



Healthy Fruit, Vol. 30, No. 10, June 7, 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 January 1)	6-June
Base 43 BE	973
Base 50 BE	549

Upcoming pest events

Pest	DD's Base 43 F. BE	Recommendation
Black stem borer 1st flight peak	635-901	Monitor for signs of boring or hang traps
Codling moth 1st flight peak	562-980	Hang pheromone monitoring traps; set biofix when the first few moths are caught within a day or two
Codling moth 1st flight subsides	866-1260	Time insecticide application at egg hatch and/or young larvae before they tunnel into fruit
Lesser appleworm 1st flight subsides	1002-1538	None
Lesser peachtree borer 1st flight	809-1734	Mating disruption should be in

peak		place; apply insecticides where a problem
Obliquebanded leafroller 1st flight peak	851-1214	Monitor and set first catch biofix with pheromone traps
Plum curculio still active until 308 DD's Base 50 F. from petal fall	Accumulated degree days (base 50°F BE) petal fall (May 18) through June 7: 306	Fruit becomes very susceptible to PC feeding injury at 6-7 mm., and when night time temperatures are in the 60's; insecticide control for PC is necessary until the 308 DD's threshold has been reached
Oriental fruit moth 1st flight subsides	823-1094	Scout for flagging peach shoot tips
Pear psylla 2nd brood hatch	967-1185	Season-long insecticide control of pear psylla may be necessary where a problem
San Jose scale 1st generation crawlers present	1033-1215	Monitor for crawlers using black electrical tape with sticky
Spotted tentiform leafminer 2nd flight starts	980-1155	No action necessary at this time; begin monitoring for sap feeding mines in a week or two

Upcoming meetings

2022 Virtual Orchard Meetup Series - Orchard Efficiency: Labor & Technology. June 16, and 30; July 14. For more information: https://rvpadmin.cce.cornell.edu/pdf/event_new/pdf96.pdf

Saturday, June 11, 2022 - Massachusetts Cultivated Blueberry Grower's Association (MCBGA), Kenburn Orchards, Shelburne Falls, MA.

Tuesday, June 14, 2022, 5:30 PM – UMass Fruit Team Twilight Meeting, Carlson Orchards, 115 Oak Hill Road, Harvard, MA. 1 pesticide recertification credit available @ \$20 per person. Light supper will be served.

Thursday, July 14, 2022 – Annual Summer Meeting of the Massachusetts Fruit Growers' Association, UMass Orchard, Belchertown, MA. Details TBD.

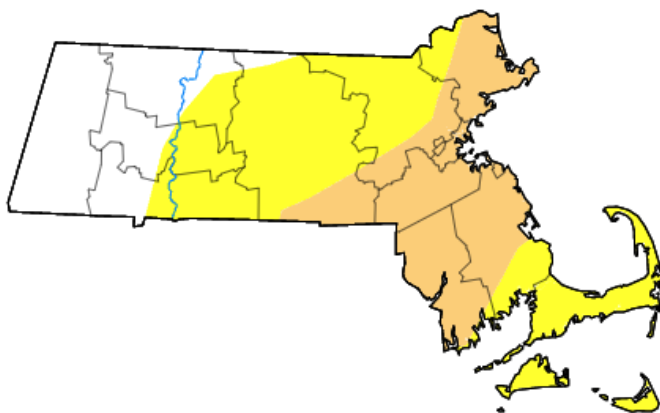
The way I see it

Jon Clements

Thinning season is over, soon you will know what you have. I am seeing overall a lightish apple and peach crop, with some orchard to orchard variability of course. It is too random to pin down, but Honeycrisp were light on return bloom, bloom was rather cool and windy with bee activity spotty but very good in some orchards, thus fruit set (pollination) was questionable, apple trees may just need a rest after a heavy crop last year, and I don't think healthy peach flower buds were formed last summer on account of the heavy peach crop in 2021 and all the rain (lack of sun). Oh yea, bloom and petal fall thinners worked very well in some instances, maybe just a bit too good? I think we will have a fine crop, and overall, the lighter crops are often most profitable and easily managed. BTW, I saw McIntosh for \$1.49 a pound in Whole Foods, vs. Honeycrisp at \$4.29 lb. WOW. I am guessing apple prices will be UP this year?

Before I forget, because of popular demand, we will have a wrap-up seasonal fruit twilight meeting at Carlson's Orchard in Harvard on Tuesday, June 14 (Flag Day) at 5:30 PM. There will be one pesticide credit (hopefully) and a light dinner served, maybe some cider?

Someone's gotta do it now. Yup, it's getting kind of dry. But it looks like the situation may change, hence see Guest article with the most excellent recommendations you will ever get for controlling summer rots. No excuse to have them this year! Note that Captan is included in almost every fungicide application. Captan is arguably the best rot fungicide in your spray shed. Use it.



Map released: Thurs. June 2, 2022

Data valid: May 31, 2022 at 8 a.m. EDT

Intensity

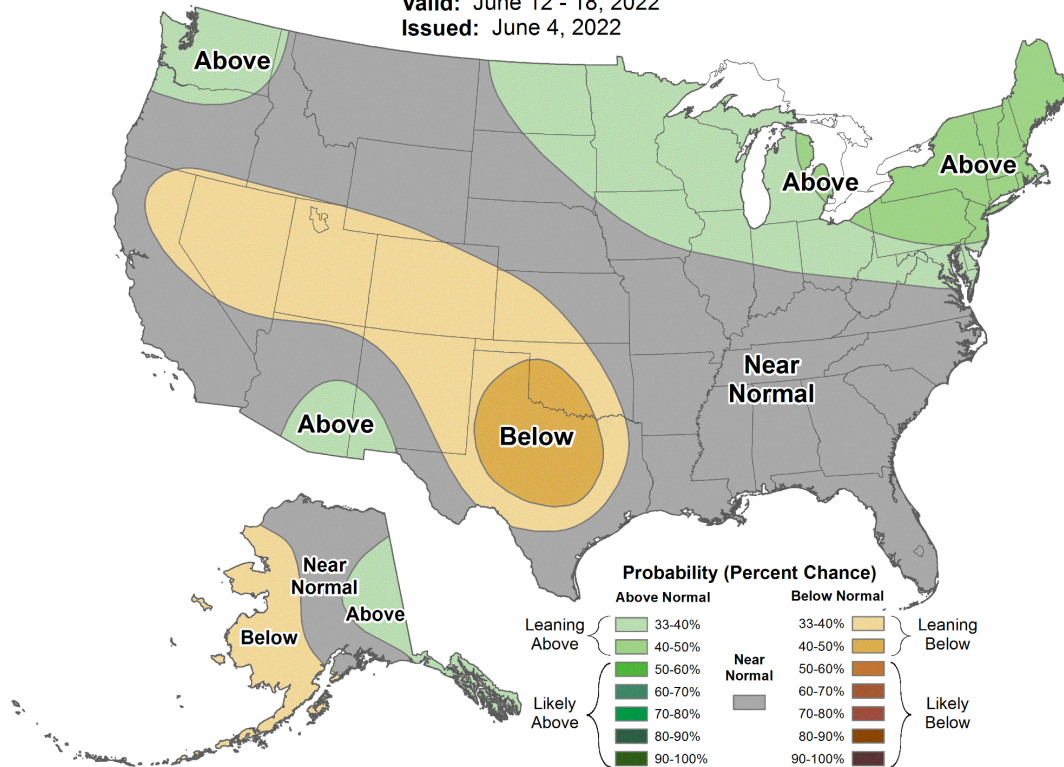
None	None
D0 (Abnormally Dry)	D0 (Abnormally Dry)
D1 (Moderate Drought)	D1 (Moderate Drought)
D2 (Severe Drought)	D2 (Severe Drought)
D3 (Extreme Drought)	D3 (Extreme Drought)
D4 (Exceptional Drought)	D4 (Exceptional Drought)
No Data	No Data



8-14 Day Precipitation Outlook



Valid: June 12 - 18, 2022
Issued: June 4, 2022



Entomology

Jaime Pinero

Plum curculio (PC). The oviposition model I have alluded to for the past couple of weeks predicts that PC only needs to be controlled until 308 DD have accumulated after petal fall. Make sure that the predicted residual coverage (10-14 days) from the last spray will protect fruit until DD accumulation reaches this value.

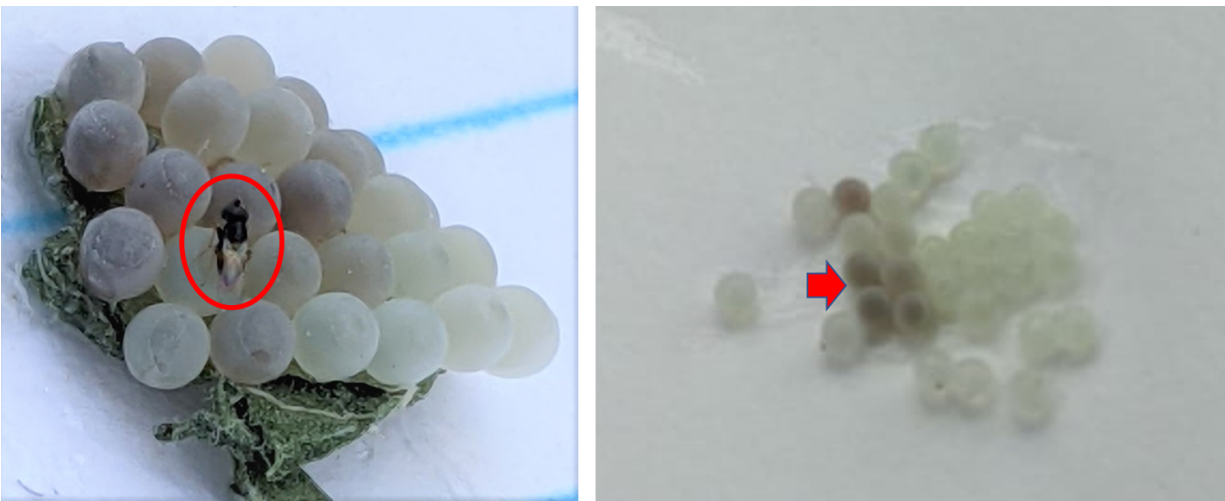
Today, some fresh egg-laying scars were found in Fuji at the UMass Cold Spring Orchard. That block will receive a perimeter-row spray based on the observed oviposition activity by PC. This finding underscores the importance of scouting.

Spotted-wing drosophila (SWD). In mid-May, clear plastic traps baited with commercial lures and with diluted Concord grape juice laced with 2% table salt were deployed at 5 locations in MA. Thus far, no SWD have been captured in traps.

Brown Marmorated Stink Bug (BMSB). Adults emerge in the spring, spend about two weeks feeding, then mate and start laying eggs at about the end of May. Eggs hatch in June and July, and fall adults have developed by August.

Samurai wasp (parasitoid that attacks BMSB eggs) update. The brightest hope for biological control of BMSB is the accidental introduction of the samurai wasp (*Trissolcus japonicus*). The samurai wasp is an egg parasitoid that keeps BMSB populations down in Asia in its native range. Three weeks ago we initiated a study aimed at monitoring for the Samurai wasp using frozen (dead) BMSB egg masses that were deployed as sentinels at 9 Massachusetts orchards. This information is important given the potential implementation of biological control of BMSB in agricultural areas while potentially reducing urban and suburban home invasions of BMSB.

Yesterday, some exciting news developed. While we cannot confirm yet the presence of the Samurai wasp in Massachusetts, our surveys indicate the presence of a similarly-looking wasp that was observed (Mateo Rull, our field research assistant) to have laid eggs inside the sentinel eggs.

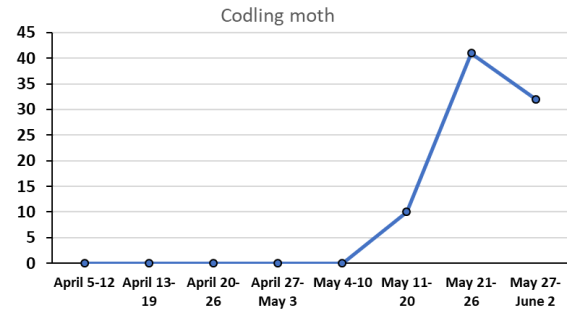
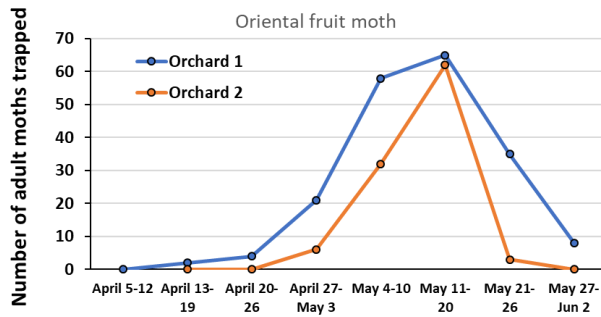


Left: Parasitic wasp attacking BMSB eggs in the field. **Right:** Sentinel BMSB (previously frozen) eggs showing dark coloration, which is a sign of potential parasitism. All BMSB eggs will be incubated in the laboratory to confirm the emergence of adult parasitoids. Picture credit: Mateo Rull.

Woolly apple aphid (WAA) and rosy apple aphid (RAA). An assessment of the incidence of aphid infestation was conducted at the UMass CSO. Only one terminal shoot out of 700 shots that were sampled was infested with WAA. This finding confirms that this is the point of the season at which we normally begin to hear reports of the first infestations of WAA.

In terms of RAA, 36 shoots out of 700 (= 5.1%) showed infestation by RAA. One block will be sprayed with a neonicotinoid to suppress potentially problematic RAA populations in that block.

Codling moth (CM) and Oriental fruit moth (OFM). OFM adults are finishing up the first flight of the season, and the first flush of OFM larvae, which aren't a major threat to newly set apples and would have been best handled during the petal fall period, are mostly on their way to pupating. In contrast, CM adults have been flying for at least two weeks around the state, and the eggs they have laid will soon be in the early stages of hatching. The New England Tree Fruit Management Guide presents a good selection of effective materials to use against OFM and CM.



Pathology

Dan Cooley

We're seeing more powdery mildew this year than we've seen in recent years. In fact, the disease has been slowly building up, and needs to be managed each year to make sure that it doesn't build up to damaging levels. So far, the amount of mildew we've seen is interesting, at least to a plant pathologist, but not really damaging. However, with warmer winters, and stretches of dry weather in spring, especially dry but humid weather, conditions are ideal for the disease. It can build up over several years.



Powdery mildew on a new foliage.

Photo Jon Clements

Most fungi that cause plant diseases really thrive on rainy weather, but not the fungus that causes powdery mildew on apples, *Podosphaeria leucotricha*. Rain actually suppresses it. So no rain actually helps the disease. That's why it's a major problem in Washington State.

The disease overwinters in apple buds, and in the spring, the fungus grows out of the bud, producing spores that can cause new infections on young leaves, shoots and, later on, new fruit. Infected buds open more slowly than healthy buds, so new healthy leaves are there when the conidia start to be released. Infections happen between 65 and 80 F with high humidity. Even if daytime humidity is low, nighttime temperatures at 65 F or above will generally have high

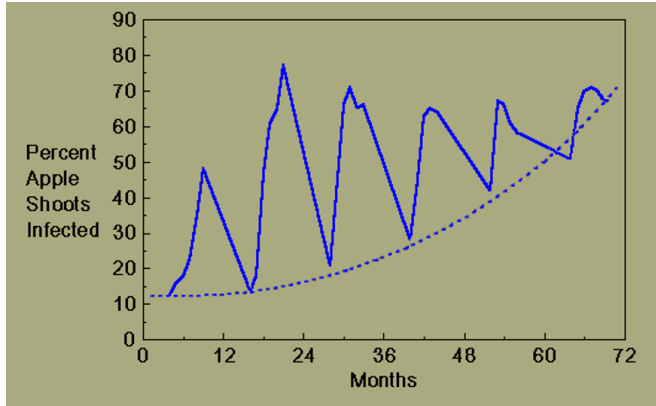
relative humidity, and the fungus takes off. It infects leaves and shoots as long as the shoots are still growing. It can infect buds as they begin to form until they harden off to overwinter.



Healthy twig right, and twig infected with powdery mildew left.

Photo Dave Rosenberger

Unmanaged, powdery mildew builds up over the years. Since it has generally not been a problem in New England, primarily because our cold winters killed the overwintering fungus, most growers don't factor it into their disease management plan. Now, it's probably time to do that, at least in those blocks and cultivars where symptoms are showing up.



Apple powdery mildew build-up over 6 years.
 Graph American Phytopathological Soc.

If there's labor to do it, pruning off infected shoots now will greatly reduce the inoculum, and cut the risk of overwintering bud infections. Next year, get an early start by suppressing the fungus with fungicides or oil. Oil at rates that suppress mites will also suppress mildew. Unfortunately, the most recommended early-season fungicides, captan, the EBDs, and the FRAC 9's Vanguard and Scala, aren't effective against it. Sulfur at low rates can be quite effective.

Until shoot growth stops, at least, in addition to sulfur as one option, the FRAC 7's (for ex. Fontelis, Aprovia), the FRAC 3's (for ex. Rally, Cevya, Indar) or the FRAC 11's (for ex. Flint Extra, Sovran) or premixes with these FRAC groups offer good control against new infections.



Russet on apple from powdery mildew
 Photo American Phytopathological Soc.

Horticulture

Jon Clements

Stop stripping leaders!

Ha, [this was my current recommendation](#), but maybe changed my tune after reading what Mario Miranda Sazo had to say in the [June 2 "Fruit Facts"](#) from Cornell's Lake Ontario Fruit Program:

"Don't rub the buds below the main shoot after planting: We are not recommending this anymore. Wait until the 2-3 shoots (below the selected leader) have 4-6 leaves and clip them to two fingers length. This technique should be conducted before June 15 to minimize competition with the leader. By leaving two-three short stubs below the ring you will have renewal surface the following seasons and blind wood situations will be eliminated. It is imperative that you produce short, planar fruiting units (all along the trunk!) as we plant trees closer and closer in the in-row spacing."

Remember, the objective here is to promote leader growth and achieve tree height (top leader) by the 2nd-leaf. I have attempted to illustrate the result of Mario's recommendation below:



BEFORE clipping leader-competing lateral shoots	AFTER clipping leader-competing lateral shoots
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Mario (and Terence Robinson) wisdom on promoting return bloom

It's time to consider return bloom sprays where a good crop of apples is currently on your trees, and even if in fact, there is a light (or no?) crop it would not hurt to implement this relatively low cost return bloom program every year as it has shown to even out annual cropping for biennial prone varieties like Honeycrisp and Fuji (among others). We have a fact sheet [Enhancing Return Bloom of Apples with Plant Growth Regulators](#) but I also got more on this subject from Mario (same reference Fruit Facts abovebelow):

Be ready for next week and start thinking about Ethrel sprays for return bloom for strongly biennial bearing cultivars like Honeycrisp and Fuji:

Dr. Robinson's suggestions for 2022

- *Start the first Ethrel spray when fruits are 16-18mm (approximately 21 DAFB). Estimated best timing could be early next week from June 6-9 in inland sites and June 9-12 for lake sites in WNY*
- *Spray a dose of ½ pt. Ethephon per acre*
- *Do not spray if temperature will be over 80's on the day of spray or the next 2 days*
- *It is Ok to mix with CaCl₂ spray for bitter pit*
- *All Honeycrisp and Fuji should receive these Ethephon sprays even those with a light crop (the low dose and avoiding high temperatures will result in no thinning even on light cropping trees)*
- *After the first spray at 7-10-day intervals apply 3 more Ethephon sprays but with a higher dose of 1 pt./acre.*
- *Make sure the last Ethephon spray goes on by July 1*
- *After July 1, I suggest adding some NAA (4oz/acre) to each spray put on in July.*

I was challenged on pricing of above sprays during our noon Zoom today. My estimate is Ethephon is cheap, a few dollars tops per acre, while NAA is more pricey, estimated at \$10-15 per acre, all of course depending on rate(s) and quantity purchased.

Don't forget that Fine America's has a new and largely untried – until now maybe, in this area at least – product called [arrange](#) who's premise is to reduce flower bud formation in the "off" crop year. Just saying...and I have no idea how much that costs!

NEWA Apple Irrigation tool

I doubt too many people use it, I have a tendency to look at it when it gets dry, but when it gets dry, you know it's dry and time to turn on the water. But they have made a science out of it, telling you how much the current day's water balance (positive or negative) is based on weather and calculated evapotranspiration (ET) rate. So, looking at the output this morning (June 7) for the UMass Orchard in Belchertown, it tells me there is a cumulative water deficit of -48,659

gallons per acre. This is based on a mature tall-spindle apple orchard planted at 3 foot by 12 foot (1,210 trees per acre). What does that mean to me? Well if my trickle irrigation has emitters at 3 foot by 12 foot (1,210 emitters per acre, one per tree, the way it should be) and they are 0.6 gallons per hour (gph) emitters, that calculates out to 720 gph while running. That is 2.8 days of continuous operation to erase the negative deficit. Of course that is not the way you are supposed to do it, you should be watching the cumulative deficit every few days and turning on the water when necessary to erase that deficit. Oh, how many inches per foot (or acre for that matter) of water is -48,650 gallons? Follow me and someone tell me if I am wrong? 1 US liquid gallon = 0.133681 cubic feet. 48,659 gallons therefore equals 6,505 cubic feet. If I take those cubic feet and multiply by 12 so I spread that cubic footage down to one inch of coverage, that equals 78,060 square feet of coverage, which is a bit under 2 acres. So if I scrunch that water up to just one acre, well, it's a bit under two inches of rain necessary to wipe out that cumulative water deficit. Looks good? Interestingly, if I look at the tool, it suggests that 0.75 inches of rain is 14,256 gallons of water per acre, I need 48,650 gallons per acre so a little math says I need 2.6 inches of rain, so I went wrong on the above somewhere. Anyone want to argue with me or just turn on the water or pray for rain?

Date (2022)	Orchard ET (gallons)		Rainfall		Irrigation	Water Balance (gallons/acre)	
	per tree	per acre	inches	gallons/acre	gallons/acre	Daily	Cumulative
Apr 8	0.0	0	0.33	6273	0	6273	0
Apr 9	0.3	346	0.2	3802	0	3455	0
Apr 10	0.3	348	0	0	0	-348	-348
Jun 5	3.4	4115	0	0	0	-4115	-40804
Jun 6	4.1	4978	0	0	0	-4978	-45783
Jun 7	2.7	3257	0.02	380	0	-2877	-48659
Jun 8 Forecast	2.0	2417	0.44	8363	0	5947	-42713
Jun 9 Forecast	1.2	1429	0.75	14256	0	12827	-29885

Guest article

APPLE BITTER ROT PRESSURE BUILDS UP LATE MAY TO EARLY JUNE IN VIRGINIA WITH WARM WETTING EVENTS; FUNGICIDE TIMING DICTATED BY CRITICAL RAIN EVENTS

By Dr. Srdjan Acimovic & Dr. Fatemeh Khodadadi

Virginia Tech [AĆIMOVIĆ LAB](#)

Apple bitter rot disease was widely present problem in apple orchards in 2021. This disease is caused by different fungi from Colletotrichum genus and is favored by warm, wet and humid

weather conditions during late spring and the whole summer. The infection pressure starts to build up in early June in Virginia. The infections on fruit usually occur when fungicide cover sprays are too far apart while rains are more frequent and spray applications do not follow these rain events. Even more complicating is extending a spray interval while delivering fungicides in an alternate row middle spray schedule. This opens significant gaps in coverage allowing bitter to infect. The frequent rains we had in the last 10 days in Virginia (Fig-s 1, 2, and 3) were favoring early bitter rot pressure build up. [Read more...](#)

Useful links

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

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

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

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

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

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

App store: Malusim (iOS and [Google Play](#)); Fruit Growth Model (iOS); Orchard Tools (iOS);

MyIPM (iOS and [Google Play](#)); Eco Fruit/Apple App (iOS and [Google Play](#)) Note: for iOS apps search the App Store on your iOS device.

The next Healthy Fruit will be published on or about June 14, 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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