may ultimately declare a disaster for the region, allowing growers to borrow money with low interest loans. Let's just hope that does not stifle demand, I suspect not, there will be apples and they will be in high demand come fall.

Healthy Fruit may take a hiatus for a couple weeks as is the Tuesday noon Zoom. (The noon Zoom won't be back this year.) Both Jaime and I have commitments early in the week for the next couple weeks. So if you don't see a Healthy Fruit in your Inbox Tuesday afternoons, don't fret. We will push more crucial management information out as necessary. Or you can make your way down to the twilight meeting in Rhode Island next week.

One more thing, and it's sad, this, from Heather Faubert:

Hello Fruit Growers,

Most of you have probably heard that Gil Barden died last Thursday after an accident on the farm. Gil was a great grower and a great friend to many of us. I've known Gil for 40 years and he has always impressed me with his apple growing knowledge and his willingness to help others. We will miss him dearly.

Calling hours are on Friday June 2nd from 3-7 at [Tucker and Quinn Funeral Chapel](#) at 643 Putnam Pike in Greenville. The funeral will be private. His obituary can be seen at <https://www.providencejournal.com/obituaries/ppvp0497663>

I know the RI Fruit Growers will do everything they can to help Sandie Barden get through the season.

Heather



Beauty bush *Kolkwitzia amabilis* blooming right on time at UMass Orchard, Belchertown, MA

## Entomology

Jaime Piñero

**Weekly report of insect pest captures in monitoring traps at the UMass Cold Spring Orchard (Belchertown, MA)**

**Period: May 24-30**

Insect	Average captures/trap	Notes
Obliquebanded leafroller	0	1 Pheromone-baited delta trap
Codling moth	8	1 Pheromone-baited delta trap
Oriental fruit moth	4	1 Pheromone-baited delta trap

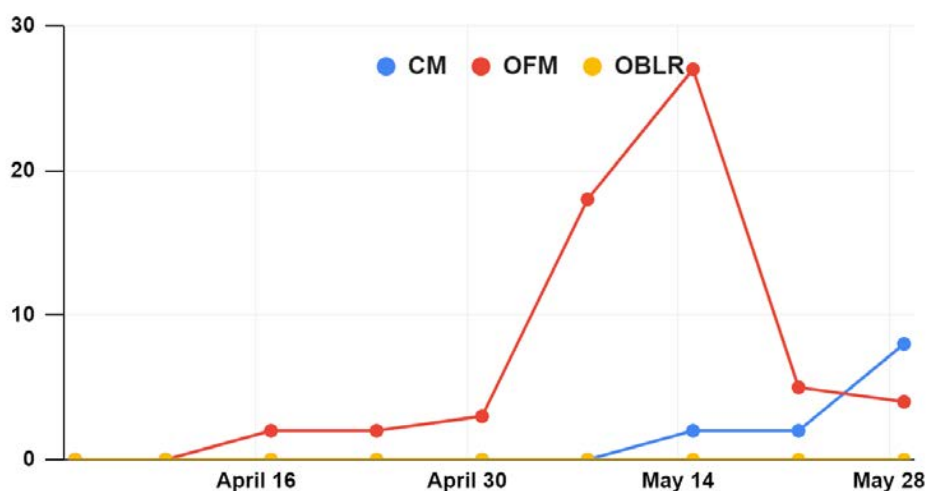
Redbanded leafroller	3	By-catch (OBLR pheromone lure)
----------------------	---	--------------------------------

**Insect pest activity at CSO.**

**Plum curculio (PC).** PC activity picked up last week. According to the oviposition model which predict when to stop spraying against PC, only 203 DD base 50°F will accumulate by June 3rd. Since the target threshold is 308 DD after petal fall of McIntosh (May 13th at CSO) then we believe fruit will continue to be susceptible for at least 14 more days.

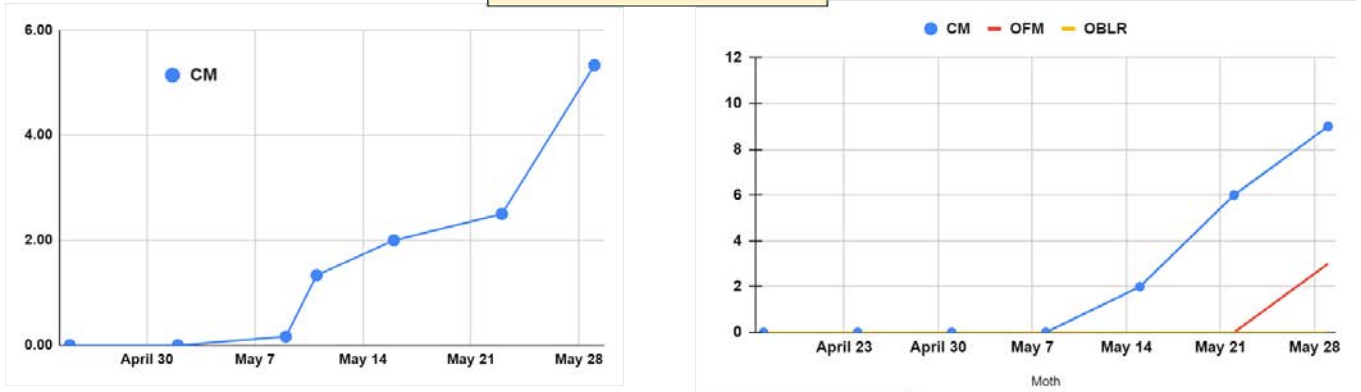
**Lepidoptera.** CM numbers are picking up and OFM populations continue to be small (see figure below). Such a pattern can be observed in other commercial orchards..

Weekly moth captures at CSO

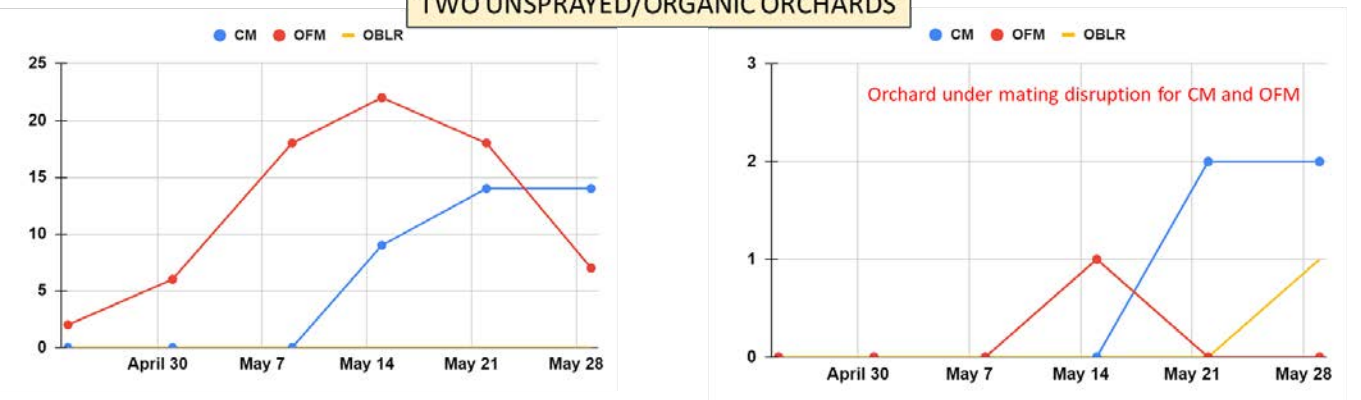


**Insect pest activity in other orchards:** While OFM numbers are currently low in most monitored orchards CM activity has increased substantially (see charts below). The first spray against CM larvae was recommended for early June for one orchard with a biofix (first date of sustained captured in traps) set as May 11.

### TWO SPRAYED ORCHARDS



### TWO UNSPRAYED/ORGANIC ORCHARDS



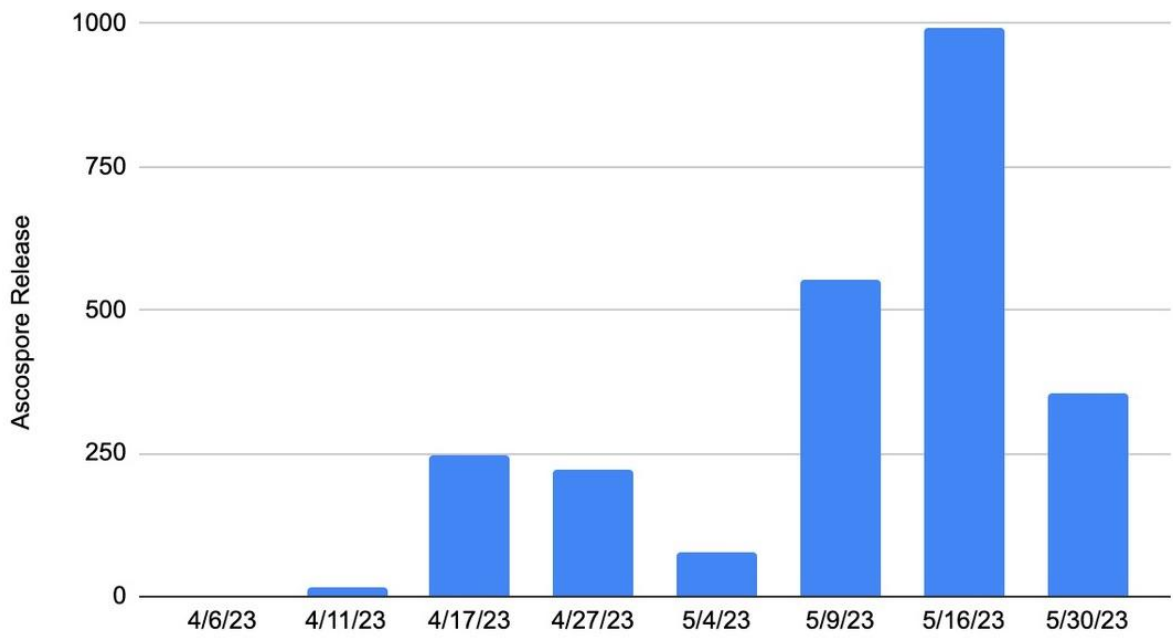
**Apple maggot fly.** Last year, AMF activity started earlier than normal. For that reason, this week we will start deploying our monitoring traps (unbaited red sticky spheres) at the orchards participating in the grafting project.

## Pathology

Jon Clements (with a little help from 'Hawkeye')

Sometimes I am better off not asking questions. I asked 'Hawkeye' "if it does not rain in June but it rains July 4 am I going to have to put on a fungicide for scab, thus ruining my celebration of the Nation's Birthday?" 'Hawkeye' replied with the following chart and I said "context?" Hawkeye replies "Primary is not done, at least in Greenfield, still a chunk of spore to go, over the hump but not done." But aren't you glad you sprayed fungicide all spring, otherwise your apple leaves would look like this...

## 2023 Ascospore PPA Release



Apple scab ascospore release, Greenfield, MA (Elizabeth Garofalo)





Apple scab on unsprayed McIntosh on 30-May at UMass Orchard, Belchertown, MA

Instead, we got powdery mildew. I hear it's pretty bad in the Hudson Valley where it is not controlled. Rather variety dependent, but where it is bad, I'd make a trip through the orchard with something good for mildew – most anything but captan and mancozeb.



Powdery mildew on Honeycrisp at UMass Orchard, 30-May

## Horticulture

Jon Clements

What's on my mind in a picture?

Still assessing the extent of freeze damage, seems to be getting a little more tolerable, although many disfigured apples?





Freeze damaged Honeycrisp at UMass Orchard, 30-May, 2023

Still need to do some thinning? Accede is the answer (if you have it) at 15-20 mm. The upcoming few days will be your last shot. No Accede? I'd suggest 6-BA (Maxcel) and carbaryl.



**Active Ingredient:**  
 1-aminocyclopropanecarboxylic acid (ACC) ..... 10.0%  
**Other Ingredients** ..... 90.0%  
**Total** ..... 100.0%

[Accede label...](#)

**APPLE – FOR FRUIT THINNING**

Crop	Objective/ Benefit	Application Timing/ Use Instructions
Apple	Depending on cultivar, orchard conditions, application timing, and grower objectives, one or more of the following benefits will be associated with <i>Accede</i> : <ul style="list-style-type: none"> <li>• Fruit thinning</li> <li>• Enhanced return bloom</li> </ul>	Apply 23 to 46 fl oz <i>Accede</i> per acre (equivalent to 2.67 to 5.34 oz a.i. per acre or 200 to 400 ppm ACC assuming a spray volume of 100 gallons per acre) using sufficient spray volume to ensure complete tree coverage (refer to the dilution table for assistance).  <i>Accede</i> can be applied in the period from full bloom until the average diameter of the king fruitlets is 25 mm. <i>Accede</i> is most active when king fruitlet diameter is 15-20 mm.

**NOTE:** Direct 80% of the spray into the upper 2/3 of the tree canopy. Use higher rates in orchards that have a history of being difficult to thin, in varieties known to be difficult to thin, and in cool weather situations. Use *Accede* in a program with other thinning products. Consider reducing the rate of application if temperatures are expected to exceed 90°F on the day of application. Allow 7-10 days to observe the effect of any thinning product before making another application. For specific information on the best use practices for your location, consult with your Valent Agricultural Specialist (1-800-6-Valent).

**Water Volume:** *Accede* efficacy requires that fruit and foliage receive thorough spray coverage. To ensure thorough coverage adjust water volumes based on tree size and spacing and use calibrated spray equipment (i.e., orchard air blast sprayer). Excessive spray application volumes that result in spray runoff will reduce product performance. In most cases, 100 gallons per acre has been shown to be effective.

**Adjuvants:** Use of a non-ionic surfactant with *Accede* will improve performance and response.

**Additional Notes:**

- Compatibility and performance data for *Accede* with other agricultural products are not available.
- Application of *Accede* to stressed trees or when temperatures are above 90°F may result in minor leaf yellowing or leaf drop.
- Do not apply *Accede* during bloom if there is a frost at this time. If frost occurs during bloom, wait until damage to flowers and buds can be assessed to determine if application of *Accede* is needed for additional thinning.

Today (literally), mature tall-spindle apple trees lost approximately 3 gallons of water per tree through transpiration. Are you replacing it with 4-5 hours per day of trickle irrigation? (Assuming 3 foot emitter spacing and 0.6 gph emitters.) We would also need 1.7 inches of rain to bring the water deficit to zero. It's dry out there!

Recommendation: **Irrigate**

Date (2023)	Orchard ET (gallons)		Rainfall		Irrigation	Water Balance (gallons/acre)	
	per tree	per acre	inches	gallons/acre	gallons/acre	Daily	Cumulative
Apr 6	0.0	0	0.03	570	0	570	0
Apr 7	0.3	356	0	0	0	-356	-356
Jun 1 Forecast	3.3	4044	0	0	0	-4044	-40125
May 29	3.7	4420	0	0	0	-4420	-28916
<b>May 30</b>	<b>2.8</b>	<b>3359</b>	<b>1.7</b>	<b>32313</b>	<b>0</b>	<b>28954</b>	<b>0</b>
May 31 Forecast	3.1	3806	0	0	0	-3806	-3806

NEWA Apple Irrigation model output for 30-May, UMass Orchard, Belchertown, MA

Stripping and pinching should be ongoing in newly planted trees. Make that leader stand out, not “which one is the leader?” [Techniques for Training Young Apple Trees](#) and see below.



Before stripping and pinching

After stripping and pinching



## Guest article



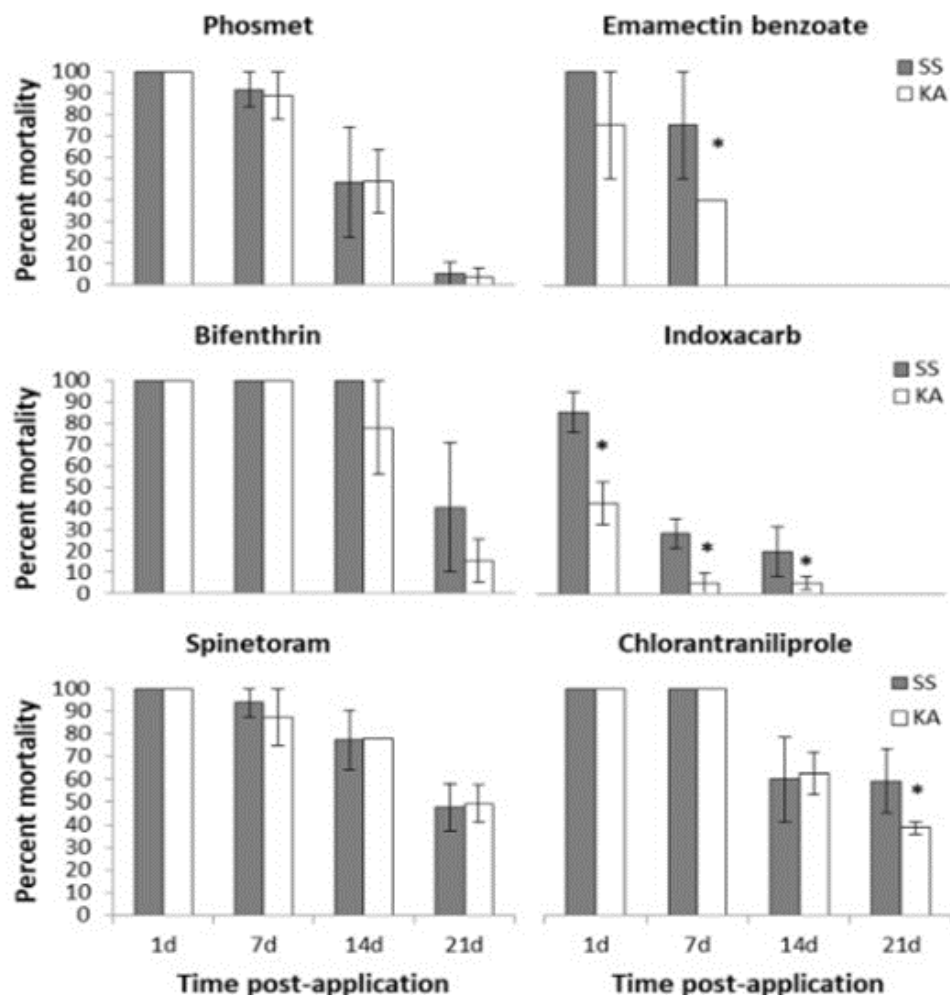
Research article summarized by: Matthew Bley ([mbley@umass.edu](mailto:mbley@umass.edu)), a graduate student at Stockbridge.

### **Introduction**

The obliquebanded leafroller (OBLR), *Choristoneura rosaceana*, is an insect pest of fruit orchards, specifically apple and cherry, with a wide range of hosts. IPM programs against OBLR have mainly relied on the use of conventional insecticides. Insecticide resistance to older and new chemical controls has been documented at low to high resistance levels. Recent studies have documented resistance levels in OBLR field populations to products that they have not even been exposed to. Those findings combined with laboratory studies, which do not account for resistance that has developed in field populations of the pest, on insecticide's effectiveness, can confuse growers looking for chemical control recommendations. This study sought to (1) quantify the efficacy of different insecticides against different resistant OBLR populations (from a cherry and an apple orchard) and (2) assess the toxicity overtime of different insecticides against resistant OBLR populations.

### **Results**

Differences in field performance of the same insecticide is due to differing levels of resistance in field populations, different weather conditions and seasonal timing, and differences in the crops morphology and physiology which may affect consumption and insecticide accumulation. **Importantly**, when deciding what insecticides to apply, consider the history of use in your area/orchard, try to avoid insecticides with a long history of use to avoid resistance development.



**Figure 2.** Mortality means ( $\pm$  SE) of the *C. rosaceana* 12–24 h-old larvae of the apple population (KA) and susceptible population (SS) when exposed to apple foliage collected at different post-application intervals. An asterisk (\*) means the mortality of the apple population is significantly different from the mortality of the susceptible population at a given post-application interval ( $\alpha = 0.05$ ).

**Phosmet.** Highly susceptible to wash-off from precipitation, but is capable of cuticle penetration for storage of the active ingredient. Phosmet has longevity as an effective chemical control of OBLR because of its fast acting neurotoxin. Documented in-field resistance may not result in a measurable loss of its efficacy. A 7-day post-application should be considered for the reapplication interval for this compound.

**Bifenthrin.** Moderate wash-off from precipitation, but can penetrate the cuticle to protect the active ingredient, helping longevity. Bifenthrin is an effective chemical control of OBR. Variations in field efficacy are assumed to be due to differences in application and field conditions. Documented in-field resistance may not result in a measurable loss of its efficacy. A 14-day post-application should be considered for the reapplication interval for this compound.

**Spinetoram.** Degrades rapidly due to light exposure, yet has excellent translaminar movement, allowing for the active ingredient to be protected inside plant tissue. Spinetoram is an excellent chemical control



of OBR. However, resistance development should be monitored periodically for further development. Documented in-field resistance may not result in a measurable loss of its efficacy. A 14-day post-application should be considered for the reapplication interval for this compound.

*Chlorantraniliprole*. Highly rainfast, plus chlorantraniliprole has translaminar activity for residue protection, resulting in long-lasting crop protection. Chlorantraniliprole's lethality in the current study conflicts with other research on the insecticide's lethality. However, this insecticide has lethal and sublethal effects (e.g. delaying oviposition). Documented in-field resistance may not result in a measurable loss of its efficacy. Based on results, a 14-day post-application should be considered for the reapplication interval for this compound. *Indoxacarb*. Moderately susceptible to wash-off from precipitation, but the active ingredient is capable of being reserved in plant leaves and fruit cuticles. The failure of indoxacarb to control OBLR was most likely due to high resistance levels in OBR populations tested. Although not labeled for use against OBLR in fruit orchards, growers should note that this insecticide is not expected to incidentally control OBLR.

*Emamectin Benzoate*. Low field efficacy was due to the documented resistance levels in OBLR and due to the product's high sensitivity to light degradation. There is conflicting evidence supporting the efficacy of emamectin benzoate on OBR, efficacy seems to vary due to field populations of the pest and their resistance level. Emamectin benzoate is registered against numerous pests in apples, if there is a high pest infestation that needs supplementary insecticide application, a 7-day post-application should be considered for the reapplication interval of the compound.

The results for the compounds in this study fall into two categories in terms of how resistance is expressed under field conditions: (1) reduced longevity of control; and (2) no evidence for loss of lethality of the compound. For example, phosmet, spinetoram, and bifenthrin were associated with significant levels of resistance in the OBLR field populations in the baseline laboratory bioassay but the field-based residual bioassay revealed that these laboratory-documented significant levels of resistance did not result in a measurable loss of field performance, or practical resistance, with the labeled field rate of those compounds.

**Citation:** Hafez, A.M.; Mota-Sanchez, D.; Vandervoort, C.; Wise, J.C. Resistance Affects the Field Performance of Insecticides Used for Control of *Choristoneura rosaceana* in Michigan Apples and Cherries. *Insects* 2021, 12, 846. <https://doi.org/10.3390/insects12090846>

## Useful links

UMass Fruit Advisor: <http://umassfruit.com>

Network for Environment and Weather Applications (NEWA): <http://newa.cornell.edu>

Follow me on Twitter (<http://twitter.com/jmccextman>) and Facebook

(<http://www.facebook.com/jmccextman>)

[The Jentsch Lab](#) (Peter Jentsch, Poma Tech)

[Acimovic Lab](#) (Srdjan Acimovic at Virginia Tech)

[Tree Fruit Horticulture Updates](#) (Sherif Sherif at Virginia Tech)

[CCE ENYCHP Tree Fruit Blog](#)

The next Healthy Fruit will be published on or about TBD, 2023. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

Thank you sponsors...



[Orchard Equipment and Supply Company, Inc. Conway, Massachusetts](#)



[Massachusetts Fruit Growers' Association](#)



[Valent USA](#)



ADAMA

[ADAMA](#)

**Tougas**  
Family Farm

Fresh Fruit, Fresh Air,  
and Family Fun

[Tougas Family Farm](#)



**CT GREENHOUSE**

Structures & Supplies

WWW.CTGREENHOUSE.COM

[CT Greenhouse Structures & Supplies](#)



**FARM CREDIT EAST**

[Farm Credit East](#)



[New England Vegetable & Berry Growers' Association](#)



[Agro-K](#)



[Seven Springs Farm Supply](#)