Healthy Fruit, Vol. 29, No. 8, May 25, 2021

Prepared by the University of Massachusetts Amherst Fruit Team

Contents

Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (Since March 1)	24-May
Base 43 BE (NEWA, since March 1)	711
Base 50 BE (NEWA, since March 1)	388

Upcoming pest events

Coming events	**Degree days (Base 43 BE)**

Black cherry fruit fly 1st catch	702-934
Black stem borer 1st flight peak	635-901
Codling moth 1st flight peak	562-890
Lesser appleworm 1st flight peak	364-775
Obliquebanded leafroller pupae present	601-821
Redbanded leafroller 1st flight subsides	610-891
San Jose scale 1st flight peak	560-736
Spotted tentiform LM 1st flight subsides	682-941

Upcoming meetings

NH Tree Fruit Virtual Twilight Meeting June 2021

Wed, 06/23/2021
6:00pm - 8:00pm
UNH Extension Field Specialist Jeremy Delisle will host this meeting featuring; Elizabeth Garofalo, Dr. Jaime Piñero and George Hamilton who will discuss seasonal disease, insect and sprayer calibration issues. Please use this link to pre register:
https://unh.zoom.us/meeting/register/tJUrcu2spjkvE93o0Zfs7XhALoWtRcMZUx50
Pesticide credits are pending.

The way I see it…

Jon Clements

Orchard visits observations in one long run-on-sentence-train-of-thought: chemical thinning late last week (and during bloom and petal fall) just starting to take effect looks good hold off on any 18 mm thinning sprays except where justified by fruitlet growth rate model rosy apple aphid infestations seem to be worse this year than any previous they seem to like Cortland Macoun and Honeycrisp probably too late to do much about it now powdery mildew also bad with this dry weather unless effective fungicides used starting at pink bud spring 2022 remember Accede Experimental Use Permit late thinning applications going out in several orchards over next week on Gravenstein Cortland Gala Macoun Paulared among others stay tuned contemplating twilight meeting out east week of June 7 or 14 stay tuned take some time off over Memorial Day weekend if you can...

Insects

Jaime Piñero

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

Period: 5.18 - 5.24.2021

Insect	Average captures/trap	Notes
Redbanded leafroller	2	Pheromone-baited delta trap (CSO)
Codling moth	1	Pheromone-baited delta trap (CSO)
Obliquebanded leafroller	0	Pheromone-baited delta trap (CSO)
Oriental fruit moth	1	Pheromone-baited delta trap (CSO)
BMSB	1.8	Pheromone-baited clear sticky card (13 traps across MA)
SWD	0.05	Comparison of fresh and fermented diluted Concord grape juice vs. commercial lure (20 traps in all)

Redbanded leafroller (RBLF). Very few adults have been captured at the UMass Cold Spring Orchard (CSO) for the last two weeks (2 in the past 7 days).

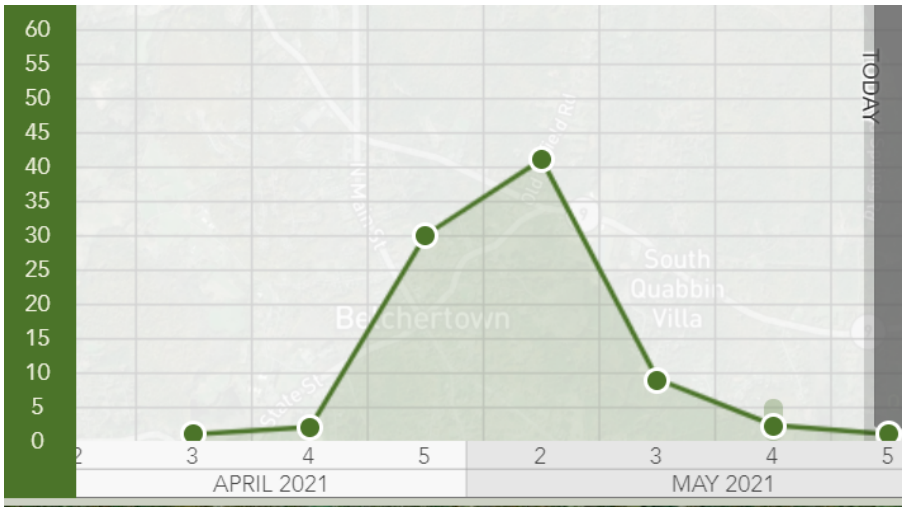
Codling moth (CM). The first CM of the season was captured at CSO on May 20th. We still have not set up a BIOFIX at CSO. This past week, 1 CM was captured in one monitored orchard and no CM have been trapped in two additional locations. Thus, CM populations seem to be low at this moment – although we received reports of high captures in other areas where we are not monitoring.

In 2020, the level of fruit injury by CM in 12 MA orchards was very low. This, of course, doesn't mean that the same will be true in 2021. As you make your selection of pesticides against CM, keep in mind the need to rotate materials with different IRAC classes of active ingredients to decrease the onset of resistance. In recent years, CM has become resistant to a number of insecticides including organophosphates. It is believed that this resistance is due to an increase in enzymatic activity of the larvae, leading to pesticide detoxification. According to Cornell University, codling moth populations resistant to older insecticide classes, including pyrethroids and OP's, can be found in orchards throughout the Northeast. But we don't believe resistance is widespread in MA.

If an insecticide spray is needed, then several materials listed in the NETFMG are ranked highly efficacious. Examples include Delegate 25WG, Altacor 35WDG, Assail 30 SG, Exirel, and Rimon* 0.83EC. For the full list of materials that can be applied against CM 7 to 14 days after Petal Fall, click HERE.

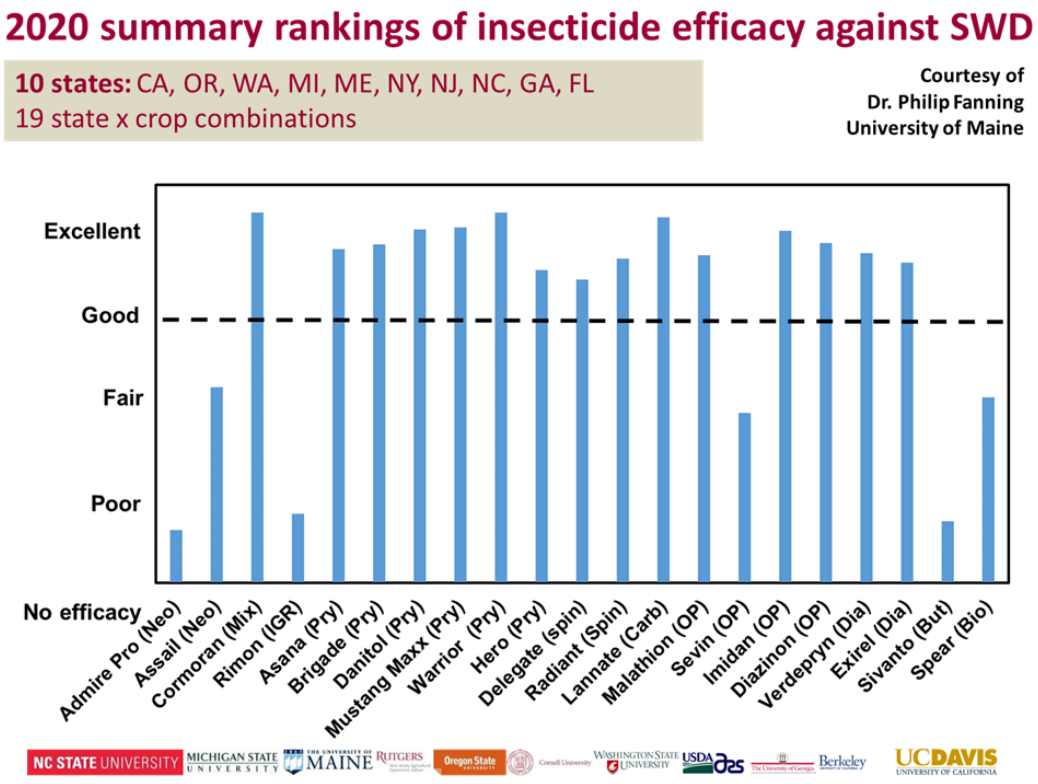
**Rimon is an insect growth regulator that impedes egg development. Must be applied before egg laying or shortly after egg laying begins.*

Oriental fruit moth (OFM). Trap captures continue to recede, an indication that peak oviposition activity at CSO is nearly over. The petal fall spray should have taken care of the larvae. Some shoot flagging was seen at the UMass Cold Spring Orchard, but not enough to warrant a spray specifically targeting OFM.



Spotted-wing drosophila. The first SWD (one female) of the 2021 growing season was captured on May 19 in one monitoring trap. This year, we are comparing the ability of fresh and fermented diluted Concord grape juice at detecting the first SWD against that of one commercial lure. Monitoring traps were deployed in five MA locations.

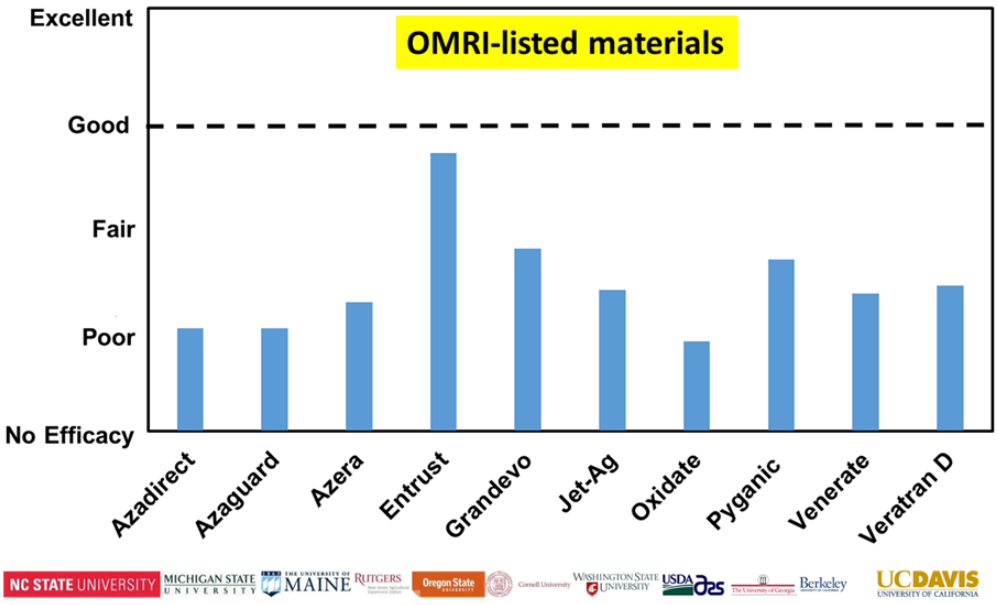
The following two charts (note that the bottom chart shows materials approved for organic production) show the most recent (2020) summary rankings of insecticide efficacy against SWD. Information was collected from 10 states (CA, OR, WA, MI, ME, NY, NJ, NC, GA, FL). The Y-axes indicates the level of SWD control reported for each insecticide. You will want to use insecticides that are rated 'good' at least. Remember that the efficacy of the sprays is expected to improve by adding sugar to the tank (2 lbs. of sugar/100 gallons of water; for smaller amounts: 5 tablespoons/gallon of water).



2020 summary rankings of insecticide efficacy against SWD

10 states: CA, OR, WA, MI, ME, NY, NJ, NC, GA, FL
19 state x crop combinations

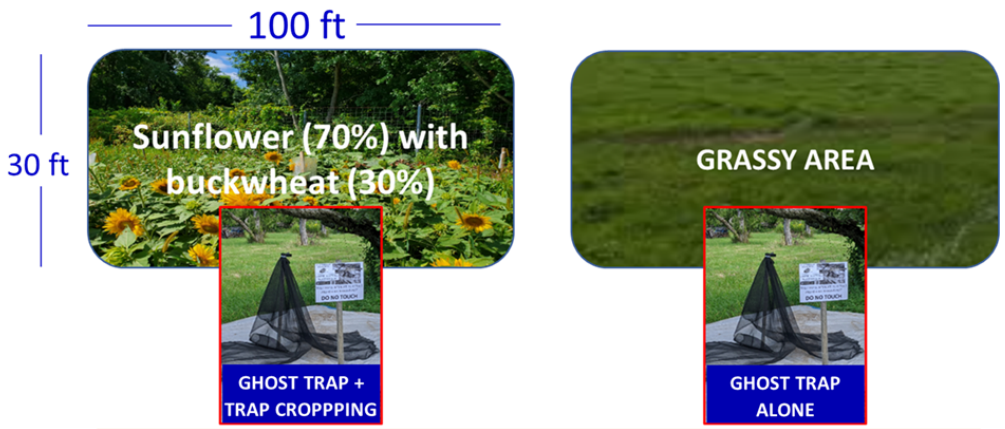
Courtesy of
Dr. Philip Fanning
University of Maine



Brown Marmorated Stink Bug (BMSB). Pheromone-baited clear sticky cards were deployed in 13 locations throughout MA during the week of May 10-14. BMSB were captured earlier than in previous years, but this may be due to the type of monitoring device used as this is the first year we use clear sticky cards. Traps will be inspected weekly or bi-weekly. **As of May 25, 5 out of 13 locations had BMSB captured in traps, and the highest number of BMSB recorded in one single trap was 14.**

As mentioned before, on-farm research involving trap cropping (sunflower and buckwheat) in association with the ghost trap will be conducted in 2020 and 2021**. If you are interested in participating, please let me know.**

We still have seeds and other materials, and can provide support, for ONE MORE orchard. Let me know ASAP if you are interested in having this trap crop study at your farm. See area needed below.



Once a week, we will record:

On each plot: # stink bugs (by species) found dead in ghost trap and on plants (3-min visual assessment)

Rosy Apple Aphid (RAA). Infestations by RAA have been reported in several locations. While all apple varieties are attacked by RAA, 'Cortland', 'Ida Red', and 'Golden Delicious' are particularly susceptible. Feeding on the leaves of fruit clusters often results in stunting and malformation of the fruit. Problems usually begin to appear after petal fall and by mid-summer the aphids move to alternate hosts.

At this point in time, if controlling this pest with insecticides is deemed necessary (the April 27th issue of Healthy Fruit included scouting options and threshold for RAA) then the best control option is in the form of insecticides that have systemic activity such as Movento.

Rosy apple aphid infestation in Cortland leaves (5.25.2021). Pictures: Jon Clements.

Diseases

Liz Garofalo and Dan Cooley

It has been dry in Belchertown, though only about 5% of the state is experiencing “abnormally dry” conditions. Belchertown is still down 3.65” annual average precipitation and it has been two weeks since we have seen any rain in Belchertown.

The forecast is for 0.25”-0.50” rain for Wednesday night (May 26) throughout MA. Temperatures are estimated to be in the mid- to upper 60’s during the rain. Temps for Thursday will be in the mid to upper 70’s. Relative humidity will be moderate on Thursday, allowing leaves to dry out. Showers will continue through Friday into Monday, Nonetheless, setting us up for relatively high disease pressure for the next week.

Scab lesions from earlier infections are well-developed on unsprayed trees at Belchertown. Rain will cause secondary infections, and release any ascospores that remain. Both NEWA and RIMpro are calling for significant scab infections over the next 5 days. Given the 1,160 ascospores observed in the home lab today, (a big rebound from the 12 seen last week), we would agree that this rain has the potential to cause significant infection, both primary and secondary. Make sure trees are protected or receive post-infection fungicides over the next week.

Intermittent showers across the state continue to raise concerns over **fireblight** in locations with late blooming varieties or those that are experiencing straggling bloom (as pictured in pear below on 5/24). There are a few new blossoms here and there, and the risk estimated by the models remains very high.

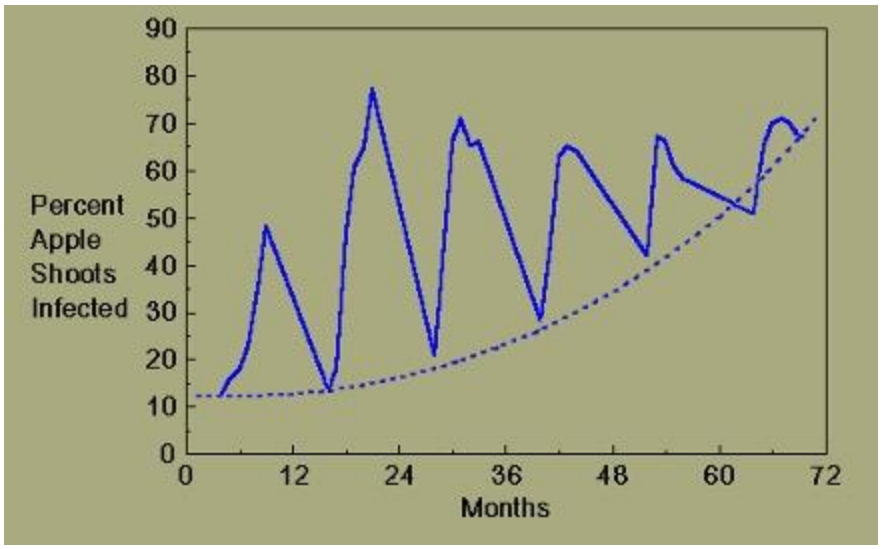
Also observed in the home lab was an increase in **Marssonina** conidia, some of which had begun to germinate (which means they are viable spore). There are still no labeled materials for use against Marssonina in the States. When managing apple scab, materials like Manzate, Sovran, Flint and Pristine have all been shown to be effective against Marssonina in European countries where this disease has also become more prevalent. Organic options include copper hydroxide, lime-sulfur and sulfur. These are also not currently labeled for Marssonina in the States.

Bitter rot is also of potential concern with the rain in the forecast. This fungus can cause infection in as little as 5 hours at ~77°F given free water is present. Merivon, Pristine, Inspire Super and Mancozeb are listed with “high” efficacy against bitter rot.

We continue to see more **powdery mildew** in MA than we used to see. Part of this may be that varieties like Honeycrisp are a little more susceptible than McIntosh, part may be the warm winters and dry springs, and part may be that because the disease isn’t a big problem, growers generally don’t select fungicides specifically to manage mildew. If looking for something that will be very effective against scab, bitter rot and powdery mildew, Merivon and Pristine work well, but mancozeb and other EBDCs don’t touch mildew.

And really, the battle against mildew should start at tight cluster, and continue through bloom. At this point, fungicide covers through terminal bud set can slow the disease down, but the bulk of the infections are in place.

While that damage is usually limited to a terminal or cluster here and there, mildew is a disease that gradually builds up over years if nothing is done. The graph below shows data from an orchard taken over 6 years. Each year, the percent of shoots infected goes up, then drops off over the winter. But over the years, the base levels of infection go up. So, rather than having a few scattered infections now and then, there are consistently high levels of infection every year.



Notes from the field

Liz Garofalo

Left: Wide striped green fruit worm, one of a number of the "green fruit worms" that attack apple. Right: characteristic fruit worm damage on developing apple

This pest is typically managed by spray applications made against plum curculio.

Adult **pear psylla** summer form are active now. While temperatures are favorable for making an oil application Thursday into the weekend, the potential for rain is high enough to **cause phytotoxicity concerns** which arise when leaves remain wet, increasing drying time and the likelihood of the oil penetrating the leaf's tissue. There are no action thresholds for adult psylla summer form, however, when scouting for nymphs one nymph per three leaves inspected is sufficient to warrant a spray application. Esteem (Pyriproxyfen, IRAC 7C) is an insect growth

regulator that can prevent egg hatch and prevents nymphs from molting. While Esteem does not appear to have adulticidal activity, eggs laid by adults exposed will be supressex. Bonus, this material has relatively low toxicity ratings for most beneficial insects and honeybees. A *critical* management aspect to always keep in mind with psylla is material **rotation to reduce the risk of resistance development**. So, if you have already applied a 7C insecticide to your pear, you will need to consider a different IRAC group. Typically, Centaur and Portal should not be used yet. These materials have a limited number of allowed applications per year and are powerful tools against overlapping later summer generations. (Ed. note: what about kaolin clay, aka Surround?)

Horticulture

Jon Clements, Editor

Apple Thinning Suggestions for May 25, 2021 (Duane Greene)

Over the past week all growers in Massachusetts have experienced the best thinning period of the season. Hopefully, all took advantage of the opportunity. Now is the time to evaluate the results of those applications before deciding the next step and determine if additional thinner applications are necessary. Following application, it takes about 3-4 days for thinners to become effective and by the 7th or 8th day after application the thinning results can be evaluated because abscising fruit will have slowed or stopped growth. The Fruitlet Growth Model is the most accurate way to make this assessment but observation and evaluation of fruit size in the clusters can be most useful, especially for those with experience.

The weather forecast for this coming week does not appear to be favorable for effective chemical thinning. Showers and cooler weather are expected to arrive later this week. If the evaluation of fruit set is that more thinning is necessary, aggressive thinning will be required to even get some thinning. However, the weather forecast appears to be unusually iffy and subject to change so be nimble in making thinning decisions. MaxCel probably will not work well if the temperature is below 75 F. It is imperative to include carbaryl in with the MaxCel to get good thinning. (Ed. note: the addition of oil at 1 pint per 100 gallons dilute tree row volume as a penetrant will give even increased results if using carbaryl and/or 6-BA.) NAA is probably your best choice to use in cooler conditions. (Ed. note: although it's efficacy when fruits reach 15 mm is minimal.) I would also suggest that you include carbaryl in with the NAA. (Ed. note: Bingo!) ProTone as ABA is a relatively new thinner. Given the cool temperatures predicted, it would be a poor choice to use during this period of time. This thinner is only effective when used when temperatures are consistently above 75 F for several days. If fruit size in your orchard is 15 mmm or more and does remain cool, aggressive rates should probably be used to achieve more thinning. (Ed. note: or hire a crew to do some hand thinning.)

Guest article

Submitted by Elizabeth Garofalo

An Untapped Commodity in Farming and Food-Systems Development:

The USDA National Agricultural Library
Vanessa S. Gordon, Ph.D.

The United States National Agricultural Library (NAL) is one of the five national libraries of the United States, housing one of the world's largest collections devoted to agriculture and its related sciences. The library has a significant online presence with information readily available to the public – including full-length research journal articles that would typically only be accessible via a fee-, university-, or government-based system. Overarching topics include, but are not limited to: agricultural law; animals and livestock; education and outreach; farms and farming systems; food and human nutrition; invasive species; marketing and trade; natural resources and environment; plants and crops; research and technology, rural development, and information on business development and funding. Each multi-layered subject area provides a vast array of public and private tools that would prove useful to a spectrum of growers, from the hobby gardener to the professional research scientist. NAL participates in the environmental justice community, providing materials detailing USDA definitions, population specifications, and agency goals in support of feeding everyone and decreasing disparity seen in target populations.

The following two specialized information centers may be of particular interest to you:

- The Alternative Farming Systems information Center (AFSIC) focuses on sustainable, organic, and other agricultural systems that enhance local food systems and marketing through information and research services for farmers and consumers. In addition to providing a plethora of information on different crop, livestock, production, and pest management systems, AFSIC also delivers information on post-harvest operations, including: small farm business and funding tools/opportunities; various educational tools; and local/regional food systems marketing resources (e.g. farmer's market, farm to institution, direct, value-added, cooperative, and agritourism).
- The Water and Agriculture Information Center (WAIC) collects, organizes, and communicates the scientific findings, educational methodologies, and public policy issues related to where water resources and agricultural pursuits intersect. The information on WAIC is very research dense and provides access to tools, and databases in many forms that can be used to direct farming operations; including items like AQUASTAT, FishBase, and the PAN Pesticide Database in addition to different data banks, and geospatial/mapping resources. The WAIC site also contains over 700 highly advanced topic-based dynamic searches that stay current with respect to available publications at the library, with at least 98% of the results open to the public without special access.

Sign up for Alternative Farming Systems, Rural, and Water and Agricultural Information Center newsletters from the USDA National Agricultural Library (NAL):

1. Go to the USDA ARS subscriber site.
2. Under National Agricultural Library, check the boxes for Alternative Farming; Rural Information; and Water and Agriculture Information Center News Updates (the bottom 3).
3. The USDA cannot send SPAM or give away email information - you will only receive the information you request.
   https://public.govdelivery.com/accounts/USDAARS/subscriber/topics

Join us and learn about what NAL has to offer for you, your business, and your efforts to provide healthy and regionally-grown food to your clientele.

Facebook Me

Jon Clements is at **UMASS Cold Spring Orchard**.
May 24 at 4:43 PM · Belchertown ·

CMU students probing apple canopy with robot, goal to visualize and measure fruitlets and test mechanical harvest concept

Peter Mitchell, Eric Henry and 20 others

6 Comments

Useful links

UMass Fruit Advisor: http://umassfruit.com

UMass Extension Fruit Team YouTube Channel

UMass Fruit Loop IPM Podcast

Scaffolds Fruit Journal (1995-2020). With the retirement of Dr. Art Agnello from Cornell University, this publication has come to an end. See Peter Jentsch's blog below.

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

Follow me on Twitter (http://twitter.com/jmcextman) and Facebook (http://www.facebook.com/jmcextman)

Acimovic Lab at Hudson Valley

Peter Jentsch's Blog

The next Healthy Fruit will be published on or about June 1, 2021. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

Nourse Farms

New England Vegetable & Berry Growers' Association

Massachusetts Fruit Growers' Association

Valent USA

Onset

Trécé