



Healthy Fruit, Vol. 30, No. 4, April 26, 2022

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor

Current degree day (DD) accumulations






UMass Cold Spring Orchard, Belchertown, MA (NEWA, since March 1)	25-April
Base 43 BE	233
Base 50 BE	91

Upcoming pest events

Pest	DD's Base 50 F. BE	Recommendation
San Jose scale (adult)	36-129	Apply oil
European red mite (egg hatch)	51-129	Apply oil
Obliquebanded leafroller (larvae)	90-109	Monitor for larvae presence
Aphids (1st egg hatch)	109	Monitor, if rosy apple aphid present apply insecticide at open cluster through pink
Green fruitworm (1st egg hatch)	109	Post-bloom sprays recommended

Current bud stages

Current bud stages. 25-April, 2022, UMass Cold Spring Orchard, Belchertown, MA (more current bud stages [here](#))

				
McIntosh apple <i>Tight cluster</i>	Honeycrisp apple <i>Early tight cluster</i>	Gala apple <i>Tight cluster</i>	Crispie pear <i>Green cluster +</i>	Redhaven peach <i>Early pink</i>

Upcoming meetings

Every Tuesday at noon - UMass Fruit Team Open Office Hour
<https://umass-amherst.zoom.us/j/97190816203> Bring your own lunch.

Wednesday, May 4, 2022, 4:30 PM - UMass Fruit Team Twilight Meeting, Mann Orchards Riverside Farm, 445 Merrimack Street, Methuen, MA. 1 pesticide recertification credit. A light supper (BBQ!) will be served. *Note the 4:30 start time!*

Thursday, May 12, 2022, 12:00 PM - UMass Fruit Team Grape Noon Zoom with Dr. Elsa Petit (Note this will be a grape-centric meeting, we don't expect to discuss tree fruit topics.)

Wednesday, May 18, 2022, 5:30 PM - URI/UMass Twilight Meeting, Spencer Morris's Orchard, Warren, RI. Details forthcoming.

Podcast reminder: Don't forget to check out the [UMass IPM Fruit Loop](#), the audio version of Healthy Fruit. We are getting episodes out on a slight delay right now but should be up to speed next week.

The way I see it

Jon Clements

Not much to see here I will admit. Apples are at tight cluster on average. Peaches are starting bloom. (Naturally it's going to turn cold and windy now for a few days, ugh.) I'm seeing 'blanks' in apples across the board here at the UMass Orchard, not looking like a snowball bloom overall, but will be adequate. I am predicting a bloom date of May 14 based on the 8-14 day outlook of a likelihood of below average temperatures. This would be slightly later than the long-term average apple bloom date. It's not too late to put on a foliar nutrient application of

boron, zinc, and a little nitrogen. Start foliar calcium applications at pink, but don't use calcium chloride. Pink is good timing for the first application of prohexadione-calcium, Apogee or kudox. A reminder to add water conditioner and don't add calcium to that prohexadione-calcium spray unless you are using a calcium formulation proven to be compatible with Apogee/kudox. Have I mentioned yet that the AmidThin label has been updated? I will have more on that next week, but Amid-Thin at bloom, which is now explicitly allowed, is real good timing to get your thinning started. And guess what? I am told it is registered in Rhode Island now! :-)



“Where’s the beef???” A ‘blank’ Honeycrisp bud.

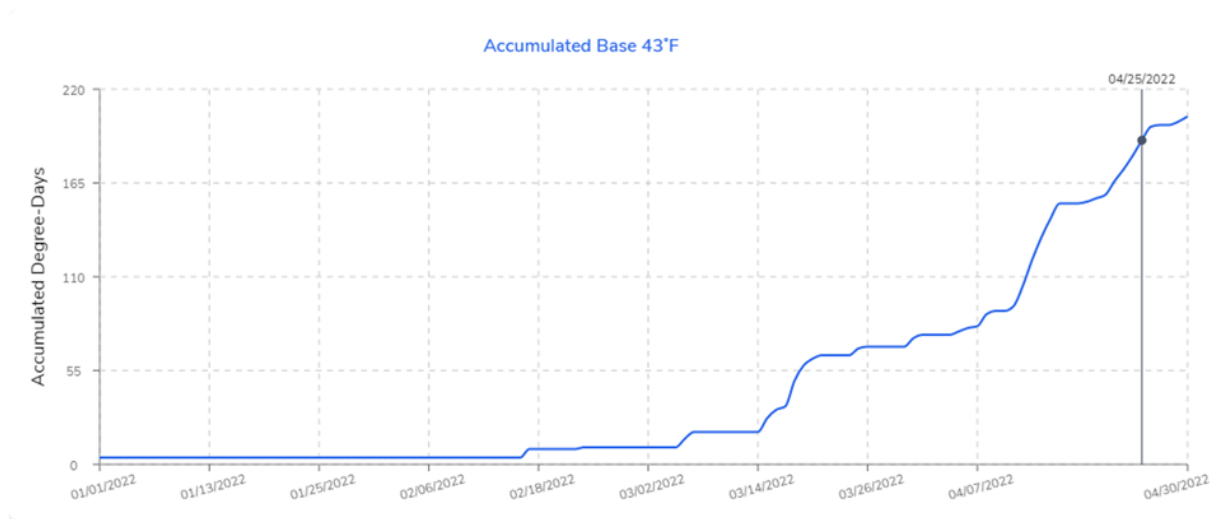
Entomology

Jaime Pinero

Tarnished plant bug (TPB). TPB activity continues to be low but it increased slightly over the past few days.

Oriental fruit moth (OFM). OFM became active in 1 out of 4 monitored orchards. Two OFM were captured by a single trap this past week. The normal petal fall spray should control OFM larvae hatching early in the season. Although first generation OFM larvae can damage fruit, particularly in orchards with high pest population densities, most larvae from this generation in apples will infest only apple shoots. Therefore, the primary reason to control the first brood is to cut down on resident populations in the orchard that could lead to more severe infestations later in the season.

Plum curculio (PC). As of April 25th, 190 DD (base 43) have accumulated since 1 January. In most years, PCs have become active (as determined by trap captures) at around 220 DD (base 43). So, the onset of PC activity is expected to happen soon.

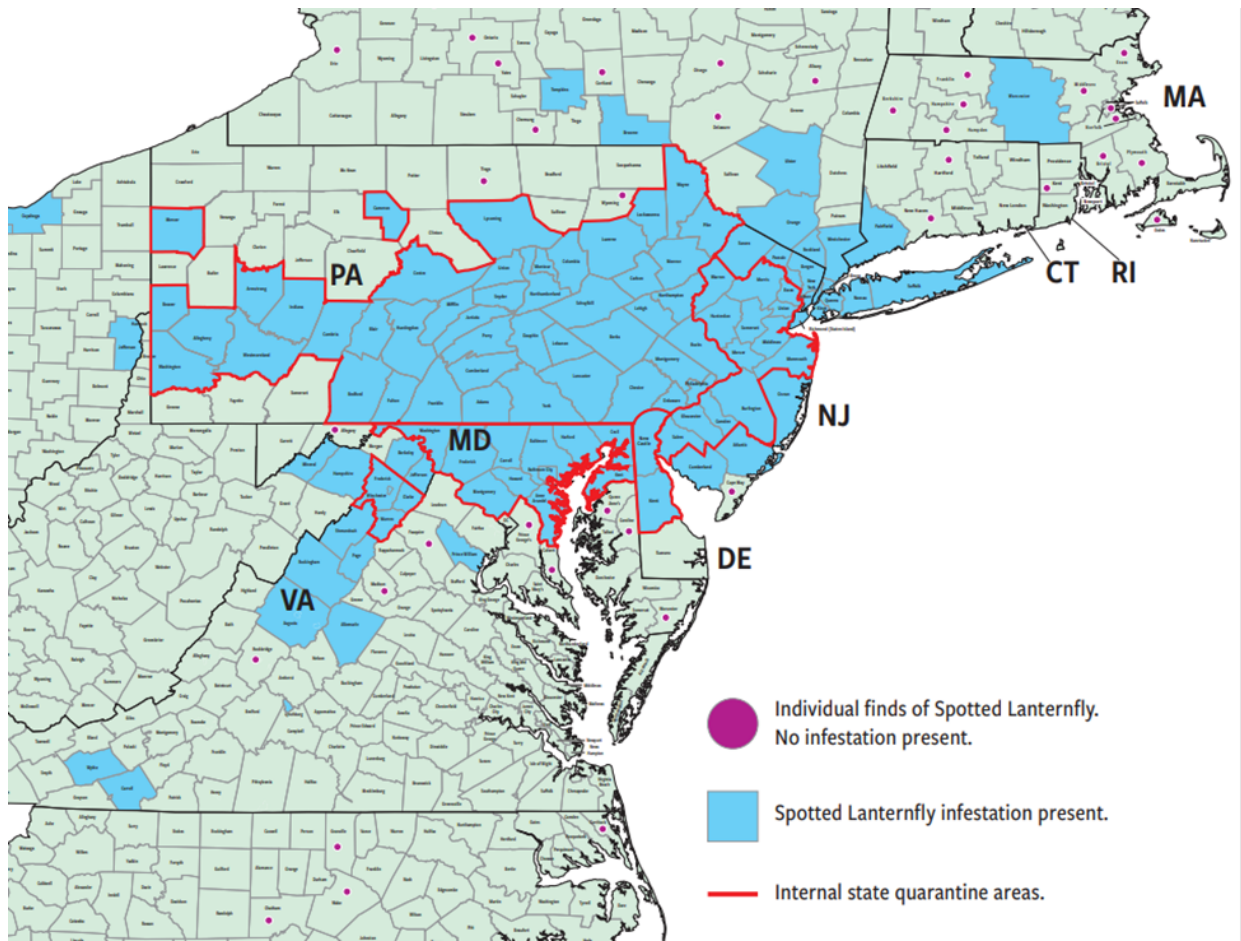


Spotted Lanternfly (SLF) update. Earlier this year, MDAR identified an infestation of the invasive spotted lanternfly on a small group of trees in Shrewsbury, MA. This is the second time in the last year that a population of the invasive insect has been found in Massachusetts. A SLF breeding population was found in Fitchburg in July 2021.

Since this is the time of year that nurseries are receiving shipments of stock for the spring planting season, MDAR reminds growers and landscapers to inspect any plant material coming from states where SLF has been found to ensure it does not harbor SLF egg masses, and to report any finds to MDAR. **This reminder is especially important as MDAR has recently received several reports that nursery stock from SLF-infested areas was sent to Massachusetts growers.**

If you happen to come across a spotted lanternfly, MDAR encourages you to take a photo or collect the specimen and report it to the department online.

Here is the SLF distribution map (snapshot taken from the New York State IPM program) as of 3.28.2022. Areas in blue represent SLF infestations, meaning reproducing populations of this invasive pest.



LIFE STAGES



EGG MASS
FOUND SEPT-JUNE

FRESH

ACTUAL SIZE: 1/2"



OLD

ACTUAL SIZE: 1/2"



EARLY STAGE NYMPH
FOUND LATE APRIL-JULY

ACTUAL SIZE: 1/8"-1/4"



LATE STAGE NYMPH
FOUND JULY-SEPT

ACTUAL SIZE: 1/2"



ADULT
FOUND JULY-DEC

ACTUAL SIZE: 1"

Above images by PA Department of Agriculture

EGG MASS LOCATIONS

Spotted lanternfly egg masses may be laid on any surface, and need a careful eye for inspection! Below are some examples of egg masses on outdoor objects.



FENCE POSTS

Heather Leach



VEHICLES

Zil Fessler



OUT-OF-SIGHT AREAS

Lori LaCava Beatrice



CAMPING EQUIPMENT

Liz Willow

TREE OF HEAVEN IDENTIFICATION

Tree of heaven (*Ailanthus altissima*) is the preferred host plant of SLF. They can also often be found on grape, maple, birch, or walnut.



BUD SCAR



FRUITS



COMPOUND LEAVES

Black stem borer aka ambrosia beetles. The black stem borer (scientific name: *Xylosandrus germanus*), also known as the ambrosia beetle, is native to East Asia, but now established in North America and Europe. It is an economically significant invasive pest in North American nurseries and orchards, and European forests. The name "ambrosia beetle" is given to beetles that have a symbiotic relationship with so-called "ambrosia fungi."

The black stem borer is a very small beetle (about 2 mm in length) that attacks apparently healthy trees and those that are stressed, dying or recently dead. Female beetles bore through the bark, the phloem, and straight into the xylem where they tunnel to create galleries in which they lay eggs. As they tunnel, they release fungal spores. The immature stages of the beetles feed on fungi. The presence of holes and fungi signals the tree that it is under attack. The galleries are frequently located at the base of the trunk, and can contain dozens of beetles.

Flooding, drought, and very low temperature exposure have been identified as potential causes of physiological stresses that preferentially attract these beetles to trees.

Art Agnello and his team at Cornell University reported that in 2013, infestations of black stem borer were seen for the first time in commercial apple trees in multiple western New York sites.

Symptoms of damage. Symptoms of an active infestation include “toothpicks” or strings of sawdust pushed out of tiny pinholes bored in the bark.



Left, Characteristic boring dust and frass sticking out of the entrance hole made by a black stem borer in a plum tree. Right, An apricot sapling oozing from holes made by a black stem borer. Photo credit: Bill Shane, [MSU Extension](#)

Prevention. It is important to avoid stressing the trees. Provide adequate water and air drainage, irrigation, and frost protection.

Monitoring. Monitor for ambrosia beetles in early spring using ethanol baited traps. These can be easily made of 2 liter soda bottles. Art Agnello (Cornell University) recommended hanging traps on metal garden hangers at a 1-m height, placed along the edges of orchards bordered by hedgerows and woods likely to be a source of immigrating beetles.

Management. Ambrosia beetles are difficult to control with insecticides because applications must be closely timed with beetle attacks. Pyrethroids e.g., Warrior are one of the most effective materials.

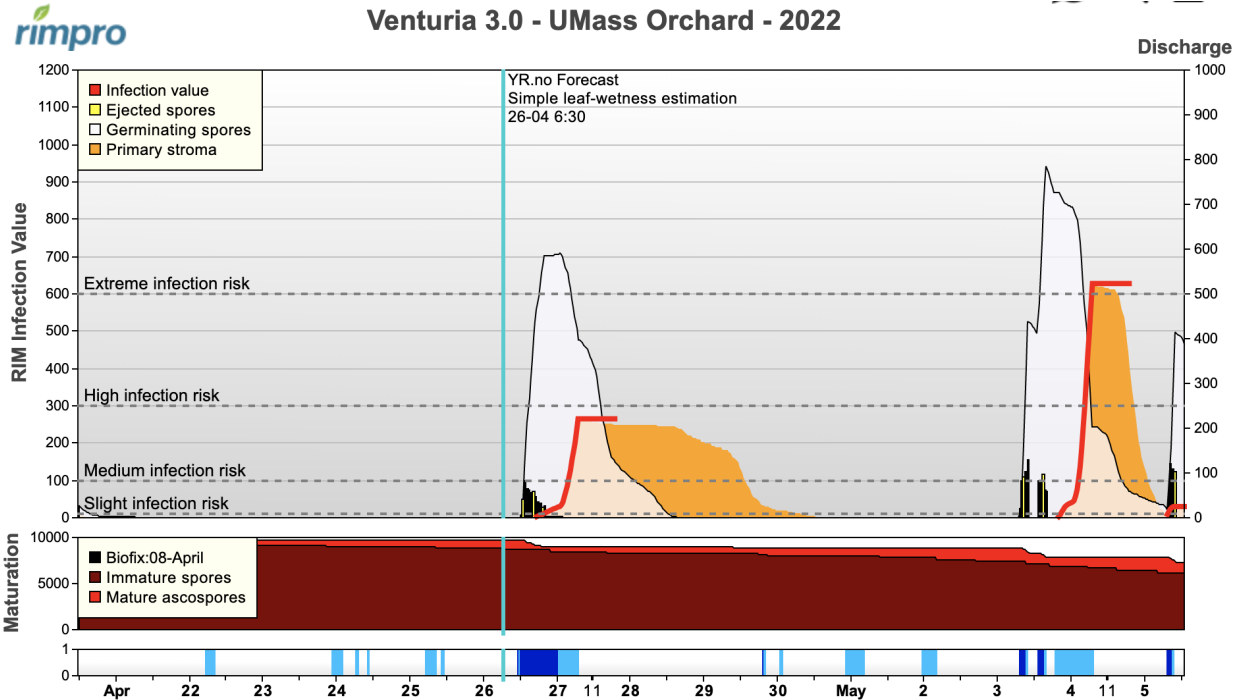
Pathology

Elizabeth Garofalo

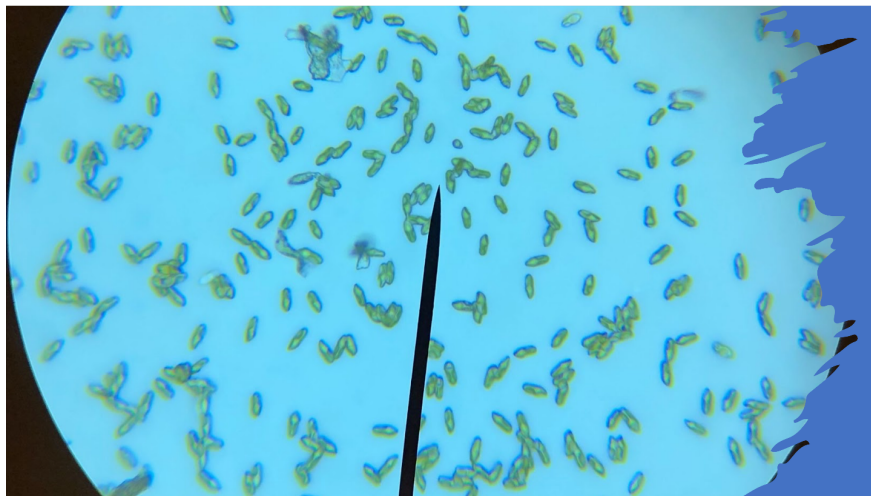
Apple scab-

Lab counts show a continued increase in spore density in funnel trap and petri plate assay captures. I expect to see this increased spore density trend to continue for another two weeks or so- depending on weather conditions. Warmer temps and more rain should speed the process along. Dry conditions will cause it to draw out over time.

NEWA currently estimates ascospore maturity to be at 23% as of April 26, 2022. NEWA has indicated that infection was potential for today and tomorrow, a “combined event”. RIMpro model output shows conditions are optimal for a “medium” infection risk event, with another “extreme” event forecast for May 3rd.

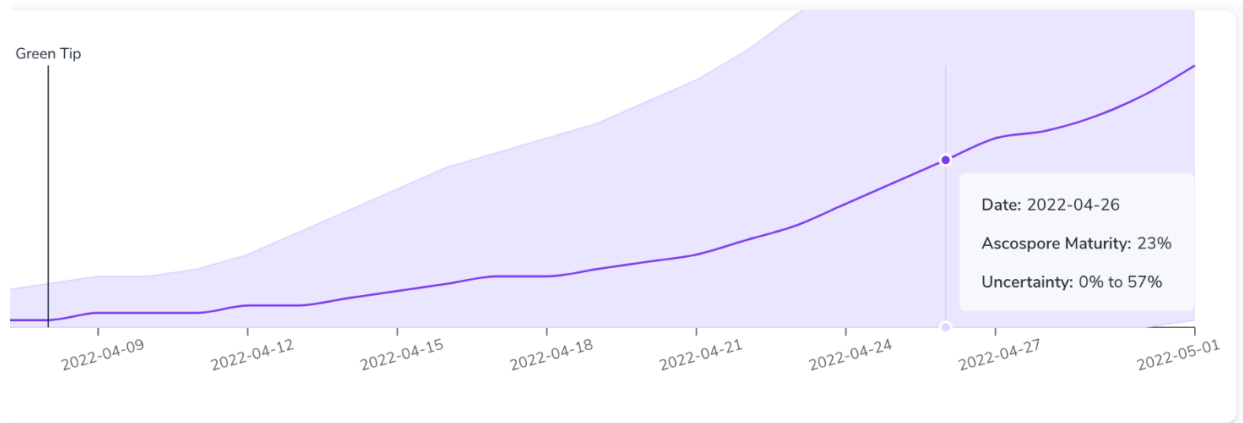


RIMpro apple scab model output 4-26-22.



Spore numbers in the funnel trap assays have reached the thousands- too many to accurately count. NEWA is estimating ascospore maturity to have reached ~23% while RIMpro puts us at ~ 11% ascospore maturity.

Venturia inaequalis ascospores under 40X magnification caught using the funnel trap.



NEWA's ascospore maturity graph indicating what?

Bottom line: The fun has begun. This is likely to be the first infection event of the season. Where inoculum is sufficient (and coverage maybe less so) expect to see lesions form on cluster leaves in... well, that all depends on the weather. As of now, temperatures are remaining relatively low for the foreseeable future. Start scouting for lesions around May 6th-9th.

-Brown rot

Blossom infection can initiate at temperatures as low as ~41°F+. However, with temps that low, the pressure is also low. Looking into the forecast, there is potential for infection in warmer locations given open bloom, however, for Belchertown, there is a (very) low potential for infection during this rain event *assuming* there is any open bloom.

-Powdery mildew (PM)

PM infections on new tissue initiate as a result of conidia dispersing from late merging shoots that were infected last year. Optimal conditions for infection are temperatures between 66°F and 72°F with relative humidity of 70% or higher. Temperatures in Belchertown are not expected to exceed 57°F over the next several days, all the way into Saturday. Sunday into Monday, temperatures are forecast to be approaching that 66°F threshold.

As you go about your daily orcharding activities, it may be worthwhile to keep your eyes open for emerging infected shoots- especially in high value, high risk blocks/locations where you noticed PM last year. Remove infected shoots where practicable.

Keep in mind that typically fungicides that are effective against apple scab are not effective against PM. With the exception of Cevya (FRAC 3) and Excalia (FRAC 7) which have been reported to have efficacy against both. **Remember when planning your rotational schedule, that FRAC 7 is also in Luna Sensation, Merivon and Pristine and FRAC 3 is a component in Inspire Super. Rotate with care.**

Horticulture

Jon Clements

An email came across my desk this week requesting a “nutrient management program to reduce bitter pit in Honeycrisp, last year was a bad year.” No easy answer there, a nutrient program needs to be customized to the particular situation with more information. But it’s safe to say that bitter pit in Honeycrisp is a perpetual problem, your goal is to minimize it every year. My take is you need to take a holistic approach, considering the following factors that either exacerbate or reduce bitter pit.

Factors that EXACERBATE bitter pit development:

- **High nitrogen** - don’t overdo it on N application, let a leaf analysis be your guide, but as a rule do not apply as much nitrogen to Honeycrisp as you would, for example, Gala. Spoon feed some foliar nitrogen only perhaps? Use calcium nitrate as a source of nitrogen, but not as a source of calcium!
- **Excess potassium** - K competes with calcium for soil uptake and in the plant, so too much K can result in too little Ca. Again, use a leaf analysis as your guide, but less K on Honeycrisp than other varieties is recommended. Don’t eliminate K completely as it is an important nutrient.
- **Deficient calcium** - yes, all things being equal, the more the merrier. It’s important to start foliar calcium applications at bloom or petal fall at latest, choose your formulation, however, this timing is not the best for using calcium chloride.
- **Light crop/large apples** - large apples mean less calcium in the individual apples equals more bitter pit.
- **G.41 rootstock** - much anecdotal evidence that G.41 rootstock and bitter pit are related, I suspect it’s a case of lighter cropping, larger apples, and a more vigorous rootstock (excess shoot growth) are the reason.
- **Heavy pruning using heading cuts, excess vigor** - heading cuts that produce vigorous shoot growth that successfully compete with the fruit for calcium are a bad thing.

Factors that REDUCE bitter pit development:

- **Calcium management** - as above, start early with foliar calcium applications and keep going all summer long. No stopping. Use a good ground application of gypsum in troublesome orchards.
- **B.9 rootstock** - being a less vigorous rootstock, lots of talk about it being a good choice if you want to avoid bitter pit.
- **Use thinning cuts, prune to desired crop load** - as above, thinning cuts as a rule are less vigorous shoot-producing than heading cuts, and excess pruning will reduce cropping giving you large fruit size — we don’t really need larger Honeycrisp — and more bitter pit.

- Annual intermediate cropping — balanced annual cropping is achieved by pruning to make calm trees and desired number of flower buds, chemical thinning using the fruit growth model, and using return bloom sprays.
- Gypsum soil application - See It's the calcium stupid!
<https://jmcextman.blogspot.com/2016/12/e-arlter-this-week-i-attended-annual.html>

Guest article

No Guest article this week...

Useful links

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

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

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

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

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

The next Healthy Fruit will be published on or about May 3, 2022. In the meantime, feel free to contact any of the [UMass Fruit Team](#) if you have any fruit-related production questions.

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