



## Healthy Fruit, Vol. 26, No. 17, July 31, 2018

Jon Clements, Author (unless otherwise noted) and Editor

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### Upcoming pest events

Coming events	Degree days (Base 43 BE)	Meaning?
Current accumulation, Belchertown, MA	2420	July has been well above average daily temperature, so I am guessing this is ahead of average too...
Apple maggot peak flight	2127 to 2642	Baited yellow sticky or red spheres should be out to monitor; Early varieties susceptible to injury,

		particularly Gravenstein, Ginger Gold, and a bit later Honeycrisp
Codling moth 2nd flight peak	1954 to 2684	Pheromone traps should be refreshed with pheromone and new sticky bottoms to monitor effectively for 2nd generation!
Lesser appleworm 2nd flight peak	2144 to 3071	?
Oblique-banded leafroller 2nd flight start	2219 to 2628	Time for Altacor, Delegate or similar if indicated, to target hatching larvae, in cooler locations; scout for signs of caterpillar feeding; consider monitoring for 2nd generation
Oriental fruit moth 2nd flight subsides	2026 to 2524	Hang pheromone traps or replace pheromone to monitor flight
Redbanded leafroller 2nd flight subsides	2166 to 2707	Does not generally seem to be a problem?
San Jose scale 2nd flight peak	2137 to 2493	?
Spotted tentiform leafminer 3rd flight start	2240 to 2629	Site specific, some have problems with STLM, others do not; if left to build and too many leaf mines, can lead to pre-harvest drop of particularly McIntosh
White apple leafhopper 1st brood adults subside	2195 to 2521	See <a href="#">Insects</a>

## Ag-Radar summary

Key insect life cycle and management dates

Note: for 2018, we have ten Massachusetts orchard locations subscribed to Ag-Radar: Amherst, Belchertown (2 locations), Brookfield, Deerfield, Easthampton, Groton, Leominster, Northboro, and Westhampton. The website for looking at AgRadar for these locations is: <http://extension.umaine.edu/ipm/ag-radar-apple-sites/>. What follows is the AgRadar summary for the Belchertown location.

**Apple Maggot Fly (AMF)** -- Rough guess of peak AM trap captures is: July 31, Tuesday. Estimated dates for first and peak trap capture are only general guidelines because the effect of rain on soil conditions is not included in the calculation.

**Dogwood Borer (DB)** -- First dogwood borer egg hatch roughly: June 22. Peak hatch roughly: July 26.

**Codling Moth (CM)** -- Codling moth development as of July 31: 2nd generation adult emergence at 66% and 2nd generation egg hatch at 27%. 2nd generation 7% CM egg hatch: July 23, Monday, = target date for first spray where multiple sprays needed to control 2nd generation CM. 2nd generation 30% CM egg hatch: August 1, Wednesday = target date where one spray needed to control 2nd generation CM.

**Spotted Tentiform Leafminer (STLM)** -- Third optimized sample date for 2nd generation STLM sapfeeding mines, if needed: July 25, Wednesday.

**White Apple Leafhopper (WAL)** -- 2nd generation WAL found on apple foliage: August 2, Thursday.

**Preliminary McIntosh Harvest Date Forecasts** -- Date to apply ReTain to delay first harvest for apples which without treatment would be ready for storage harvest on September 6 is from Thursday August 9 to August 16. Date to apply ReTain to delay maturity for 2nd, 3rd or 4th pick of those apples, without delaying start of harvest maturity, is from Thursday, August 23 to August 30. Begin measuring actual McIntosh starch-iodine index no later than Saturday, August 18. The Michigan formula estimates that non-spur McIntosh will reach starch index 4.0 and start the optimum harvest window for long term storage on Thursday, September 6. Using the Champlain Valley NY formula from Cornell Bulletin 221 '[Predicting Harvest Date Windows for Apples](#),' McIntosh maturity is forecast to reach starch index 6.0 in Belchertown-ColdSpring MA on Saturday, September 15. (Yup, we are already talking about harvest.)

## Upcoming meetings

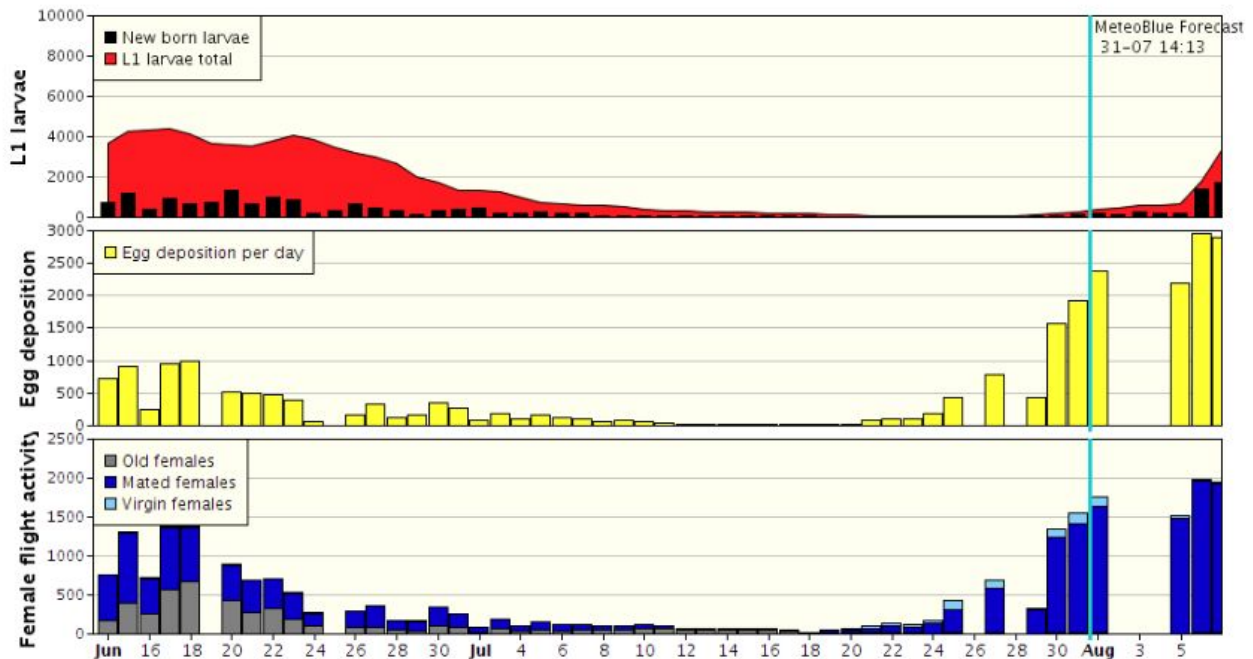
No fruit-related meetings I know about?

## The way I see it

Jon Clements

I don't have much to say, except it has been wet, humid, hot, disease pressure (SBFS, rots, brown rot) is moderate-high, shade trees are showing signs of stress, it's lush out there, Gala apples going from green to yellow, it's time to do leaf nutrient analysis (every three years, see [Horticulture](#)), codling moth second generation is getting going (see RIMpro-Cydia chart below, harvest of early peach varieties well underway (Earlystar, July Rose, PF 8 Ball White looking good -- although not quite ready), brown rot rampant on some nectarines, mid-season peach harvest should begin next week (accelerated by weather forecast), not too late to do a little pruning on peaches to help color-up fruit, start of McIntosh harvest is just a little over 4 weeks away, etc. etc.

### RIMpro-Cydia location MA-Belchertown-MB - 2018





## Insects

Jaime Pinero



### *Apple maggot fly (AMF) and leafhoppers*

**AMF:** Continue to check red sphere traps and apply insecticides if 1-2 AMF are captured on unbaited red spheres or if 5-8 AMF are captured on odor-baited spheres. Remember that you can safely discount captures that occur within 7-10 days of a recent insecticide spray unless heavy rain has fallen in the interim.

**LEAFHOPPERS:** The immigrant potato leafhopper can be found in some orchards. Refer to the New England Tree Fruit Management Guide (<https://netreefruit.org/apples/spray-table/9-summer>) for a number of optional materials against high populations of leafhoppers. The table below shows important characteristics of the white apple leafhopper and the potato leafhopper.

	White apple leafhopper ( <i>Typhlocube pomaria</i> )	Potato leafhopper ( <i>Empoasca fabae</i> )
<b>Description</b>	<p>Adults are creamy white, about 3 mm in length and hold their wings over their back when resting. Nymphs are whitish green and are usually found on the undersides of older leaves. <i>They move forward and backward.</i></p>  <p style="font-size: small; text-align: right;">NYS Agric. Expt. Station, Geneva, NY</p>	<p>Nymphs and adults are yellowish green to pale green. <i>Nymphs tend to move sideways</i> and quickly retreat to the opposite side of the leaf when disturbed.</p> 
<b>Life cycle</b>	<p>Second-generation eggs begin to hatch during late July and August. The nymphs feed during August and are fully grown by late August or September. Overwintering eggs are laid during September and early October.</p>	<p>Potato leafhoppers overwinter as adults in southern states and move northward mainly through the action of storm fronts. The potato leafhopper is most damaging from mid-June to mid-August.</p>



	<b>White apple leafhopper</b> <i>(Typhlocube pomaria)</i>	<b>Potato leafhopper</b> <i>(Empoasca fabae)</i>
<b>Primary host</b>	Apple trees seem to be the only host that white apple leafhopper overwinters on. During the growing season this insect may also infest peach, plum, cherry and hawthorn.	Apple, grapes, strawberry, potato, many other vegetable crops, beans, alfalfa and approximately 200 other species of plants.
<b>Injury</b>	Adults and nymphs feed on leaves and do not directly attack the fruit, although excrement on the fruit can reduce its quality. Leaves become speckled or mottled with white spots as green tissue is destroyed where leafhoppers suck sap from the leaves. 	The potato leafhopper feeds near the edges of leaves. The potato leafhopper's toxic saliva causes considerable damage in young orchards. If several feeding sites are present on a leaf, the leaf will cup downward. If several leaves on a shoot are affected, shoot growth may be greatly stunted. Feeding may spread fire blight. 
<b>Summer monitoring</b>	Examine 5 trees per block, 20 leaves per tree, and check the undersides of leaves for nymphs. An insecticide treatment is only necessary when a threshold of 2-5 nymphs per leaf is observed in a 100 leaf sample.	Fire blight susceptible varieties and young trees where this species has been a problem in the past should be protected when the first adults appear.

**Do you have any suggestions for articles on arthropod IPM? Please let me know!**

Contact info: [jpinero@umass.edu](mailto:jpinero@umass.edu); (413) 545-1031 (campus office); (808) 756-2019 (cell).

## Diseases

Dan Cooley

## Brown Rot

The wet and humid summer weather has brought on reports of brown rot on ripening peaches and nectarines. You may remember that we had some brown rot blossom blight and fruit rot on cherries earlier in the year. This tells me the fungus was around and active this spring.

In peaches and nectarines, brown rot works in two phases. There's a blossom infection phase, sometimes severe enough to cause blight, oozing and twig dieback. Other times the infections start in new fruit, but don't progress. That is, they don't rot fruit until fruit starts to ripen. That's the second phase of the disease. All brown rot in fruit doesn't come from blossom infection, but a significant amount can.

The obvious way to suppress problems in ripening fruit is to manage blossom blight. It's too late this year for those without a time machine, but keep it in mind for next year. Peaches should get two to three fungicide applications during bloom. And while I see few growers do it, mummies and dead twigs in trees and on orchard floors should get moved out of range of peaches before they bloom.

So what to do now if brown rot is coming on strong? After bloom, peach fruit remain relatively resistant to brown rot until three or four weeks before harvest. Then, especially in wet and humid weather, it's important to apply fungicides to suppress infections and minimize spread.



Brown rot on a ripe peach. This one peach has thousands of spores, which can infect other fruit.

At this time, use the most effective fungicides, rather than captan. There are quite a few, though many of them are the same active ingredient. They include Fontelis, Gem, Indar, Inspire Super, Luna Experience, Luna Privilege, Luna Sensation, Merivon, Pristine and Tebucon. Bumper, Fitness, Propimax, Quadris, Tilt and Topguard are also effective.

Timing these sprays doesn't sound very IPM-like. [Norm Lalancette at Rutgers recommends](#) a calendar program, 18, 9 and 1 day preharvest. This approach has given 95% control under high

brown rot pressure in fungicide trials. Obviously, peaches are harvested by variety, so some adjustments will be needed.

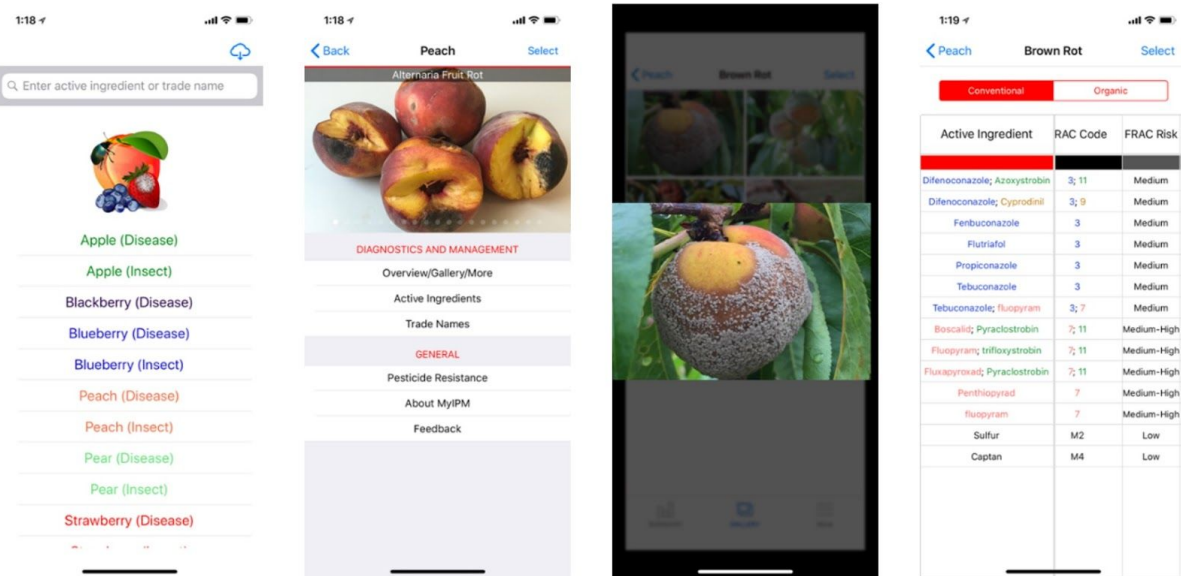
Fungicide resistance is an issue in brown rot management, and the fungicides used at this time are prone to resistance development. Rotate active ingredients. Another reason to rotate: there are limits on how much of each can be used in a season. Read the label.

After that, here's a cheat sheet to help. For example, an Fontelis, Indar, Gem sequence will change a.i. each spray. This information, and much more, can also be downloaded in the [MyIPM app](#) from either the Apple App Store (search for MyIPM) or [Google Play](#).

<b>Fungicide</b>	<b>FRAC Group</b>	<b>Brown Rot Efficacy</b>	<b>Rate per Acre</b>	<b>PHI Days</b>
Bumper 41.8 EC	3	4	4 fl. oz.	0
Fitness	3	4	4 fl. oz.	0
Indar 2F	3	5	6 to 12 fl. oz.	0
Orius 20AQ	3	5	8.8 to 17.2 oz.	0
PropiMax EC	3	4	4 fl. oz.	0
Tebucon 45 DF	3	5	4 to 8 oz.	0
Tilt	3	4	4 fl. oz.	0
Topguard SC	3	4	14 fl. oz.	7
Fontelis	7	5	14 to 20 fl. oz.	0
Luna Privilege	7	5	4 to 6.8 fl. oz.	0
Gem	11	5	1.9 to 3.8 fl. oz.	0
Luna Experience	3, 7	5	6 to 10 fl. oz.	0
Inspire Super	3, 9	5	16 to 20 fl. oz.	1
Quadris Top	3, 11	4	12 to 14 fl. oz.	0
Luna Sensation	7, 11	5	5 to 7.6 fl. oz.	1
Merivon	7, 11	5	4 to 6.7 fl.oz.	0
Pristine	7, 11	5	10.5 to 14.5 fl. oz.	0

Efficacy: higher is better





Screens from the [MyIPM app](#), a great tool for resistance management and pesticide information.

## Horticulture

Jon Clements

NOW is the time to do foliar nutrient analysis if you have not already done so. As a rule of thumb, it should be done every three years on a block/variety basis. That being said, it truly is the best way to get a handle on the nutrient status of your apple/pear/peach/cherry trees. OK, below are specific links to help you get the job done. Frankly, I just submitted a sample to Waypoint Analytical last week, mailed leaves on Wednesday and had results back on Saturday. I like instant gratification, and in this case, it helps me with a ground-truth check of what the trees are looking like, and it is not too late to make some nutrient/fertilizer applications -- or stop nutrient/fertilizer applications -- as dictated by the leaf nutrient results.

### Soil/tissue testing labs

[UMass Soil and Plant Nutrient Testing Laboratory](#)

[Dairy One Plant Tissue Testing Services](#) (formerly Cornell Nutrient Lab)

[Waypoint Analytical](#)

[Spectrum Analytic](#)

[University of Maine Analytical Lab](#)

[Basic nutrient management plan for tree fruit growers](#)

## Plant Tissue Sampling for Determining Fertilizer Needs of Fruit Crops

### Hawkeye's corner (notes from the field)

#### Liz Garofalo

A line up not so usual suspects...

While apple maggot fly and brown rot are hot on the tail of the fruits of your labor, other critters lurk just around the corner (or under the leaf, as it were).



Adult **leaf weevil** feeds on foliage (ahem, hence the name) of fruit trees, like the hazelnut pictured here. Another foliar feeder also likes hazelnuts (and whatever else it can get its nasty little mouthparts on):



**Banded tussock moth** larvae can be a real pain, due to the stinging nature of the hairs along their bodies. Thankfully, however, neither insect are usually of economic concern.

**Spotted wing drosophila**, on the other hand, can indeed be a problematic pest in peaches if certain measures are not taken to prevent damage. Like removing obvious breeding sites and readily compromised fruit from the canopy (and the understory). (Ed. note: sanitation is a basic IPM practice.)



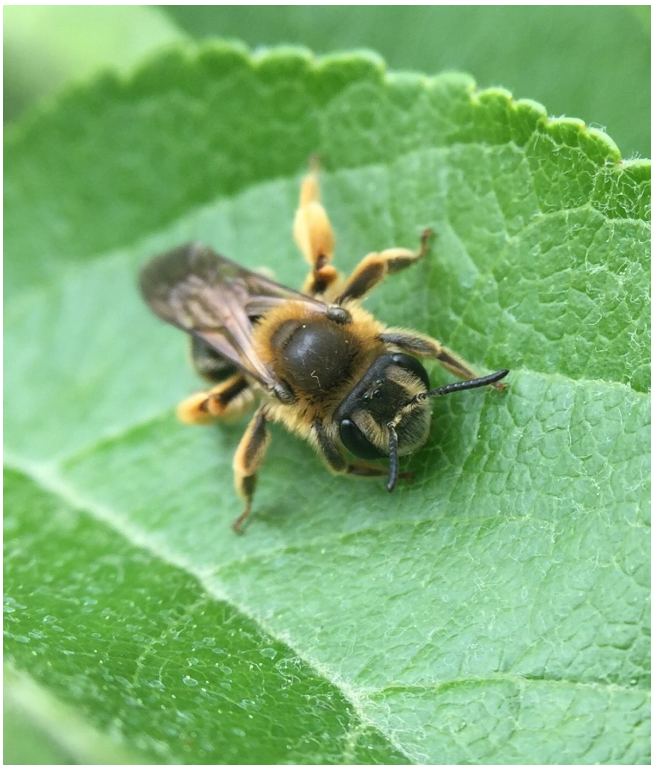
Likely **bird damage** opened the door to brown rot which has subsequently softened the fruit up, making a safe haven for fruit flies, including SWD.

**Brown rot** on this peach is poised, ready to jump to its healthy neighbor at the first chance, while providing easy access to SWD that may be hanging out in the shaded, humid canopy.





Summer pruning, a clean understory and removal of fruit with open wounds will go along way to reducing likelihood of further damage to peaches by SWD (and will reduce disease pressure too!). Should you need to make an insecticide application, please refer to this year's [stone fruit material list](#), courtesy of Mary Conklin, that can be found on the UMass [Fruit Team's website](#).



Don't forget to check out [Ag-Radar's](#) Honey Bee Activity Chart!

## Guest article

Ed. note. As some of you may know, I am very fortunate to have Liz Garofalo, Lyndsey Ware, and Cam Olanyk helping out this summer. All are fully or partially funded by an iPIPE intern grant. I would encourage you to consider downloading the iPIPE Lite app on your smartphone, taking a bit of time to set it up, use it while scouting your orchard (you do scout your orchard, right?) and -- as it says on iPIPE.org -- "There is a critical need to develop a national infrastructure of professionals who routinely monitor crop health and pest incidence then share this knowledge enabling dissemination of mitigation measures to limit food security impairment." A fancy way of saying "your observations contribute to a national effort to track pests and particularly if they present a critical threat (like BMSB)." To that end, Cam and Lyndsey have prepared a nice set of instructions here on how to use iPIPE Lite. Enjoy.

Links to iPIPE Lite

Google Play: <https://play.google.com/store/apps/details?id=com.zedxinc.ipipelite>

Apple App Store: Search for iPIPE Lite

Directions for getting and using iPIPE Lite: <http://bit.ly/2twatrF>

### **Lyndsey Ann (Ware) > iPIPE Intern Blog (on Google+) July 28, 2108**

Yesterday (Friday), I silently accounted for the previous days. I perused the week's events and information trying to select a subject to write about. That unseen process would sound something like a jumbled news brief delivered by the reporter who gets way to excited about each topic... all to be covered within 2.5 minutes.

"Pest numbers remain low in our Massachusetts Malus Fruit trees with a re-emergence of Codling moth observed in Leominster area. The second generation of Codling moth reflects current models and most growers prepared ahead of time. Pest management of these grey winged suspects requires decisions to be made during the larvae & egg stages of its life cycle.

Apple maggot flies join the new-age Codling moths on the scene.

Apple trees continue to get hand thinned... McIntosh exhibiting signs of scab more than other varieties as expected.

Monday's sporadic rainstorms and high winds caused a few grafted tree casualties at UMass Cold Spring Orchard. The aspiring cider trees were secured that afternoon. Four to six trees may have been lost.

It's peach picking time. Some are beautiful. Others are literally rotting on the trees or being devoured by the "birds & the bees." (note: this line would be tossed by any broadcast editor on account of being cliché and sounding sing-songy.) Brown rot was identified as one cause for most of the rotten fruit.

Evaluation of the peaches indicated that some are ripe while others could stand a few more days in the sun. Interestingly, despite first bite impressions, sugar analysis indicates apples are sweeter than peaches.



The UMass Fruit Team spotted Cedar Apple Rust on a group of young apple trees. The trees, being part of Apple scab research, were labeled and dated enabling the team to isolate the two weeks in May when that location was susceptible to Rust.

More on pests and peaches next week. I'm Lyndsey Ware with UMass Fruit Team & Extension. Thank you for listening and have a peachy weekend everyone."



**Facebook Me**



Clarkdale Fruit Farms

3 hrs · 🌐



Our peach crop was featured on Western Mass News last night! We have a great supply of fruit available 8-6 daily!



WESTERNMASSNEWS.COM

### Local peach crop impacted by recent rainy weather

The heavy rain we've been experiencing over the past couple of weeks...

👍👍👍 Peter Mitchell, Ken Nicewicz and 62 others 4 Comments 9 Shares

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💬 Comment

➦ Share



## Useful links

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 August 14, 2018. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

Thank you sponsors...



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