Healthy Fruit, Vol. 28, No. 5, April 21, 2020

Prepared by the University of Massachusetts Amherst Fruit Team

Contents

Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (Since January 1)	20-April
Base 43 BE (NEWA, since January 1)	200
Base 50 BE (NEWA, since January 1)	68

According to the NEWA Degree Days prediction, by April 20 we will have reached 227 DD's Base 43 BE. Tight cluster apple bud stage should occur 206-257 DD's Base 43 BE. Yea, I know, it's STILL dragging...

Current bud stages

Current bud stages. 20-April, 2020, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Half-inch green++	Honeycrisp apple Half-inch green+	Crispie pear Bud burst++	Redhaven peach Bud burst+	Rainier cherry Bud burst

More 2020 bud stages here…

Upcoming pest events

Coming events	**Degree days (Base 43 BE)**
Green apple aphids present	111-265
Green fruitworm peak flight	91-226
Pear thrips in pear (and apple) buds	118-214
Rosy apple aphid nymphs present	134-244
Spotted tentiform leafminer 1st catch	120-217
McIntosh tight cluster	204-256

Upcoming meetings

UNH Tree Fruit Webinar for Commercial Orchardists. Wed, 04/22/2020. 5:30pm - 7:30pm. This replaces the monthly in-person Tree Fruit Twilight Meeting that we have had in the past. NH Pesticide Credits: 2. Participants must register prior to the webinar to receive pesticide credits. Cost: Free. More information and to register…

UMass Fruit Team Twilight Meeting. Thursday, April 30 (tentative date, but mark your calendar). 5:30 PM. By Zoom. Pesticide credit being arranged. Pre-registration will be required.

The way I see it…

Jon Clements

Not much to see or do really? Weather continues to be unseasonably cool. Bud development really crawled in the last week, I expect McIntosh to be tight cluster by now, but no, it's not really there. (Honeycrisp seems to be catching up though.) Insect activity is next to nil. (Although Heather Faubert reported seeing pear thrips in apple buds last week.)

I've been working at home mostly, watching a lot of webinars*. What did I learn? Here are a few take-home messages:

Sprayer calibration includes confirm sprayer is emitting the correct rate AND configure sprayer to match crop and environment. (Jason Deveau, OMAFRA)

Fireblight management use streptomycin at bloom if EIP>70. Fireline, Mycoshield, biologicals alternate/rotate with strep. 2 oz Apogee - 1 oz Actigard for shoot blight control in young apple plantings, beginning at pink, several applications. CONTROL blossom blight, then use Apogee for shoot blight. (George Sundin, MSU).

Spring weed control in herbicide strips, 4 good options: 1.) Alion + Surflan + Roundup. 2.) Karmex + Prowl H2O + Roundup 3.) Chateau + Surflan + Roundup 4.) Goal + ProwlH2O + Roundup (Sushila Chaudhari, MSU)

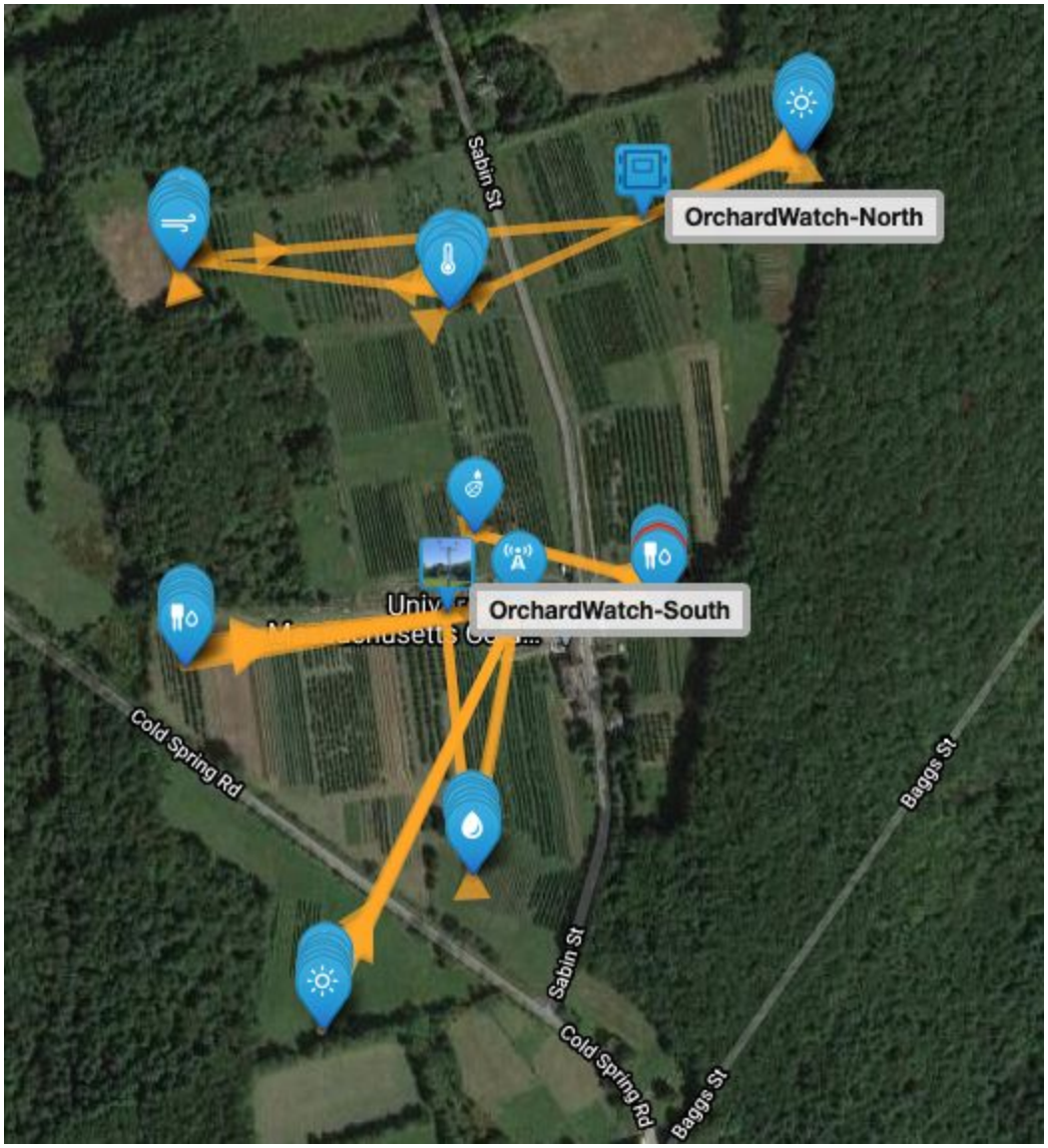
Weed management effects on beneficial and pest insects should focus on REMOVING flowers in the orchard and ADDING flowers outside the orchard. (Julianna Wilson, MSU)

6-10 day and 8-14 day outlook from NOAA/CPP calls for very good chance of below normal temperatures April 26-May 4. Thus, apple bloom in MA (UMass Orchard) predicted to start no earlier than the first full week in May. (Jeff Andreesen, MSU, and Jon Clements, UMass)

A caustic bloom thinner (lime sulfur or ATS) applied at bloom for early thinning can improve final fruit quality and return bloom. The Pollen Tube Growth Model helps time that caustic bloom thinner spray. (Phil Schwallier, MSU)

*Live and on the MSU Fruit YouTube channel.

I've also been working at the UMass Orchard (very limited hours) in deploying weather station hardware (Onset) as part of an (unfunded) initiative we are dubbing "OrchardWatch." Currently there are a total of 63 sensors in nine locations measuring the following environmental parameters: air temperature, humidity, and dew point; rainfall; 'leaf' wetness; wind and gust speed and direction; solar radiation; and soil temperature and water content. All the data is public: OrchardWatch-North and OrchardWatch-South.



OrchardWatch at the UMass Orchard, Belchertown, MA

Insects

Jaime Piñero

Weekly report of insect pest captures in monitoring traps at CSO (Belchertown, MA)

Period: 4.14 - 4.20

As shown in the table below, for the past seven days there has been very little insect activity - except for RBLR. Spotted tentiform leafminers are active but numbers are very low.

Insect	Average captures/trap	Notes
RBLR	16	
OFM	0	
CM	0	
Spotted tentiform leafminer	1	
Tarnished plant bug	0	
European apple sawfly	0	

Spotted Tentiform Leafminer. This insect pest infests apple foliage throughout North America. The larvae mine between layers of apple leaves, reducing photosynthetic area. Heavy infestations of STLM affect fruit sizing, reduce vegetative growth and/or cause premature fruit drop.

Monitoring. Expected first catch: 117-215 DD (base 43). The first catch in Belchertown took place on April 17th, at ca. 190 DD43.

Spotted Tentiform Leafminer Results for Belchertown-2

First Trap Catch: 4/17/2020

First Trap Catch date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the protection period after first trap catch more accurately.

Accumulated degree days (base 43°F) first trap catch through 4/19/2020: 7 (0 days missing)

	Past	Past	Current	5-Day Forecast				Forecast Details
Date	Apr 18	Apr 19	Apr 20	Apr 21	Apr 22	Apr 23	Apr 24	Apr 25
Daily Degree Days (Base 43BE)	0	6	4	6	1	3	4	8
Accumulation since January 1	190	196	200	206	206	210	214	222
Show Degree Day Graph								

Pest stage: Moths flying and beginning to lay eggs

The first-generation STLM adults actively fly and females lay eggs from tight cluster until the end of the pink bud stage. The first eggs are usually laid at the early tight cluster stage, on the first leaves to unfold. Mines are expected to start forming somewhere between 367 and 641 DD43.

No control should be applied at this time and it is too early to sample for STLM eggs because oviposition has just begun. No insecticidal control sprays are recommended against STLM adults. Control sprays targeted against younger instars of larvae (sap feeding stages) feeding in the leaves can be applied either at pink (in orchards with a history of STLM) or shortly after petal fall. But again, the petal fall spray should take care of most STLM larvae.

Redbanded Leafrollers. Egg masses of the first brood are deposited on the undersides of larger limbs, while the eggs of the later broods are laid mostly on the upper leaf surface. Larvae are small, pale green with yellowish heads.

RBLR pupae overwinter in the groundcover. Moths emerge during April. First generation larvae hatch at late petal fall. RBLR has 2 generations in New England.

Damage: Larvae skeletonize leaves from the underside, folding and webbing them together. They feed on the fruit, especially when leaves touch it, making shallow, irregular channels.

Apple damage by the redbanded leafroller. Photo credit: J. F. Walgenbach and A. Eaton.

Monitoring: In orchards with a history of RBLR problems, pheromone traps should be used for monitoring moth activity. Adults may be monitored beginning around green tip. Place pheromone traps in the orchard and check weekly. Larvae may be monitored by searching for tied leaves. Injured fruit should be assessed periodically through the season. No thresholds are available based on pheromone trap catch. A provisional economic threshold is 1% injured fruit at harvest.

Redbanded leafroller captured in white sticky card. Photo credit: Jaime Piñero, UMass Extension.

Control: Eliminate wild or unmanaged trees in the vicinity of the orchard to reduce the pest population.

Preserve natural enemies whenever possible such as egg parasites that can be very effective biological control agents in unsprayed trees.

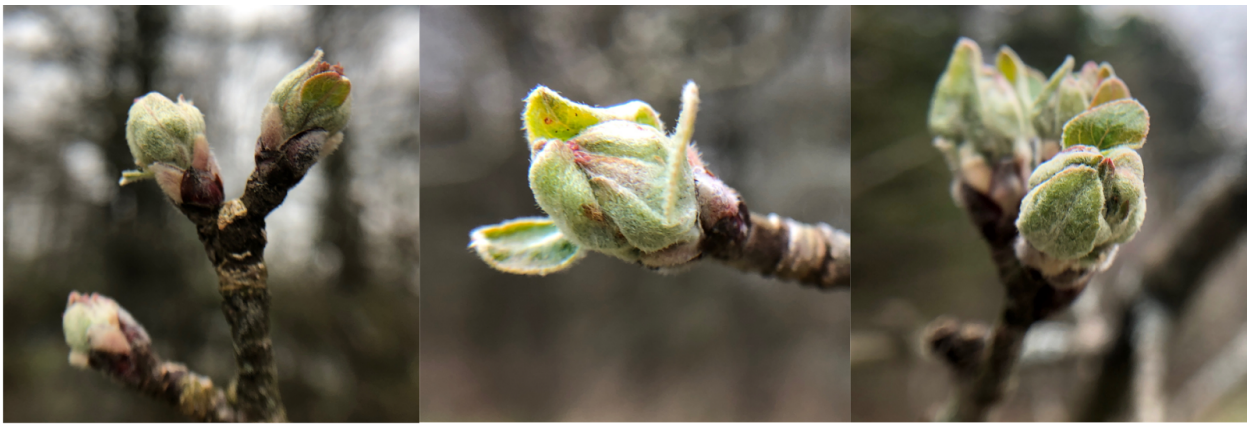
We are currently conducting a small evaluation of the biological control agent *Trichogramma minutum* against redbanded leafroller eggs in an organic apple orchard.

This parasitic wasp reportedly attacks eggs of many moth species including Oriental fruit moth, redbanded leafrollers, and codling moth.

RBLR are primarily controlled by sprays directed at other insects, such as leafminers, plum curculios, and apple maggot fly. DO NOT APPLY INSECTICIDES DURING BLOOM.

Diseases

Liz Garofalo and Dan Cooley

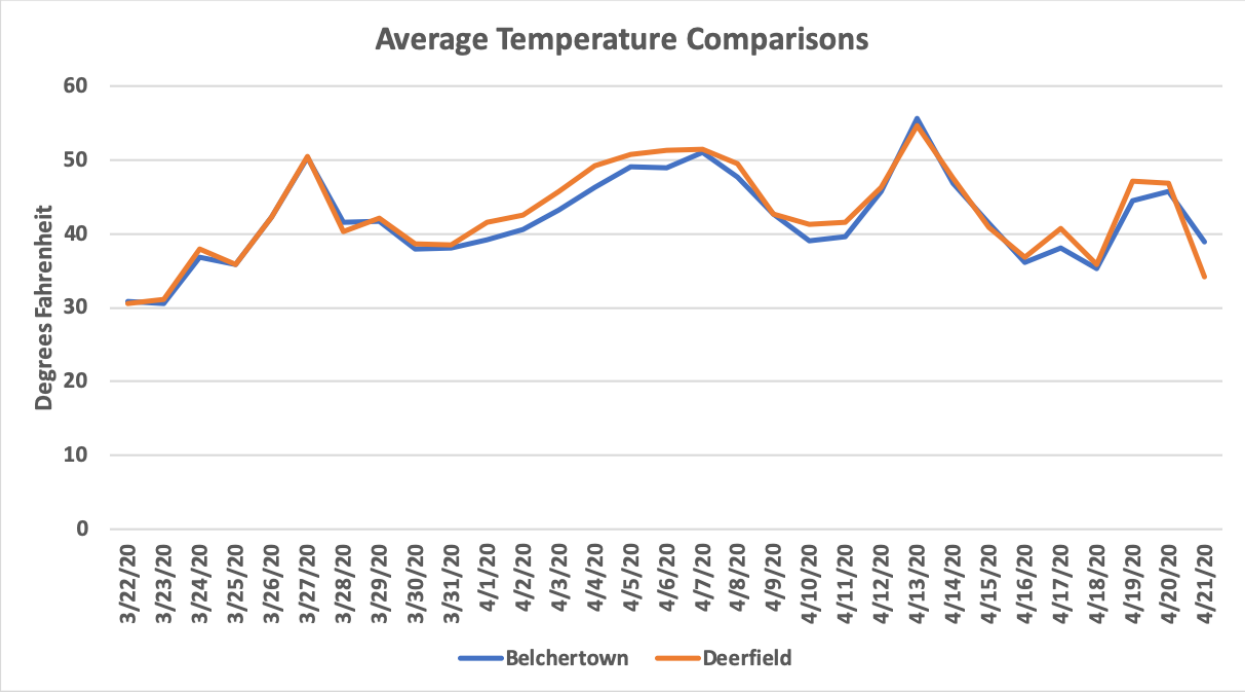


Bud stage development Greenfield, MA (4-21-20) moving slowwwwwly.

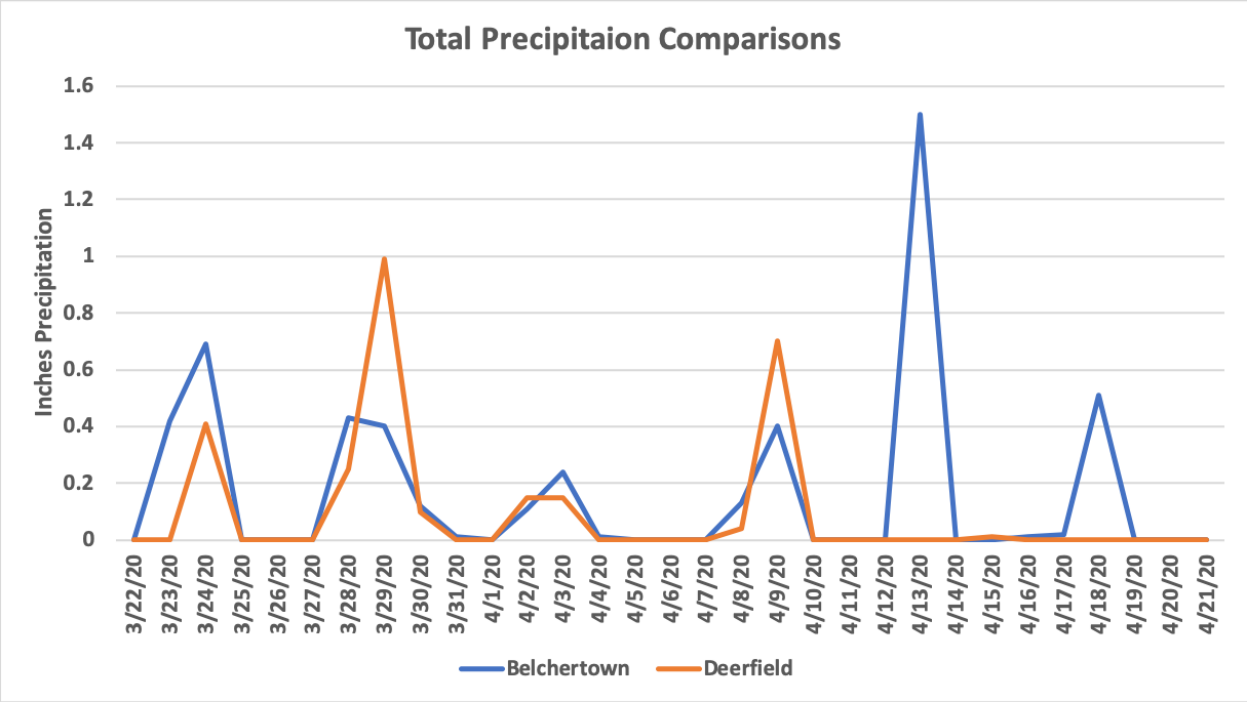
Apple scab weekly update:

	Ascospore Observation Method and Spore Count	
Date	Petri Plate Assay	Funnel Trap
4/7/2020	0	21
4/14/2020	1	0
4/20/20	162	117

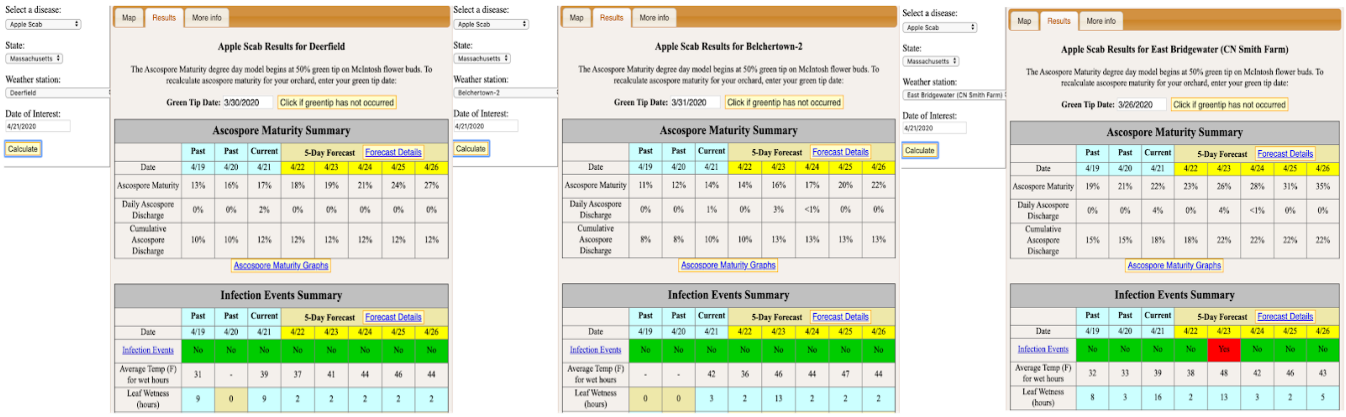
Ascospores are mature and ready to eject with the next rain event, which is forecast for Tuesday (today) afternoon. Infection estimations from NEWA have changed more than twice since I started looking at them this morning. As is always the case this time of the year, rapidly changing weather conditions make firm estimations of infection difficult. Looking at NEWA (1:52 pm, 4-21) now, there are currently no infection events forecast for many sites in MA. There is an infection event forecast for the East Bridgewater station for April 23. This morning that same location had two events forecast; one today and another for April 23 and 24.There are currently no infections forecast for Deerfield or Belchertown for the foreseeable forecast.
Both RIMpro and NEWA estimate that approximately 6.0% of the season's total ascospore "bank" will be released during today's (April 21) upcoming rain. **Bottom line** is, unless the leaves remain wet for a sufficient amount of time, there is a slim chance of an infection event resulting from today's wetting. Locations, like East Bridgwater, that are likely to experience longer leaf wetting have a greater likelihood of seeing infection from today's spore release. If you had scab last year, **caution** is the signal word. Early season infections can go unnoticed, especially with inoculum left over, and lead to season-long battles. To help mitigate this- good news everybody! There is still time to get leaf chopping done to reduce overall scab pressure!
I find the weather comparisons between Deerfield and Belchertown endlessly fascinating. Temperatures continue to range fairly closely, 42.74℉ average in Deerfield from March 22 - April 21 and 41.99℉ in Belchertown (a difference of 0.8℉).



While site differences in precipitation seem to be on the rise as this season progresses. Deerfield has racked up a total of 5 inches of rain from March 22 - April 21 and Belchertown only 2.8 inches. That's the biggest spread we have seen since this volume of Healthy Fruit started!



Given the above apple scab update, differences between these two sites are much more interesting! Because, we have spore ready to eject, and even germinate! But, depending on where you are, your microclimate might be such that you will have an infection (of variable severity) while 45 minutes up the road no infection is forecast. This may make the case for individual sites maintaining their own Decision Support System stronger. Your neighbor's weather station may be recording weather information just differently enough to miss an infection on your site.



Comparison of NEWA's apple scab estimates for three different MA locations. 4-21-20

Horticulture

Use of Prohexadione-calcium (Apogee and Kudos) in 2020

Duane Greene

Tree development has proceeded almost to the point where growers can consider making their first application of prohexadione-calcium (Pro-Ca). Recent research has shown the value of early application for both greater growth control and for initiation of early control of shoot blight.. It requires between 10 and 14 days after application for Pro-Ca to start to inhibit growth. Since shoot growth in an apple shoot begins early, often at bloom, the earlier growth can be checked the greater overall reduction in growth that will be possible. If the initial application is made at pink, no more than 6 oz per 100 gal. may be applied at this timing.

The label suggests that there are two time periods when Pro-Ca can be applied. The first is early at the pink stage of flower development. The second time period is when shoot growth has reached 1 to 3 inches in length which is generally during the bloom period. The greatest reduction in shoot growth will be achieved when Pro-Ca is applied at the pink stage since reduction in shoot growth is achieved early before rapid shoot growth starts. If less aggressive growth reduction is chosen, then wait about a week after the pink stage to make the first application. Those who wish to have a less dramatic reduction in shoot growth may wish to make the initial application during the late bloom period. Follow up application(s) will be needed to maintain growth control throughout the season. The number of applications will vary depending on the vigor of the orchard. Generally, 6 oz/100 gal is a sufficiently high rate to use initially although lower rates are typically used in follow up applications.

There are two formulations of Pro-Ca available, Apogee and Kudos. They both have the same percent active ingredient and they may be used interchangeably. There are small differences between these formulations but in my estimation they are comparable.

An important use of Pro-Ca is to help control shoot fire blight. Pro-Ca has no direct inhibitory effect on the fire blight bacteria. The structure of the shoots treated with Pro-Ca is altered and thus providing a barrier for penetration of fire blight into the shoot. Therefore, in order for Pro-Ca to provide any protection from fire blight it must first cause growth reduction in shoot growth. Application of Pro-Ca at pink does not inhibit blossom blight but what it does do is alter the structure of the developing shoot thus providing earlier protection against shoot blight. If Pro-Ca is used for shoot blight control on young trees, an undesirable reduction is tree growth may occur.

Ed. note: recent research out of Cornell has shown that Prohex-Cal application beginning at pink *may* help reduce bitter pit in Honeycrisp, while delaying application(s) until after bloom *may* actually increase incidence of bitter pit. Just something to think about. Also note that Apogee application at pink for fire blight shoot blight suppression can be made only if the applicator has the 2EE supplemental label for early application in their possession. The Kudos label, however, allows application at pink.

Small Fruit Update

Sonia Schloemann

Crop Conditions:
Strawberries: Local observations and regional reports indicate little change since last week due to continued cool weather. Plants are showing early new growth and row-covered fields have some flower trusses just visible in or slightly extending from the crowns. Low tunnel fields are somewhere in between. Check covered fields often for Two-spotted Spider mites and aphids. Check all fields for Cyclamen mites as new leaves unfurl and show feeding damage. See New England Small Fruit Management Guide for recommended materials and rates. Be ready to scout for Strawberry Bud Weevil (Clipper), as flower trusses expand and king blossoms open. Rows near woodsy field edges and hedgerows are more likely to have damage from clipper weevils migrating in from these protected overwintering sites. More on this in a week or two. New fields are being planted as soil conditions allow.

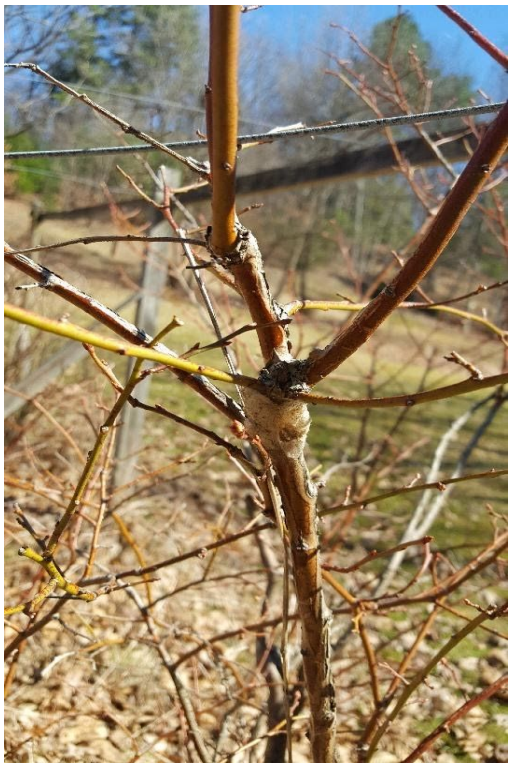
Brambles: Local observations and regional reports say raspberry green tissue is at 1.5 +" growth with leaf expansion starting. Blackberries are a little further along. New canes (primocanes) are at about 2" on average in Western MA. Be careful now with herbicide applications that can damage these new canes. Watch for Raspberry Fruitworm feeding injury on newly opening leaves over the next couple of weeks. See the New England Small Fruit Management Guide for recommended materials and rates.

Blueberries: Bud development is progressing slowly through budbreak, tight cluster and flower bud expansion. Leaf buds are expanding and showing green tissue. Mummy Berry continues to be a top concern. If you had MB infection in your planting last year, be vigilant about getting fungicide coverage as the green leaf tissue becomes exposed. Regional observations indicate increased occurrence of Blueberry Stem Galls. These galls harbor the overwintering larvae of this Blueberry Stem Gall Wasp (BSGW), and are very visible now until obscured by foliage. Prune out and destroy these galls as soon as possible to lessen the emerging tiny wasps from pinholes in the galls (see photo below) which takes place around mid-May or when bloom is near. Removing galls is much preferred to spraying at or near bloom time. Normally BSGW populations are thought to be kept low by natural enemies but these beneficials may be negatively impacted by intensive SWD spray programs leading to more BSGW than before.

Another oddity this year has been a report of a very localized high population of Whitemarked Tussock Moth Pupae in a blueberry planting in Western MA (see photos below). These pests are also normally kept in low numbers by natural enemies but can sometimes flare up. The damage may be noticeable from caterpillar feeding, but another risk is that this is a species of caterpillar (and pupae), that can cause serious irritation when it comes into contact with bare skin. This is a particular concern for PYO operations. Pruning egg masses and pupal cases out of bushes and removing and destroying ones found on trellis or netting posts now is recommended (wear gloves, a long sleeved shirt and facemask to avoid contact with allergenic

fibres). If caterpillars are found later, B.t. products are effective on very small larvae but larger larvae may require a stronger material like Confirm or Intrepid. See this fact sheet from Michigan State University for more info.

A gall showing multiple emergence holes, with a newly emerged gall wasp perched on the left of the gall. **Photo** by Rufus Isaacs, Michigan State University.



Left - Whitemarked Tussock Moth egg case (empty) and, **Right-** overwintered pupal cases in spring. Remove and destroy wearing gloves, longsleeved shirt and face mask to avoid contact with allergenic fibres. **Photo credit**: T. Simisky, UMass Extension.

Last week's photo of the week: Praying Mantis egg case

Hawkeye's corner (notes from the field)

Liz Garofalo
No field visits for this week. But, soon, perhaps… Stay tuned!

Guest article

No guest article this week...

Facebook Me

Useful links

UMass Fruit Advisor: http://umassfruit.com

UMass Extension Fruit Team YouTube Channel

Scaffolds Fruit Journal: http://www.nysaes.cornell.edu/ent/scafolds/

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

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Acimovic Lab at Hudson Valley

Peter Jentsch's Blog

The next Healthy Fruit will be published on or about April 28, 2020. 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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