

Healthy Fruit, Vol. 28, No. 11, June 2, 2020

Prepared by the University of Massachusetts Amherst Extension Fruit Team

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Thank you sponsors...

Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (Since January 1)	1-June
Base 43 BE (NEWA, since January 1)	685
Base 50 BE (NEWA, since January 1)	359

Upcoming pest events

Adapted from Scaffolds Fruit Journal

Coming events	Degree days (Base 43 BE)
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Black cherry fruit fly 1st catch	702-934
Black stem borer 1st flight peak	635-901
Codling moth 1st flight peak	562-980
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	570-736
Spotted tentiform LM 1st flight subsides	682-941

Upcoming meetings

<u>Thursday, June 4,2020. 12:00 - 1:00 pm.</u> WEBINAR - Invasive Insect Series: Spotted Lanternfly and Environmental DNA: Insect Monitoring of the Future

Speaker: Dr. Julie Lockwood, Professor and Chair, Ecology, Evolution and Natural Resources, Rutgers University.

Preregistration is required to access the webinar. Register here. After registering, you will receive a confirmation email containing information about joining the webinar.

Credits available for this webinar: 1 Pesticide contact hour for categories 26, 27, 29, 35, 36 and Applicators (core) license; 0.5 MCA, 0.5 MCLP, 1 ISA, and 1 SAF.

<u>Thursday, June 4, 2020. 5:30 pm.</u> UMass Fruit Team Twilight Meeting (via Zoom). One pesticide recertification credit. Register here.

AGENDA

5:30 PM Technical difficulties addressed for those needing assistance. (5 min.)

5:35 Welcome & Intro - S. Schloemann (10 min.)

5:45 Spotted wing drosophila & Brown marmorated stink bug updates - J. Piñero (20 min.)

6:05 Notes from the field and other insect considerations - E. Garofalo and H. Faubert (15 min)

6:20 Summer Rots - D. Cooley (10 min.)

6:30 Thinning update - D. Greene (5 min.)

6:35 Lightning talk: contact herbicides - J. Clements (10 min)

6:45 Q&A

7:00 Meeting adjourned

The way I see it...

Jon Clements

In the midst of measuring apple fruitlets and using the fruitlet growth rate model (<u>Ferri method</u>) to determine which are staying and which are going. After two measurements, the results are as follows:

Variety	Mean fruit diameter	Mean largest 3 fruits/tree	Mean smallest 3 fruits/tree	Potential fruit per tree	Target fruit/tree	Predicted set/tree	% of potential fruit set
DS-41 Pazazz	9.8	11.9	7.9	602	60	360	60
Buckeye Gala	10.5	12.3	8.9	470	80	229	49
Honeycri sp	10.4	12.6	8.6	657	70	203	31

Comment: a petal fall thinning spray was applied. More thinning is needed for sure in the Pazazz and Gala. Honeycrisp also got lime sulfur at bloom, not 100% sure what is going on there yet, it appears there was some bloom thinning effect. Probably needs another touch of thinner. NOW is the time to get on with it...

Irrigation, more on that below, it's dry enough such that the trickle irrigation should be on. Especially in young, newly planted trees.

Hope to see you at our virtual Zoom twilight meeting Thursday evening. And for a bit of comic relief, check out the <u>UMass IPM Fruit Loop Podcast</u>.



DS-41 Pazazz, needs more thinning



Buckeye Gala, needs more thinning



Honeycrisp, needs more thinning maybe???

Insects

Jaime Piñero

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

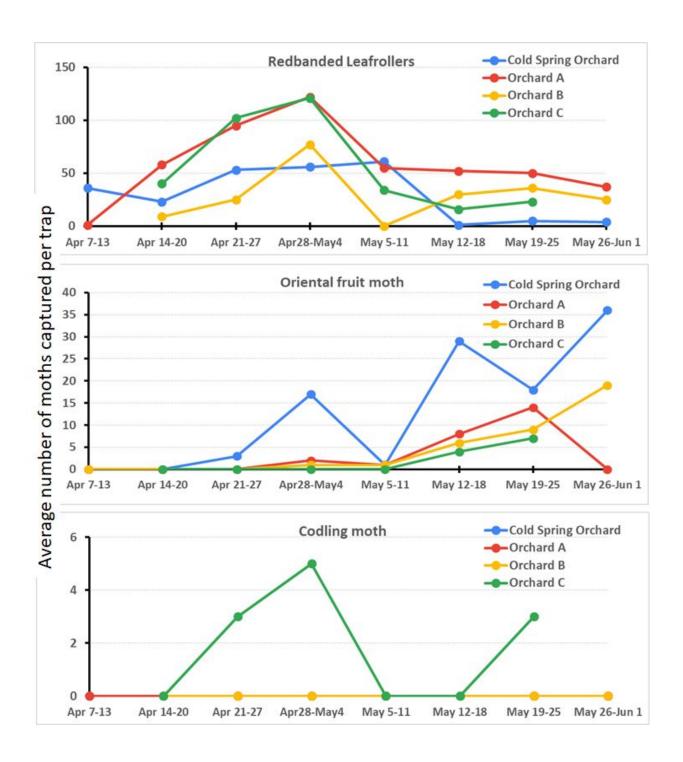
Period: 5.26 - 6.2

Insect	Average captures/trap	Notes
RBLR	4	Pheromone-baited trap
OFM	36	Pheromone-baited trap
СМ	0	Pheromone-baited trap
Spotted tentiform leafminer	7	Pheromone-baited trap
Tarnished plant bug	0.08	Unbaited white sticky cards
European apple sawfly	0.0	Unbaited white sticky cards

Plum curculio (PC). For the past 7 days, odor-baited black pyramid traps have captured few PCs. This is reflective of comparatively less PC movement as female PCs are fully engaged in oviposition activity. The level of PC injury to fruit increased from 1.5% to 9.5% in just one week, in one unsprayed apple block at CSO.

<u>Verdepryn 100 SL (cyclaniliprole) vs Avaunt (indoxacarb):</u> In one apple block at CSO, the effectiveness of Verdepryn at controlling PC is being compared against that of Avaunt. The petal fall spray in this block took place on May 24th. The first cover using the same two materials was applied today. We will record the fruit injury data in late June.

Lepidoptera. The chart below shows captures of redbanded leafroller (RBLR), Oriental fruit moth (OFM) and codling moth (CM) at four MA orchards, including the UMass Cold Spring Orchard.



RBLR populations (spring generation) continue to decline in some of the orchards. The capture of RBLR in pheromone-baited traps shows that this pest RBLR moves from unsprayed habitats. It is most likely that RBLR larvae in commercial apple orchards are controlled primarily by the petal fall spray against PC.

OFM biofix (first sustained captures) took place on May 1st, 2020 at the UMass CSO. As shown in the chart above (see middle panel) OFM captures continue to be high in Belchertown when compared to other MA orchards (A, B, and C). The variability in captures over time is likely due to variations in weather. As a reminder, the first spray against the first-generation larvae was recommended at 350–375 DD (base 45°F) from biofix. Currently, NEWA shows that we were at 376 DD (base 45°F) as of June 1st. The petal fall spray against PC should have taken care of most of the OFM larvae.

Degree Days (Base 45) for Belchertown-2									
	Past	Past	Current	5-Day Forecast Forecast Details					ils
Date	May 30	May 31	Jun 1	Jun 2	Jun 3	1 3 Jun 4		Jun 5	Jun 6
Daily Degree Days	24	9	5	16	26	27		29	23
Seasonal Accumulation	362	370	376	391	417	4	44	473	496

As shown in the bottom panel of the chart, **CM** has been found in one of four orchards so far, in very low numbers. No CM has been caught in pheromone-baited traps at CSO.

The table below shows the estimated timing of 1st and 2nd generation larvae of OFM, CM, and Obliquebanded leafroller (not captured traps yet at any MA location) when DD data are calculated starting at BIOFIX.

Moth species	Control of 1 st generation larvae	Control of 2 nd generation larvae
OFM	350-375 _{45°} DD after biofix (55-60% egg hatch)	1,450 - 1,500 _{50°} DD after <u>biofix</u>
СМ	220-250 _{50°} DD after biofix*	1,260 _{50°} DD after biofix
OBLR	360-450 _{43°} DD after biofix (55-60% egg hatch)**	2,750 _{43°} DD after biofix

^{*}In low-pressure orchards, or if mating disruption has been used for 2-3 years, you can wait until we hit 350 DD (65% of egg hatch occurs by this time).

^{**}The petal fall insecticide spray should control overwintered larvae. Orchards that have low OBLR pressure can wait until about 600 DD, based on results from scouting.

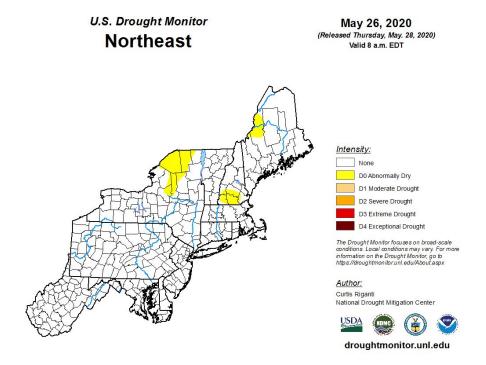
Diseases

Liz Garofalo and Dan Cooley

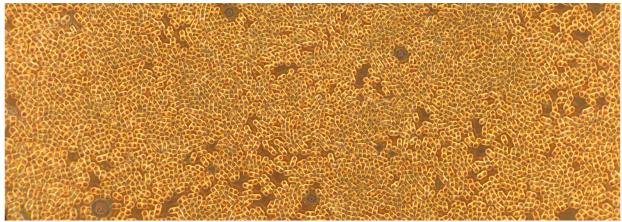
No rain, no pain...?

	Ascospore (Ascospore Observation Method and Spore Count						
Date	Petri Plate Assay	Petri Plate Assay Funnel Trap						
3/31/20	0	0	0					
4/7/2020	0	0 21						
4/14/2020	1	0	1					
4/20/20	162	117	279					
4/28/20	95	44	139					
5/5/20	89	1421	1510					
5/12/20	259	5275	5534					
5/18/20	205	Too many to count*	205*					
5/26/20	162	1967	2129					
6/1/20	1060	6294	7354					

All those dire warnings about how primary scab season ISN'T over, and barely a drop of rain since then. Which brings us back around to what some of us like to call "the dry switch". The term "dry switch" refers to a programming mechanism within the scab model in a decision support system, however, it's also often used to describe the effect prolonged dry conditions have on ascospore development and maturity. In essence, prolonged dry periods cause ascospores to slow or even halt maturation. This serves to preserve longevity in the fungus. When wet conditions resume, so does the maturation and potential for primary infection. This extends the primary scab season longer into the late spring, further than we would normally expect to see it go.



Even though things are dry in terms of scab, Massachusetts is currently not yet dry enough to register on the <u>National Drought Monitor</u>. Although there are parts of the Northeast that are registering as "Abnormally Dry". The drought monitor uses several different parameters in conjunction with one another to determine the drought status by region, not just rainfall amounts.



6-1-20; Thousands of mature ascospores, caught using the funnel trap, observed under the microscope (200X), ready to eject and cause infection. The spore "stripe" on the glass microscope slide was once again observable by the naked eye.

While NEWA estimates ascospore maturity to have reached 100%, the site also states that ascospore *discharge* remains at 94% and that the remainder of mature spores will be released with the next rain of one tenth of an inch or greater.

Spore counts, however, remain higher than one would expect to see if ascospore maturity had indeed reached 100%. To make matters more complicated, the forecast is playing touch and go with rain events. We were forecast to have rain over the last few days without so much a drop in Belchertown since May 23 (and I mean *a drop*, .01" actually). There has not been a rain event in Belchertown since May 15/16. Definitely enough time for the dry switch to kick in and slow maturation, prolonging the primary scab season.

Apple Scab Results for Belchertown-2

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: 3/31/2020 Click if greentip has not occurred

Ascospore Maturity Summary										
	Past	Past	Current 5-Day Forecast Forecast Details							
Date	5/30	5/31	6/1	6/2	6/3	6/4	6/5	6/6		
Ascospore Maturity	100%	100%	100%	100%	100%	100%	100%	100%		
Daily Ascospore Discharge	0%	0%	0%	0%	0%	0%	0%	0%		
Cumulative Ascospore Discharge	94%	94%	94%	94%	94%	94%	94%	94%		

Ascospore Maturity Graphs

The Ascospore Maturity model predicts that 95% of the ascospores have matured. At this point, essentially all ascospores will be released after a daytime rain of greater than 1/10 inch with average temperature above 50°F.

Infection Events Summary										
	Past	Past	Current	5-Day Forecast Forecast Details						
Date	5/30	5/31	6/1	6/2	6/3	6/4	6/5	6/6		
Infection Events	No	No	No	Yes	No	No	No	No		
Average Temp (F) for wet hours	65	-	60	66	66	71	71	76		
Leaf Wetness (hours)	4	0	1	8	2	2	2	2		
Hours ≥90% RH	9	0	2	1	0	0	0	0		
Rain Amount	0.00	0.00	0.00	0.01	0.00	Night 1% Day 40%	Night 46% Day 46%	Night 51% Day 9%		

Download Time: 6/1/2020 11:00

Infection events, shown in red above, are based on the <u>Revised Mills Table</u> and are calculated beginning with 0.01 inch of rain. The word "Combined" means the wetting event on this day is being combined with another wetting event using the following rule: two successive wetting periods, the first started by rain, should be considered a single, uninterrupted wet period if the intervening dry period is less than 24 hours. When an infection event is in the 5-day forecast, the actual weather data logged may or may not translate into an actual infection event. Therefore, the table output may change once actual weather data are logged.

With the forecast shifting nearly hourly, determining the next potential infection is challenging. With rain forecast in varying percentages for Monday, Tuesday and Wednesday nights and Friday, we have potential for an infection event. RIMpro is forecasting two infection events, The first is in the moderate risk category and the second with a RIM value exceeding 300 (putting it into the high risk category). **Bottom line**, there is still a large spore dose available and ready to

infect. Spores were germinating on the slide while I was counting them, so we cannot rely on reduced spore fitness (ability to thrive). This is no time to let your guard down for primary scab.

Horticulture

Chemical Thinning Suggestions for When Fruit are 10-15 mm.

Duane Greene

Last week the weather was somewhat variable but sandwiched in between was a period of warm and cloudy to partly cloudy weather. Thinner rate recommendations for that period were normal to modest (reduced) because of the very negative carbon balance indicated by the apple carbohydrate model. Then the weather cooled down over the weekend. Yesterday I observed reasonably high fruit setting with spurs having similar sized fruit on McIntosh, Macoun, Honeycrisp and other mainstream varieties. Temperatures are scheduled to increase for the remainder of the week providing favorable thinning conditions. The 8-14 mm fruit size range is the range at which fruit are most easily thinned. After that thinning is going to become more difficult and you will probably need to have help from the weather to thin. I think that this may be your last very good opportunity to thin. If fruit set is reasonably heavy, I think that you should be somewhat aggressive with what you apply. If you are a grower who uses carbaryl I would include this with your NAA and MaxCel thinners. NAA is a very effective thinner to use at this stage of fruit development. Of course, different rates are used on different varieties. On varieties that you normally use high rates, I would not hesitate to apply 10-12 ppm (4-5 oz NAA per 100 gallons dilute TRV) with 1 qt carbaryl. This fruit size stage is also when MaxCel is most effective. It is a mild thinner when applied alone but when combined with carbaryl it is quite a potent thinner. I would not hesitate to use 64 oz. (100 ppm) per 100 gal. of spray dilute TRV with carbaryl on trees that are heavily set. Last year I applied as high as 80 oz. per 100 gal. with carbaryl when I wanted to achieve greater thinning. MaxCel requires warm temperatures for at least 2-3 days after application to work well. These conditions are forecast for the next few days. MaxCel may be used at higher rates without carbaryl if you are interested in some thinning but are equally as interested in getting additional fruit size. If you have applied carbaryl within the last 7 days fruit will "remember" that previous spray and additional thinning might be expected even if carbaryl is not included in the spray tank this time. According to work done at Cornell, the best thinning is generally achieved when trees are exposed to between 200 and 250 growing degree days (Base 39 F. from bloom). As of today at Belchertown we have accumulated 246 growing degree days.

In conclusion, this is your last good opportunity to thin apples this year. The weather forecast is somewhat favorable for thinning, but not for over-thinning. There is a threat of rain tomorrow. If your thinning spray has had the opportunity to completely dry and remain that way for at least 30 minutes, a rule-of-thumb is that you can expect to have at least 80% of the thinning activity from the application.

NEWA Crop Management/Irrigation Model

Jon Clements

The NEWA Crop Management/Irrigation Model can be reached directly here. It's fairly straight-forward to use, and although it may not suggest there is anything earth-shattering going on here -- when it's dry, it's dry, and when it's wet, it's wet -- it does give you a quantitative measurement of the water status in your orchard and could help prevent under- or over-watering.

The steps to use:

Cornell Apple ET Model

Go to http://newa.cornell.edu/index.php?page=apple-irrigation

Choose your State (Massachusetts) and Weather Station (there are 53!)

Hit Continue and select your green tip date (don't use the default, it's wrong), enter your In row and between row spacing and Age of orchard (older orchards use more water)

Мар Results More info State: Massachusetts > Apple ET Model for Belchertown-2 Weather station: Belchertown-2 Green tip date below is estimated from growing degree day accumulations. Enter your orchard's green tip date to fine-tune results. Enter in-row and between-row spacing (or trees/acre) and select age of orchard Select Date: from menu. Click "Calculate" to obtain results. 6/2/2020 In row Between row Trees per Age of Water Green tip date Continue spacing spacing acre orchard balance 3/18/2020 3 feet 12 feet 1210 Mature Calculate

Hit Calculate and you will see results as below. Orchard ET is EvapoTranspiration. Rainfall is actual (to current date) based on the weather station you selected. Note it is 0.100 inches for the last week, although 0.10 inches is predicted today, and 0.06 inches predicted for tomorrow. If you have irrigated, you can manually enter the gallons/acre applied. (More on that below.) Finally you see Daily and Cumulative Water Balance, which stands at -18, 620 gallons/acre today (June 2). Ugh. Time to turn the water on.

	Apple Evapotranspiration Model Results										
Date	Orchard I	ET (gallons)	R	Rainfall		Irrigation		Water Balance (gallons/acre			
	per tree	per acre	inches	gallons/acre	g	allons/acı	re	Daily	Cumulative		
May 26	2.8	3340	0.00	0		0		-3340	-3340		
May 27	2.5	3079	0.00	0		0		-3079	-6419		
May 28	0.9	1113	0.00	0		0		-1113	-7532		
May 29	1.0	1207	0.00	0		0		-1207	-8739		
May 30	2.7	3225	0.00	0	3	0		-3225	-11964		
May 31	2.1	2541	0.00	0		0		-2541	-14505		
Jun 1	1.7	2069	0.00	0		0		-2069	-16574		
Jun 2	1.9	2247	0.01	190		0		-2057	-18631		
Jun 3	2.2	2641	0.06	1140		0		-1501	-20132		
Jun 4	3.4	4068	5	7.		0		-4068	-24200		
Jun 5	2.3	2789		-		0		-2789	-26989		
Jun 6	2.7	3258	-	-		0		-3258	-30247		
Jun 7	2.5	3039	-	-		0		-3039	-33286		
Jun 8	2.8	3333	-	-		0		-3333	-36620		

You can enter your own rainfall or irrigation amounts and click the "Calculate" button which will appear above to recalculate the water balance.

So, how do you figure out how much water you are applying through the trickle irrigation. (Assuming that is how most apple growers irrigate their orchards?) Good question, and I am not sure I am right, but this is the way I would do it. If I have a tall-spindle orchard, planted 3 by 12 feet, there are 1,210 trees per acre. If I have pressure-compensating drip tube with emitters putting out 0.6 gallons per hour, and there are 1,210 emitters per acre (presumably) and I run that for 24 hours, then 24 hours X 0.6 gallons per hour X 1,210 emitters per acre = 17,424 gallons per acre. Note that running the irrigation for 24 hours nearly wipes out the Cumulate Water Balance deficit:

	Apple Evapotranspiration Model Results												
Date	Orchard ET (gallons)		Rainfall		Irrigation		Water Balance (gallons/acre)						
	per tree	per acre	inches	gallons/acre	g	allons/acr	re	Daily	Cumulative				
May 26	2.8	3340	0.00	0		0		-3340	-3340				
May 27	2.5	3079	0.00	0		0	Í	-3079	-6419				
May 28	0.9	1113	0.00	0		0		-1113	-7532				
May 29	1.0	1207	0.00	0		0		-1207	-8739				
May 30	2.7	3225	0.00	0		0		-3225	-11964				
May 31	2.1	2541	0.00	0		0		-2541	-14505				
Jun 1	1.7	2069	0.00	0		0		-2069	-16574				
Jun 2	1.9	2247	0.01	190		17424		15367	-1207				
Jun 3	2.2	2641	0.06	1140	1	0		-1501	-2708				
Jun 4	3.4	4068	-	-		0	, 0	-4068	-6776				
Jun 5	2.3	2789	-	-		0	3	-2789	-9565				
Jun 6	2.7	3258	1-	-		0		-3258	-12823				
Jun 7	2.5	3039		-		0		-3039	-15862				
Jun 8	2.8	3333	in .	5		0		-3333	-19196				

You can enter your own rainfall or irrigation amounts and click the "Calculate" button which will appear above to recalculate the water balance.

But you should not do it that way, you should run every day or two, for example, for 6 hours (2,904 gallons) or 12 hours (5,808 gallons) alternating every other day which would more or less keep up with the average daily water deficit that has occurred. And then you can wait and see if it rains!!!

	Apple Evapotranspiration Model Results												
Date	Orchard ET (gallons)		Rainfall		Irrigation	Water Balance (gallons/acre)							
	per tree	per acre	inches	gallons/acre	gallons/acre	Daily	Cumulative						
May 26	2.8	3340	0.00	0	5808	2468	0						
May 27	2.5	3079	0.00	0	0	-3079	-3079						
May 28	0.9	1113	0.00	0	2904	1791	-1287						
May 29	1.0	1207	0.00	0	0	-1207	-2494						
May 30	2.7	3225	0.00	0	5808	2583	0						
May 31	2.1	2541	0.00	0	0	-2541	-2541						
Jun 1	1.7	2069	0.00	0	2904	835	-1706						
Jun 2	1.9	2247	0.01	190	0	-2057	-3763						
Jun 3	2.2	2641	0.06	1140	5808	4307	0						
Jun 4	3.4	4068	-	-	0	-4068	-4068						
Jun 5	2.3	2789	-	-	0	-2789	-6857						
Jun 6	2.7	3258	-	-	0	-3258	-10115						
Jun 7	2.5	3039	-	5.	0	-3039	-13155						
Jun 8	2.8	3333	in in	-	0	-3333	-16488						

You can enter your own rainfall or irrigation amounts and click the "Calculate" button which will appear above to recalculate the water balance.

Small Fruit Update

Sonia Schloemann

Crop Conditions: Field conditions continue to be very dry. Growers should be irrigating, especially in new plantings. Spotted Wing Drosophila (SWD) traps have been deployed around the state and region and we will begin reporting on trap captures soon.

Strawberries: Row covered fields and 2nd year Day Neutrals are ripening fruit. Some may have enough for limited picking this weekend. Regular June-bearing fields are mostly post-bloom now and have green fruit sizing up. Scouting should continue for Tarnished Plant Bug and Two-spotted Spider Mite. Both are showing up, but in low numbers. Botrytis Gray Mold and Leather Rot may still be a concern, especially where fields are receiving a lot of overhead irrigation. Drip irrigation avoids wetting the canopy and/or splashing which aids in dispersing spores. Bacterial Angular Leaf Spot is still also a concern where frequent wetting periods occur from overhead irrigation. Continue pulling blossoms off newly planted June bearing varieties as well as day neutrals (for about 4 weeks on the DN varieties) to allow them to establish strong root systems and crowns before carrying a fruit load.

Raspberries: Early Summer bearing varieties (e.g., 'Prelude') are late bloom to fruit set while other varieties are in early to full bloom now. Blackberries are in bloom and those on rotating trellis should be moved to the horizontal position to force flowers/fruit to one side of the trellis (East is best). New primocanes continue to grow well. Scout for Tarnished Plant Bug and <a href="Tarnished Plant Bug and <a

Blueberries: Blueberries are in full to late bloom with some varieties in full fruit set now. Some bushes are exhibiting a heavy fruit set with few or no leaves present on the canes, or sometimes on the whole bush. 'Bluecrop' and 'Elliot' seem to be particularly prone to this condition. When it occurs this condition can be a sign of inadequate pruning (too much old wood), or root stress. Regardless of the cause, it is important to reduce the crop load on these plants to avoid losing whole canes or worse. I advise stripping at least half the fruit on affected canes. Some recommend stripping all the fruit. Without leaves the bush will struggle to ripen any of it and the stress will weaken them. If you see many bushes with this symptom, dig some up and look at the root systems to see if you can determine the source of stress. It can be voles, grubs, drought, disease, or poor nutrition. See this link for a description and photo of this condition.

As for insect pests, <u>Cranberry or Cherry Fruitworm</u> should be flying now but my traps have not yielded any captures yet. Where these pests were a problem last year, monitoring is very important for timing of spray applications. <u>Plum curculio</u>, though rare in blueberries in New England, can be a problem, especially where blueberries are grown near other susceptible fruit. Disease-wise, the bloom period is key for managing fruit rot fungi like <u>Botrytis</u> and <u>Anthracnose</u>, especially following wetting events.

For management recommendations for any of these insect pests or diseases, refer to the <u>2020</u> New England Small Fruit Management Guide for materials and rates.

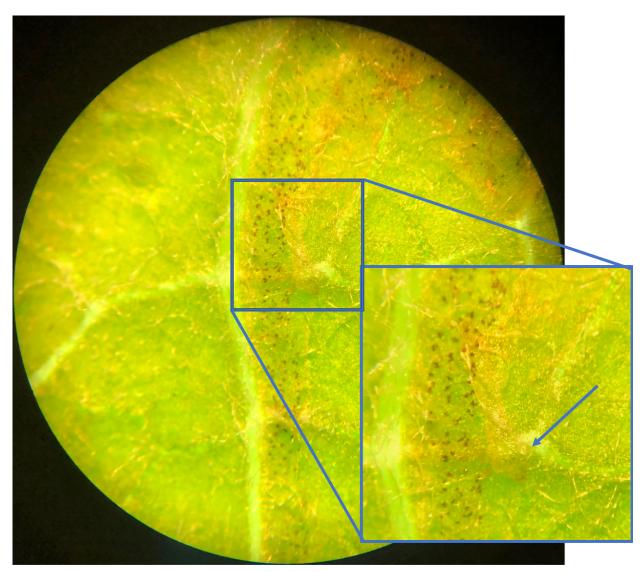


Figure 1) 'Prelude' raspberry at fruit set (left); 'Double Gold' raspberry in early bloom (center); 'Reka' blueberry approaching berry touch (right). **Photos**: S. Schloemann, UMass Extension 6/2/20

Hawkeye's corner (notes from the field)

Liz Garofalo

Leafminer larvae are actively feeding! Here you can (just barely) see this larvae feeding below the epidermis of the underside of a McIntosh apple leaf. It is not quite large enough yet to cause the characteristic "mine" to form but you can see the leaf discoloration and frass from sap feeding.

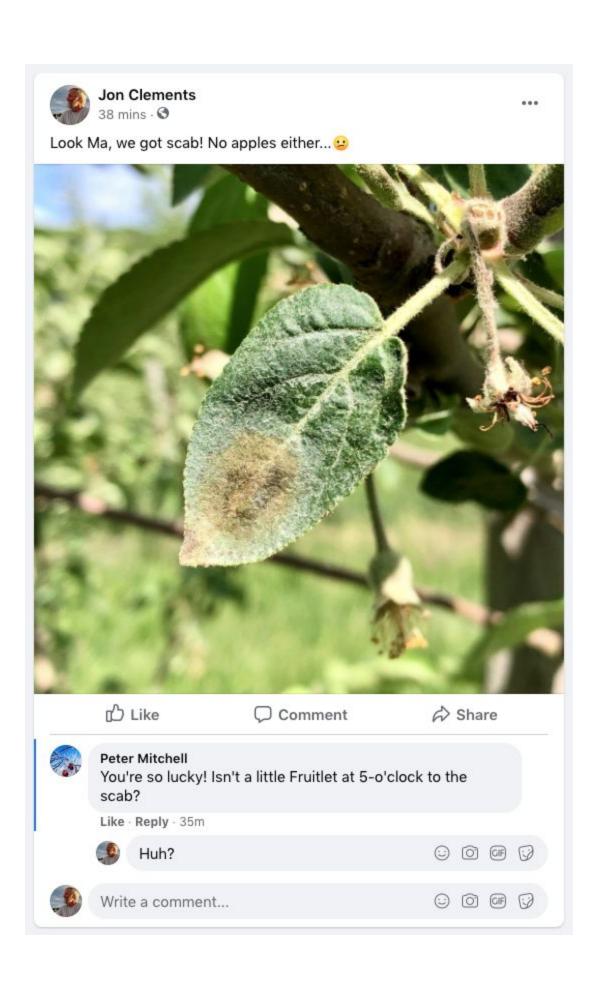


6-1-20; Close up of the underside of a McIntosh apple leaf with a leaf miner larvae seen feeding just below the epidermis. Inset, close up of leaf miner larvae. Arrow points to the larvae's head.

Guest article

No Guest Article this week...

Facebook Me



Useful links

UMass Fruit Advisor: http://umassfruit.com

UMass Extension Fruit Team YouTube Channel

UMass IPM Fruit Loop Podcast

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 June 9, 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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