



## Healthy Fruit, Vol. 27, No. 4, April 30, 2019

Jon Clements, Author (unless otherwise noted) and Editor



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### CURRENT DEGREE DAY ACCUMULATIONS

UMass Cold Spring Orchard, Belchertown, MA	29-April
Base 43 (NEWA, since March 1)	221
Base 50 (NEWA, since March 1)	93



## CURRENT BUD STAGES

Current bud stages. April 29, 2019, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Very early pink	Honeycrisp Late tight cluster	Bartlett pear Late green cluster	Redhaven peach Early pink	Regina sweet cherry Early bud burst

More 2019 bud stages [here...](#)



## UPCOMING PEST EVENTS

Coming events	Degree days (Base 43)
Black stem borer 1st catch	256 to 364
European red mite hatch	231 to 337
Green apple aphids present	111 to 265
Green fruitworm flight subsides	267 to 499
Obliquebanded leafroller larvae active	158 to 314
Pear psylla 1st egg hatch	174 to 328

Rosy apple aphid nymphs present	134 to 244
Redbanded leafroller 1st flight peak	232 to 382
Rosy apple aphid nymphs present	134 to 244
Spotted tentiform leafminer 1st oviposition	143 to 273
McIntosh pink bud stage	267 to 316



## UPCOMING MEETINGS

May 14, 15, and 16 2019 - Fruit Twilight Meetings TBA (May 16 in RI)



## THE WAY I SEE IT

Ever wonder why they **grow apples in Washington**? I bet they don't have 8 inches of rain in April. Nor do they have plum curculio. I never seen the UMass Orchard so wet and rutted up. It's too bad, hard to fix and lots of erosion issues. Last Friday afternoon, in addition to 2.5 inches of rain, there was hail. Hail covered the ground in an orchard east of here. (Hope there was not much damage. Better now than late I guess, but hail in April? Used to be we had a nice dry spell in late April, and then it would invariably start raining during apple bloom (around Mother's Day). Maybe this year will be "different?" Let's hope so.

Stone fruit are coming into bloom. Slowly. Peach bloom looks pretty good, cherry bloom is a little off I have to say. Cool temperatures are not conducive to **brown rot** infection of flowers, but it is going to warm up. During bloom, a systemic fungicide -- Indar, Fontelis, Inspire Super, Luna Sensation, Mervion -- are good choices. Yesterday I sprayed ReTain on Rainier cherries to (hopefully) improve fruit set. I intend to treat Skeena, Benton, and Regina similarly when they reach the right bud stage, which is "popcorn" or white bud.

Don't forget to apply prohexadione-calcium (Apogee, Kudos) at pink bud stage of apple to maximize growth control. Among other things, such as fire blight suppression. See [Duane Greene's comments in Horticulture](#). During apple bloom, we have a new tool to assess pollination progress and decide whether a blossom thinner is a good idea (or not), the **Pollen**

**Tube Growth Model (PTGM)** on NEWA. Extension colleague Mike Basedow of Cornell, Upper Champlain Valley, NY wrote up this good description of the PTGM and it's applicability. That follows. I am going to start measuring style length when bloom starts and may play with some bloom thinning. Will keep you posted.

Also, please note a major change to the Apple Carbohydrate Thinning Model on NEWA as described in the [Guest Article](#). We grow in interesting times indeed...JC

### **Bloom Thinning with the Pollen Tube Growth Model (PTM)**

*Mike Basedow, CCE-ENYCHP & Dan Donahue CCE-ENYCHP*

Reprinted from Cornell ENYCHP Tree Fruit E-Alert, Donahue and Basedow, for April 30th, 2019 @ 10:00 am

- We trialed the PTM thinning protocol in ENY orchards in 2018 to mixed results. Spray timings are critical (hours, not days), and inclement weather can interfere. Trials have been set up in Ulster, Columbia, and Clinton Counties for 2019.
- We are not recommending the PTM for the Hudson Valley in 2019. Our current weather forecasts are suggesting poor pollination conditions and we don't have adequate experience with PTM here in the ENY under these conditions. The model assumes that open flowers are pollinated promptly, which is a reasonable assumption when pollination conditions are good. Our 2019 HV trials may shed some light on this question.
- Ammonium thiosulfate (ATS) when used as a foliar fertilizer has bloom thinning activity, as does lime-sulfur when applied as a fungicide for apple scab. These materials have a very narrow (1-2 day) timing window where they can be effectively used to ensure only the desired number of king blooms have been fertilized. This spray timing can be determined using the Pollen Tube Growth Model on NEWA. Click on the link [here](#) to access the PTM on NEWA.
- The model requires a few key measurements, including assessing the amount of king flowers opening until the desired crop load is reached, and measuring a sample of flower style lengths to accurately set model parameters.
- Once you enter the necessary info and run the model, you will make your first application when the model reaches 100%. One to two additional sprays should follow when the model again reaches 60% These subsequent sprays can be a day or two after the initial application.
- If you are interested in bloom thinning with the PTGM, we highly recommended reading the recent Fruit Quarterly article by Dr. Greg Peck and Dan Olmstead available [here](#), and this additional guide by Dr. James Schupp and Dr. Tom Kon here for a full background and detailed instructions. Call either Mike or Dan to discuss your specific plans. Ed. note: don't call them call me, Jon Clements :-)
- If it will be your first year using the PTGM, we recommend you trial it on a small scale until you become more comfortable and confident with it.



## NEW ENGLAND TREE FRUIT MANAGEMENT GUIDE

The New England Extension tree fruit specialists -- which include myself, Dan Cooley, Jaime Pinero, and Elizabeth Garofalo at UMass. Mary Concklin at UConn, Heather Faubert at URI, Terry Bradshaw at UVM, George Hamilton and Anna Wallingford at UNH, and Glen Koehler and Renae Moran at UMaine -- have officially launched, and updated for 2019 -- an online edition of the **New England Tree Fruit Management Guide**. Note that it is easy to print any of the sections, if you want to have old-school reference, for example, to hang on your spray shed wall. Also, it is quite mobile-friendly so make a home screen shortcut to here:

<http://netreefruit.org>. Finally, if you really, really want a printed version, order here: <https://www.umassextensionbookstore.com/products/29>.



## INSECTS

Jaime Pinero

### **Plum curculio (PC) and tarnished plant bug (TPB) got off to a slow start.**

**PC.** Monitoring black pyramid traps baited with benzaldehyde (BEN) and grandisoic acid (GA), the PC aggregation pheromone, were deployed at the UMass CSO on April 20th. The first overwintered PCs (4 adults in 3 odor-baited traps) were captured on April 24th. These first captures took place at **214.1 DD (base 43, accumulated since January 1st)**. This is very close to the 7-year average of 224 DD (base 43). One additional PC was captured on April 25th, and no PCs have been captured since that date, due to cool, rainy weather. Very few PCs are expected to be captured within the next 5-6 days. We will report PC activity next week.

One field experiment aimed at comparing the attractiveness of several commercial lures to PCs, against that of the standard lure composed of BEN+GA, will be initiated within the next few days, once weather becomes more conducive for PC activity.

**Trap tree research** (i.e., spraying trap trees only after the full-block petal-fall spray) will continue this year, at one MA orchard and at two NH orchards. Lures will be deployed within the canopies of trap trees at the early bloom stage.

**TPB.** Only a couple of TPB adults have accumulated in 6 white sticky traps for the last 6 days. Based on the weather forecast, TPB activity is expected to continue to be low.

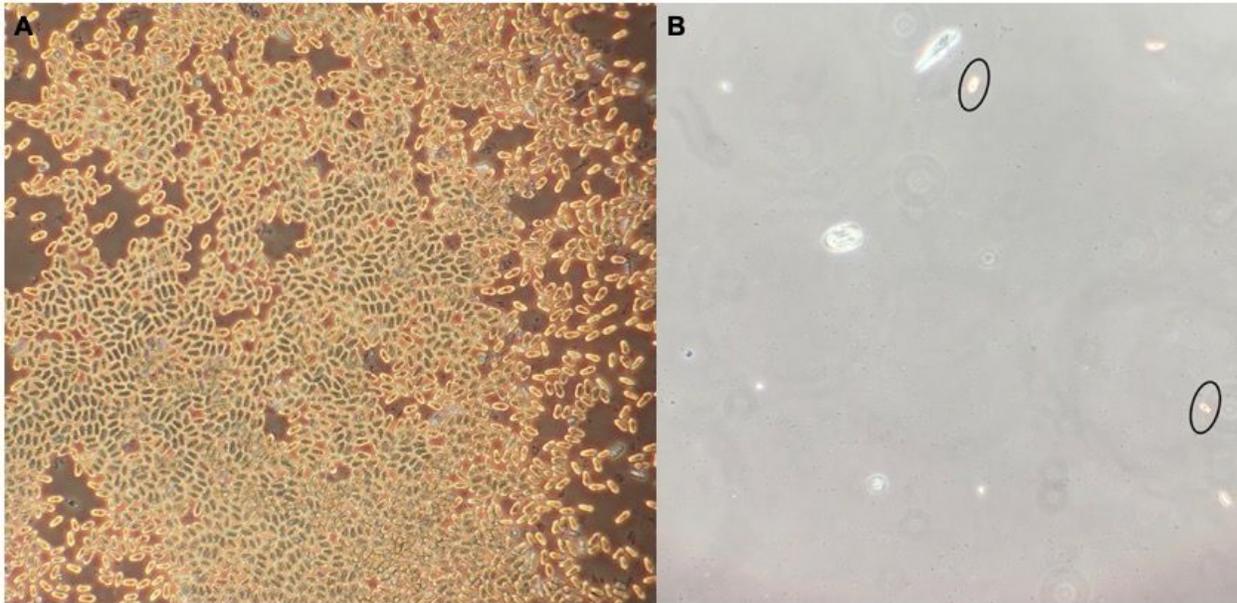


## DISEASES

Liz Garofalo

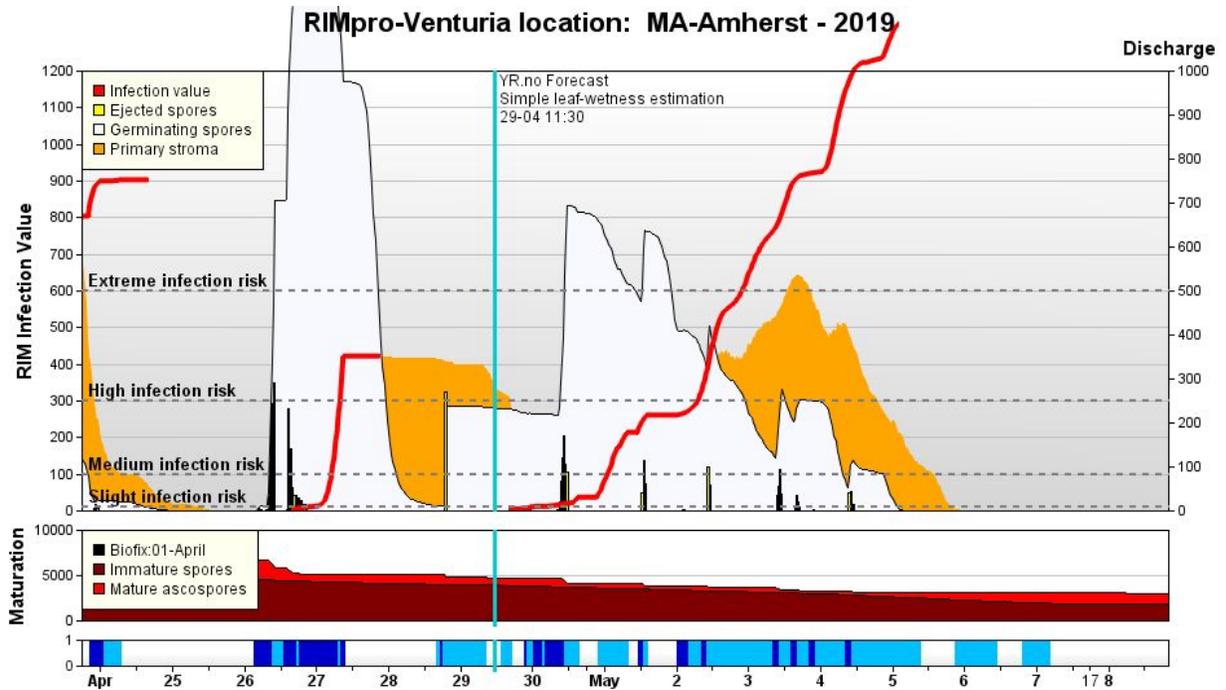
### Apple Scab

Ascospore development is moving along at a (dare I say it?!) normal rate this year.



A: Photo of *Venturia inaequalis* ascospore release in lab-based funnel trap 4/24/19, prior to the 4/26/19 multi-day infection event. B: Photo of *Venturia inaequalis* ascospore release on 4/29/19 showing only two spore (circled) in the view. Spore collected from infected leaves overwintered in Amherst, MA.

[RIMpro](#) estimated that 1,593 of the “virtual bank” of the season’s ascospores were released on 4/26, that’s about 16% of the estimated seasonal total of available spore. RIMpro is forecasting another multi-day event for Amherst, and most of the region, beginning with tomorrow’s rain continuing into the foreseeable weather forecast future. In spite of the low spore count on 4/29, this is forecast to be a significant event. Spores had all day Monday to mature, and will continue to do so throughout the upcoming rain event. Over the coming seven days, RIMpro estimates ~20% of the total seasonal spore will be released. This infection event is literally off the charts.



RIMpro forecast infection event for Amherst, MA. The Relative Infection Measure (RIM) exceeds 1200, beyond the range of the chart.

[NEWA](#) is estimating current forecast events to be one multi-day event, running through to May 4 with the possibility of 6% of the seasonal ascospore discharge occurring on May 1.

## Apple Scab Results for Amherst (UM ALC)

The Ascospore Maturity degree day model begins at 50% green tip on McIntosh flower buds. To recalculate ascospore maturity for your orchard, enter your green tip date:

**Green Tip Date:**

[Click if greentip has not occurred](#)

### Ascospore Maturity Summary

	Past	Past	Current	5-Day Forecast					<a href="#">Forecast Details</a>
Date	4/28	4/29	4/30	5/1	5/2	5/3	5/4	5/5	
Ascospore Maturity	29%	32%	35%	39%	43%	48%	54%	61%	
Daily Ascospore Discharge	2%	0%	3%	6%	3%	4%	0%	0%	
Cumulative Ascospore Discharge	23%	23%	27%	33%	36%	39%	39%	39%	

[Ascospore Maturity Graphs](#)

### Infection Events Summary

	Past	Past	Current	5-Day Forecast					<a href="#">Forecast Details</a>
Date	4/28	4/29	4/30	5/1	5/2	5/3	5/4	5/5	
<a href="#">Infection Events</a>	No	No	No	Combined	Combined	Yes	No	No	
Average Temp (F) for wet hours	43	37	43	52	47	49	51	55	
Leaf Wetness (hours)	7	8	10	10	14	12	10	2	
Hours ≥90% RH	1	9	7	0	8	9	8	0	
Rain Amount	0.01	0.00	0.18	0.12	0.15	Night 71% Day 58%	Night 15% Day 25%	Night 26% Day 26%	

While the two DSS are not 100% in agreement on the severity of the event, they both agree it is occurring. I hope you were able to get in the orchard ahead of time, get covered and *not* get your tractor stuck in all the muck! With an inch and a half to two inches forecast in Amherst and Belchertown, the forecast dry weather for the weekend will mean another round of fungicide. Keep up your mancozeb covers for now. In blocks where **powdery mildew** has been an issue, the addition of a FRAC group 3 (Rally, Topguard...) material will help manage PM as well as provide kickback for scab.

As to the “normal” nature of this Spring... Well, that's debatable. Temperatures in Amherst and Belchertown have not deviated much from the norm, only by a degree, give or take. Rain, on

the other hand is definitely coming down in greater amounts than we have been accustomed to in the past. The table below shows this Spring's (March 20-April 29) average maximum and minimum temperatures and total precipitation accumulation as well as deviations from the norm. Amherst has accumulated more than two inches greater than normal while Belchertown has accumulated four inches more than normal this year.

Town (MA)	Average Maximum Temperature	Average Maximum Temperature Deviation	Average Minimum Temperature	Average Minimum Temperature Deviation	Total Precipitation	Total Precipitation Deviation
Amherst	55.3 °F	-0.09 °F	33.83 °F	+1.46 °F	7.6 inches	+2.58 inches
Belchertown	54.7 °F	+0.47 °F	32.83 °F	+0.23 °F	9.27 inches	+4.02 inches

Average temperature and total precipitation accumulation data from NOAA Northeast Regional Climate Center, [SC ACIS](#) indicating more or less "normal" temperatures with higher than normal rainfall.

### Brown rot

Season long brown rot management begins at bloom! Bravo or Echo (both chlorothalonil, FRAC M5) continue to be good, preventative, bloom time sprays. Save materials that the pathogen may become insensitive to for later season (fruit ripening) brown rot prevention in a resistance management program.



**HORTICULTURE**

Jon Clements

I said my (JC) peace in [The way I see it...](#)

### Apogee and Kudos (Prohexadione-calcium) Application

Duane Greene, UMass Amherst

The cool weather has slowed tree development considerably providing an opportunity to achieve good growth control. Application of prohexadione-calcium at this time will yield maximum growth control. Label directions limit the amount that can be applied at this time to 6 oz/acre. The time of application rather than the rate applied of the product has a greater effect on the extent of growth control. Even though the weather forecast calls for cool cloudy weather in the near future, these conditions should have little effect on the extent of growth control. If Apogee or Kudos are applied this week there should be a significant reduction in growth. A follow-up application should be done in about 3 weeks and additional application(s) may be required later in the season if re-growth is observed. If you have never applied

prohexadione-calcium this early I suggest that you try it. Application at this stage of tree development is especially effective on tip-bearing cultivars such as Cortland.

In the March Message we indicated that application of prohexadione-calcium may be used to help control fire blight based upon work reported by Kerik Cox at Cornell. It has no effect on the fire blight bacterial itself, but by achieving very early shoot growth control, it may provide protection of shoot fire blight much earlier. If you intend to have treated trees grow this season, application should be limited to just one application. This will allow the trees to outgrow the prohexadione-calcium and continue to growth for the remainder of the season.



## SMALL FRUIT UPDATE

Sonia Schloemann

**CROP CONDITIONS: Strawberries:** Strawberry growth has only progressed a little since last week, flower trusses just beginning to push from crowns, except where row covers were used. Row-covered fields are in bloom with covers removed to allow for pollination. Be sure to get your frost protection system set up and ready for when it is needed. Some new plantings are going in where field wetness doesn't prevent tractor work. **Brambles:** Growth hasn't moved much since last week due to the cold weather. Winter injury does not appear to be widespread, though some uneven shoot growth seems common. Shoots are growing slowly and leaves are beginning to separate on floricanes. Primocane growth is up to 6" in some areas. As leaf tissue expands, watch for [orange rust](#) on blackberries and black raspberries and rogue out plants where it is found. Orange rust is systemic and cannot be treated to eliminate it from an infected plant. **Blueberries:** Bud development has progressed a little to the early pink stage in some varieties. [Mummy Berry](#) is the main concern at this time, especially where it was found last year. This disease has 2 distinct phases of its life cycle; [shoot strike](#) and [blossom blight](#). See an illustration of the whole life cycle [here](#). Stopping the shoot blight stage is the most effective way to limit damage to the fruit. Sanitation (cleaning up or covering fallen mummies), and air circulation (pruning for good drying conditions in the canopy), are cultural practices that are effective for reducing infection. Fungicides are recommended according to their efficacy against each phase. See the [New England Small Fruit Management Guide](#) for treatment recommendations. **Other Berries:** [Haskaps](#) are in bloom. These plants can tolerate low temperatures, even at bloom (tolerating down to 18°F), so frost protection is not needed.



**Berry Bud Stages 4/29/19** - Strawberry (ready for frost protection), Raspberry (bud growth), Blueberry (approaching early pink stage), Haskap (full bloom).



**HAWKEYE’S CORNER (notes from the field)**

Liz Garofalo

Gypsy moth hatch keeps moving forward. Cooler temperatures and rain will, thankfully, have slowed further emergence. Nonetheless, if gypsy moth was a challenge for you in that last year or three, keep your eyes peeled for them ballooning into your orchards! If they do start to make their way into your crops, remember, smaller caterpillars are more easily managed in general and specifically with Dipel or other Bt. material.



**A:** Gypsy moth egg mass photographed 4/23/19, only one caterpillar emerged. **B:** Same egg mass photographed 4/25/19, ~18 caterpillars hatched.



## GUEST ARTICLE

### **NEWA APPLE CARBOHYDRATE THINNING MODEL NOW IMPROVED!**

Dan Olmstead, Juliet Carroll, NYS IPM Program, Geneva, and Mario Miranda Sazo, Lake Ontario Fruit Program, Newark; [dlo6@cornell.edu](mailto:dlo6@cornell.edu), [jec3@cornell.edu](mailto:jec3@cornell.edu) & [mrm67@cornell.edu](mailto:mrm67@cornell.edu)

Reprinted from Scaffolds Fruit Journal, Vol. 28, No. 6, April 29, 2019.

<http://www.scaffolds.entomology.cornell.edu/2019/index.html>

You've read about it in trade magazines, heard about in talks, and now it's become a reality with a v2019 upgrade released on Friday April 26! Terence Robinson has added important improvements to the apple carbohydrate thinning model on NEWA. Dr. Robinson ([tlr1@cornell.edu](mailto:tlr1@cornell.edu)) Professor of Horticulture, Cornell University, along with other horticulturists, developed the Malusim fruit thinning model. The Apple Carbohydrate Thinning Model on NEWA has continued to be researched and now the improvements from this research are being woven into a v2019 edition of the model, improving its precision.

**How to Access the v2019 Apple Carbohydrate Thinning Model on NEWA.** If you haven't already started your thinning program, access and use the v2019 apple carbohydrate thinning model using the same dropdown list as the current apple thinning model. Click on 'Apple CHO Thinning v2019 NEW'. If you've already initiated your thinning program and are using the original 'Apple Carbohydrate Thinning' model, continue to use that one. All web browser bookmarks and website access points will remain intact for the remainder of 2019. Need more specifics? On NEWA's main menu, hover over or tap on 'Crop Management' to show the dropdown list. Then click or tap on 'Apple CHO Thinning v2019 NEW'. Click the link below for direct access.

### **Apple CHO Thinning v2019 (the upgraded version)**

<http://newa.cornell.edu/index.php?page=apple-thin-new>

Here is a summary of the upgrades in the Apple CHO Thinning v2019 NEW model.

- The NEWA apple carbohydrate thinning model will get an updated look and provide more comprehensive information.
- The data table will have a column of degree days (DD) base 4°C and will have color highlighting when we are in the sweet spot for thinning (200-250 DD from bloom).
- The user will be required to enter the percentage of spurs that are floral.
- The new version will also give a Thinning Index composed of the average carbohydrate balance for the two days before, the day of thinning, and the next four days, providing a seven-day running average.

- The thinning recommendations will be based on a new three-dimensional lookup table that takes into account DD from bloom, percent of spurs that are flowering, and the thinning index (i.e., the average carbohydrate balance over seven days).
- The thinning recommendation cells in the table will be color coded to indicate high risk of over-thinning (red), mild thinning efficacy (yellow), and good thinning efficacy (green).

In New York, please direct questions and comments regarding these important updates and changes to your Cornell Cooperative Extension regional program extension educator listed below or to Terence Robinson. Mario Miranda Sazo, Lake Ontario Fruit Program Mike Basedow, Eastern New York Commercial Horticulture Program (Champlain Valley) Dan Donahue, Eastern New York Commercial Horticulture Program (Hudson Valley). (Ed. note: in Massachusetts, feel free to contact Jon Clements or Duane Greene with questions.)

In 2020, along with a brand new NEWA website, the upgraded apple carbohydrate thinning model will be implemented on NEWA and will replace the original version.



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## USEFUL LINKS

[27th Annual March Message \(2019\) to Tree Fruit Growers \(Google Doc\)](#)

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

Scaffolds Fruit Journal: <http://www.nysaes.cornell.edu/ent/scaffolds/>

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 May 7, 2019. 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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