



Healthy Fruit, Vol. 27, No. 3, April 23, 2019

Jon Clements, Author (unless otherwise noted) and Editor

Contents



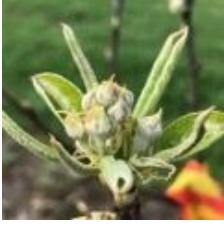

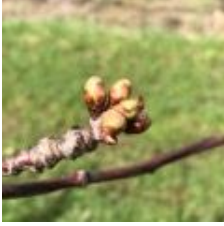
- [Current degree day accumulations](#)
- [Current bud stages](#)
- [Upcoming pest events](#)
- [Upcoming meetings](#)
- [The way I see it](#)
- [New England Tree Fruit Management Guide](#)
- [Insects](#)
- [Diseases](#)
- [Horticulture](#)
- [Small Fruit Update](#)
- [Guest article](#)
- [Facebook Me](#)
- [Useful links](#)
- [Thank you sponsors...](#)

Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA	22-April
Base 43 (NEWA, since March 1)	180
Base 50 (NEWA, since March 1)	80

Current bud stages

Current bud stages. April 23, 2019, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Tight cluster	Honeycrisp Early tight cluster	Bartlett pear Early green cluster	Redhaven peach Half-inch green	Regina sweet cherry Late swollen bud

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

Upcoming pest events

Coming events	Degree days (Base 43)
Green apple aphids present	111 to 265
Green fruitworm peak flight	95 to 229
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 catch	110 to 176
Spotted tentiform leafminer 1st catch	119 to 227
McIntosh tight cluster	206 to 257

Upcoming meetings

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

The way I see it...

What a difference a week makes as we are off to the races. Apples are tight cluster, first bloom is emerging in stone fruit. Of course it's been too wet to spray. (Or has it?) If May is wetter than normal we are headed for a real slog -- riding the Gator around the orchard this morning was like piloting a boat! A cool-down is forecast, but only back to seasonal levels which should put us on track for first apple bloom by next week. Good luck keeping up...

Apogee or Kudos (prohexadione-calcium) at pink bud stage of apple is now labeled for growth control AND fire blight suppress. Use where desired, however, be aware it can prevent young plantings from filling their space. Follow up applications of Apogee or Kudos for extended growth control may be necessary, AND a streptomycin application at bloom if conditions warrant for fire blight is still necessary!!!

Apply **ReTain** at popcorn bud stage up to bloom to cherries to improve fruit set. Earlier applications beginning at popcorn bud stage are most effective. One or two pouches per acre is advised, use two pouches at popcorn if the weather forecast is warm, or use one pouch at popcorn and then a follow-up application (one pouch) at about 80% bloom if the weather favors an extended bloom. DO NOT add surfactant. Most useful on cherry varieties that don't set well like Regina.

Current conditions favor **brown rot** infection of stone fruit in the late pink to bloom bud stage. Consider the fact that the hours of wetting necessary for blossom infection decreases from 18 hours at 50°F to 5 hours at 77°F. We're somewhere in-between, but I suspect 6 to 10 hours of wetting would be necessary to initiate infection. Don't underestimate the need to spray fungicide on stone fruit (peach, nectarine, cherry, plum) during bloom, you will have less brown rot problems at harvest. You can start with a systemic fungicide -- Indar, Rally, Flint, Merivon, etc. (among many others, see: <http://netreefruit.org/stone-fruit/peaches/spray-table/3-bloom>) at late pink if it is wet. (The flower pistil can be infected with brown rot as it emerges.) Continue fungicide applications during bloom if it is wet. Be sure to rotate fungicide MoA's (FRAC's) to help prevent the development of resistance.

New England Tree Fruit Management Guide available online

- 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

There has been very little insect pest activity for the last seven days. In lieu of an insect report, below I provide a brief overview of the dogwood borer, an increasing problem in dwarf apples in the Northeast.

Dogwood borer monitoring and management.

Apple growers are increasingly concerned with the impacts of dogwood borers (*Synanthedon scitula*) on dwarf apple trees. These trees, which are grown on size-controlling (dwarfing) rootstocks, have a tendency to develop burrknots, aerial aggregations of root initials, on the rootstock portion of the trunk. Dogwood borer infests apple tree trunks by ovipositing on these burrknots, and feeding damage caused by the larvae often results in loss of tree vigor and shortened tree life.

Dogwood borer infestations in apples have also been associated with tree death and the lifespan of tart cherry trees is estimated to be reduced by one-third by dogwood borer infestation. Borer injury may also provide infection pathways for fungal or bacterial pathogens, such as rootstock fire blight.

The dogwood borer overwinters as a larva concealed within a burrknot. In spring, it feeds on burrknot tissue until it pupates in May. In early to mid-June, the adults (clear-wing moths) emerge, mate, and lay eggs. In Massachusetts, there is typically one brood of larvae in the summer that feed through the fall until they go into hibernation.

Monitoring.

Adults appear beginning around 250 growing degree days (base 40), which may occur around mid or late May in Massachusetts. Pheromone traps are commercially available and can help to pinpoint the exact time of adult flight and egg-laying activity. Examples include:

- Scentry® dogwood borer 4 station kit, which includes 4 complete traps with plastic tops, 8 extra liners, and 12 lures. Any unused lures may be stored in the freezer and used the following season. Field life is 4 - 6 weeks.
- Trece® Pherocon IC dogwood borer kit, 3 station, which include 3 complete traps with plastic tops, 3 extra liners, and 9 lures. Any unused lures may be stored in the freezer and used the following season. Field life is 4 – 6 weeks.
- Alpha-Scents pheromone lure.

Preventive practices.

- Avoid physical injury to the tree by unnecessary cutting or bruising. Be careful in use of mowers near the base of trees.
- Brace newly transplanted trees to protect against strong winds. In some cases, wrapping the trunks of new trees will reduce egg-laying of female moths.
- Applying white latex paint mixed 50/50 with water can deter some attacks.
- Maintain optimum growing conditions for trees and remove dead or cankered branches in dry weather.

Chemical control.

- Apply one coarse spray of Lorsban to trunk burr knots between Half Inch Green and Petal Fall. If not sprayed in spring, and if fresh borer activity is noted in early July, apply one spray of Lorsban in early July. Only one application of any chlorpyrifos material allowed per year in apples.
- Apply Lorsban as a post-bloom application to the lower 4 feet of the apple tree trunk from a distance of no more than 4 feet using low volume handgun or shielded spray equipment. Do not allow spray to contact foliage or fruit, and do not apply within 28 days before harvest.
- Dogwood borer management can be aided with mating disruption dispensers.

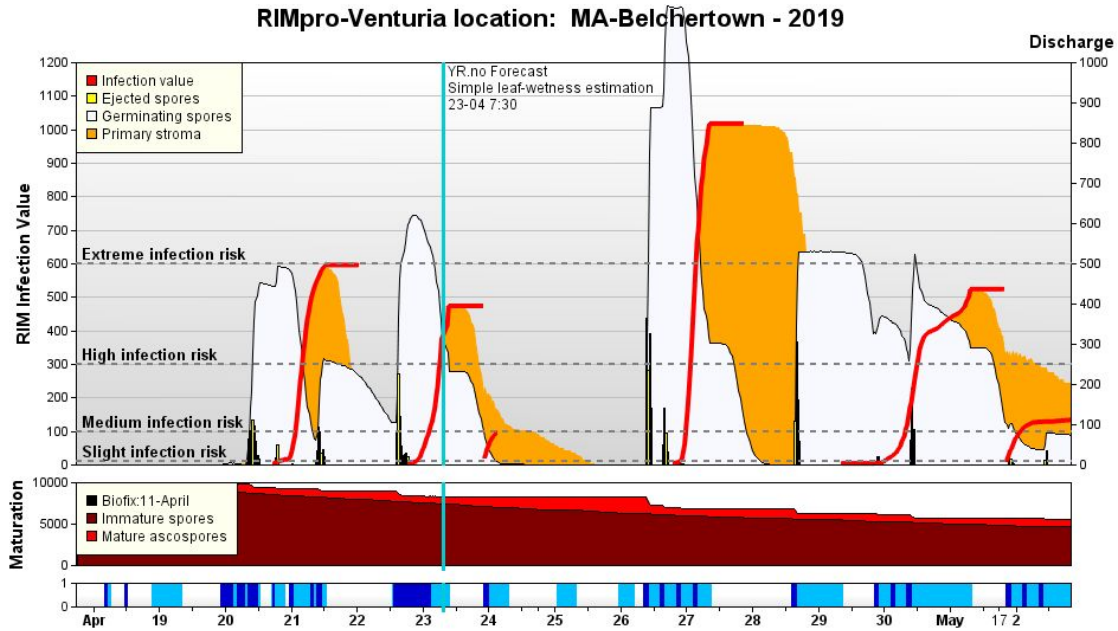


Diseases

Liz Garfalo

Apple Scab

We are in full swing of scab season. Forecasts for Belchertown show rain and leaf wetness potential sufficient for infection to continue through Wednesday night. Thankfully, we should catch a breather Thursday, which will give folks time to get in with a protectant and, given the extended infection event we are in the midst of, some kickback should go on too. Leaves are rapidly expanding, exposing new tissue to infection. RIMpro is forecasting that we are going to have a *brief* breather, then another infection event is forecast for April 26.



Meanwhile, NEWA is indicating one long infection event beginning on April 19, lasting through and lasting through the 26th.

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: [Click if greentip has not occurred](#)

Ascospore Maturity Summary

	Past	Past	Current	5-Day Forecast					Forecast Details
Date	4/21	4/22	4/23	4/24	4/25	4/26	4/27	4/28	
Ascospore Maturity	10%	13%	16%	19%	22%	26%	29%	34%	
Daily Ascospore Discharge	1%	3%	2%	<1%	0%	3%	0%	0%	
Cumulative Ascospore Discharge	9%	12%	14%	14%	14%	18%	18%	18%	

[Ascospore Maturity Graphs](#)

Infection Events Summary

	Past	Past	Current	5-Day Forecast					Forecast Details
Date	4/21	4/22	4/23	4/24	4/25	4/26	4/27	4/28	
Infection Events	Yes	Combined	Combined	Yes	Combined	Yes	No	No	

Brown rot

We have had reports of open peach blossom from CT and Central MA. Which means, of course, that early season peaches are now at risk for blossom infection at warmer locations. This is your first chance of the season to protect your peaches from brown rot! Captan (FRAC M4), Bravo (FRAC M5) or Echo (FRAC M5) will all protect blossoms at this time. For organic production (and rotational options in other management systems), use [Botrystop](#) or [Serifel Biofungicide](#) applied at 7-10 intervals, as weather conditions require.

Marssonina coronaria For those of you who have not seen or heard about this emergent, potentially problematic pathogen, here is a quick overview:

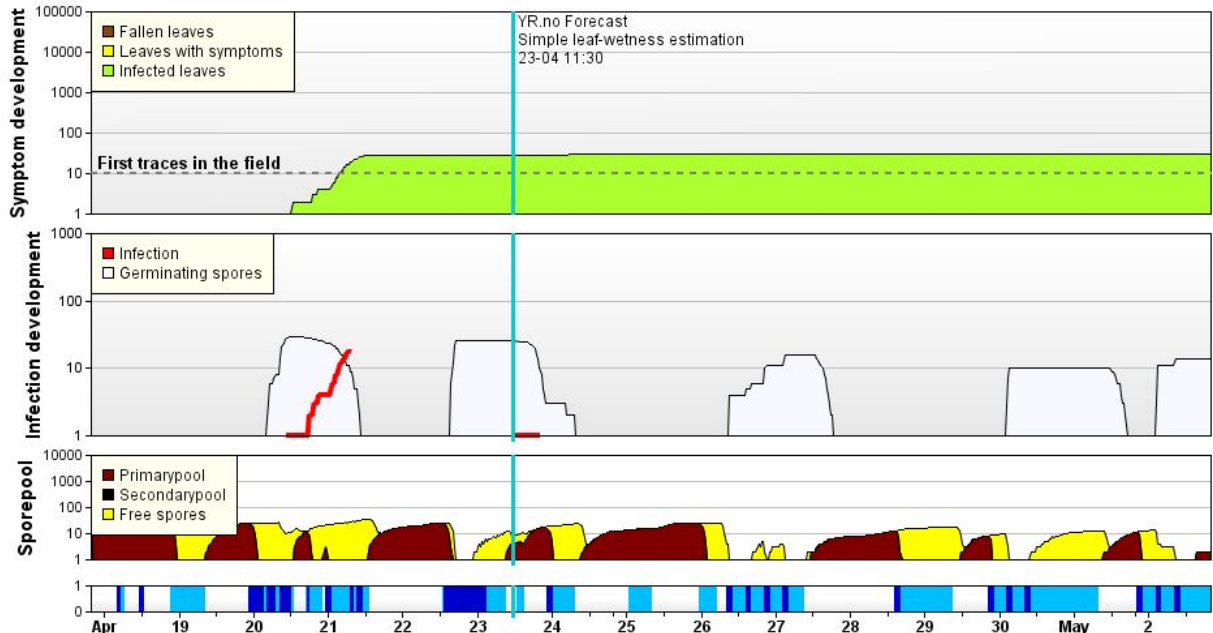
Over the last three years we have been seeing symptoms of *Marssonina* leaf blotch show up. It began with a few sightings in unsprayed and organically managed orchards. Last year it was observed in conventionally managed orchards as well. While this disease can affect fruit, we have only seen it on leaves here in Massachusetts (and the Northeast) thus far. Symptoms (image below) typically appear in late summer and lead to early defoliation. Spores become available in late spring, however, these infections are assumed to be managed with a traditional apple scab spray program. The trouble appears to crop up when we shift from primary apple scab management to summer covers (more on that when the time comes). This, presumably, is

why we haven't been seeing early season symptoms from this pathogen. Currently, there is not a great deal known about the biology of the pathogen in the United States all though preliminary work is being done. We do, however, have access, by way of RIMpro, to a model forecasting *Marssonina* infection periods. There is not currently a *Marssonina* model in any of the other Decision Support Systems we have available to us.



Marssonina symptoms on apple leaves September 1, 2018, the leaf in the red box shows the classic *Marssonina* blotching.

RIMpro-Marssonina MA-Belchertown - 2019



RIMpro *Marssonina* model. Forecast current as of April 23, 2019 1:00pm. Bottom bar in blue indicates rain (dark blue) and leaf wetness (light blue) as well as date. The graph immediately above that indicates the estimated inoculum availability. Currently, the model is estimating that spores are available for release (brown) and have been released recently (yellow). The middle graph shows when an infection has been estimated to occur or is forecast to occur, with the red line indicating infection. The top most graph shows actual infection and symptom forecasts. Currently, the model is estimating that infections have occurred, but symptoms have not yet developed.

Horticulture

Jon Clements

This goes in the "I couldn't have said it better myself." Received from Mary Concklin at UConn this morning...or was it yesterday afternoon???

Good afternoon,

Pollen Tube Growth Model (Dan Donahue, Cornell NEWA system)

A new model that helps apple growers precisely time thinning sprays during bloom is available in time for the 2019 growing season on the NEWA website. It is called the pollen tube growth model (PTGM). It is based on apple pollen tubes growth rates that were empirically derived under controlled temperature conditions. Model validation has been conducted in Washington, Virginia, and New York orchards.

The PTGM begins when the desired number of king bloom flowers are in full bloom (that is, when the petals no longer cover the reproductive organs thus allowing for cross-pollination). The desired number of open king bloom flowers is equal to the desired crop load and is determined by counting the number of open king bloom flowers per tree or by visual assessment of full bloom density in the orchard. Average style length is measured at this time and is used as a variable in the model.

Hourly temperatures recorded in or near the orchard are used with the pollen tube growth rate equations to calculate cumulative pollen tube growth. Chemical bloom thinning applications are made when the pollen tube lengths are equivalent to average style length. The supposition is that fertilization has occurred at this point.

Assuming that pollen tubes must grow the entire average style length on flowers that reached full bloom after an application of a bloom thinner, the model is reset after the bloom thinning application is made. Additional bloom thinning applications occur before pollen tubes grow to the end of the style to prevent additional fertilization. Applications cease at the end of bloom. Typically, two chemical thinning applications are necessary each year. Occasionally, a third application is necessary.

Apple varieties in the pollen tube growth model include Fuji, Gala, Golden Delicious, Granny Smith, Honeycrisp, Red Delicious, and Pink Lady.

Find the Pollen Tube Growth model by clicking on the link, pollen tube growth model (PTGM), or by going to www.newa.cornell.edu, go to 'Crop Management', click on the link at the bottom of the list. Read the page completely. At the bottom are the directions and the '+Block' to click on to start is located in the upper left corner of the page. (Ed. note: here is the direct link to the PTGM: <https://ptgm.newa.cornell.edu/>)

Stone Fruit Pruning. This is a reminder not to prune or wound stone fruit once growth has started IF the weather is wet. Bacteria move with rain to open wounds causing the spread of bacterial canker. Wait until dry weather arrives for at least a couple of days ...whenever that may be.

Cool wet weather can lead to a prolonged bloom period. In blocks that are low or marginal in nitrogen levels in the buds, this can be a problem by shortening the length of time the ovules are receptive. A **foliar application of nitrogen** in the form of urea at 3#/100 at pink will help improve this situation. This is NOT for use on pears and stone fruit.

Additional information on foliar nutrient applications (timing and rates) is attached. Please note that micronutrient applications should only be made in blocks that have a need based on tissue analysis. There is a thin line between toxicity and deficiency with micronutrients because plants use it in small quantities. (Ed. note: I have attached Mary's concise foliar nutrient

recommendations. You can also access our [Fact Sheet F-126 Prebloom Nutrient Applications for Apple Trees.](#))

Stay out of the mud.

Mary

Small Fruit Update

Sonia Schloemann

CROP CONDITIONS: Strawberries: Strawberry growth has progressed with the tips of flower trusses just barely visible in the crowns. Be sure to get your frost protection system set up and ready for when it is needed. Some growers have reported deer damage in the fields. Fencing is the standard recommendation for keeping deer out but is not practical in many situations. See here for more information on [Deer Management in Massachusetts](#). As foliage expands, watch for weak areas of the field and check roots for [Black Root Rot](#) and/or [Red Steele](#) if you find stunted or sparse growth. **Brambles:** Green tissue is visible and leaves are beginning to separate on floricane. Primocane growth is at 2-3" in some areas. Look for symptoms of [Anthracnose](#), [Cane Blight](#) or [Spur Blight](#) on the canes and prune out now before new cane growth advances. 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 is budbreak to tight cluster. (If you want to see a chart that shows blueberry bud stages, click [here](#).) This is still [Mummy Berry](#) season. 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.



Berry Bud Stages 4/22/19 - Strawberry, Raspberry, Blueberry, Gooseberry

Hawkeye's corner (notes from the field)

Liz Garofalo

Oriental fruit moth (OFM) flight is underway in some locations. The unfortunate bugger below was caught in a pheromone trap in Greenfield, MA. For what it's worth, this is a solitary peach tree in my backyard. Nonetheless, if you are using mating disruption in your peaches, it's time to consider getting it out, especially in warmer locations.



OFM adult in pheromone trap. Greenfield, MA 4/22/19.

And of course, gypsy moth wouldn't want to be left out of the show this year. It's too soon for treatment, as they have not begun to balloon into orchards yet. If you have had issues in the recent past, however, it's a good idea to start keeping your eyes peeled.



First observed gypsy moth hatch, Belchertown, MA.

Guest article

TRAPPING FOR APPLE INSECTS

(Juliet Carroll, NYS IPM Program, Geneva & Art Agnello, Entomology, Geneva; jec3@cornell.edu & ama4@cornell.edu)

Reprinted from Scaffolds Fruit Journal, Vol. 28, No. 5, April 22, 2019.

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

Monitoring apple orchards with insect traps paves the way for greater precision in insect management by:

- Tracking the number of insects caught until a treatment threshold is reached.
- Obtaining the date of first sustained catch to use as a biofix in NEWAinsect models: newa.cornell.edu/index.php?page=apple-insects.
- Determining whether mating disruption is working effectively.

Traps useful in apple IPM are almost all of the sticky kind. But, in addition, depending on the insect being monitored, traps may be used with a pheromone lure or a food bait (kairomone).

Oriental fruit moth (OFM) traps use a pheromone lure. There are about three flights of this insect per year. Typical traps are triangular in shape with a sticky inner surface (e.g, delta or Pherocon IIB traps). The OFM pheromone comes in a rubber capsule that you can simply place

in the trap on the sticky surface and replace as directed. To monitor OFM, set traps around mid-April (Hudson Valley), late April (western NY) or early May (Champlain Valley). Place traps about 60 ft. into the orchard and separate traps from other OFM traps by about 160 ft. and from other species' traps by about 60 ft. Check traps at least once per week for OFM male.

- OFM treatment threshold is >10 caught per trap per week.
- First trap catch is the biofix date for the NEWA OFM model. Use this date to increase precision of the degree day model spray windows
- Zero males caught in traps shows your mating disruption program is working.

Codling moth (CM) traps use a pheromone lure. There are two flights of this insect per year. Traps and the CM pheromone are similar to those for OFM. To monitor CM, set traps around early May (Hudson Valley), midMay (western NY) or late May (Champlain Valley). Trap placement is similar to OFM, about 60 ft. into the orchard and separate traps from other CM traps by about 160 ft. and from other species traps by about 60 ft. Check traps at least once per week for CM males. Recommendations were once for placing CM traps high in the tree canopy, but this is no longer the case in dwarf, high density systems.

- CM treatment threshold is >5 caught per trap per week.
- First trap catch is the biofix date for the NEWA CM model. Use this date to increase precision of the degree day model spray windows.
- Zero males caught in traps shows your mating disruption program is working

Obliquebanded leafroller (OBLR) traps use a pheromone lure. There are two flights of this insect per year, the later flight being of most concern to the fruit. Traps and the OBLR pheromone are similar to those used for OFM. To monitor OBLR, set traps in mid-May (Hudson Valley), early June (western NY or Champlain Valley). Trap placement is similar to OFM, about 60 ft. into the orchard and separate traps from other OBLR traps by about 160 ft. and from other species' traps by about 60 ft. Check traps at least once per week for OBLR males.

- OBLR weekly trap catch provides an indication of insect pressure in the orchard. If pressure is high, use the NEWA model.
- First trap catch is the biofix date for the NEWA OBLR model. Use this date to increase precision of the degree day model spray windows.

Apple maggot (AM) traps are red spheres. These visually attractive traps need no attractant, but a fruit volatile bait can be used. The NEWA model times when to set these traps, based on accumulated degree days from January 1. Place AM traps on the edge of the orchard.

- Set traps according to the NEWA AM degree day model.
- Baited traps – the treatment threshold is 5 AM caught per trap per week.
- Unbaited traps – the treatment threshold is 1 AM caught per trap per week.

Facebook Me

(Tweet Me this week again...)



Jon Clements @jmcextman · 9m

Apricots are in bloom at UMass Orchard and native pollinators doing their job



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 April 30, 2019. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

Thank you sponsors...



[Orchard Equipment and Supply Company, Inc. Conway, Massachusetts](#)



[Nourse Farms](#)



[FMC Agricultural Solutions](#)



[New England Vegetable & Berry Growers' Association](#)



[Massachusetts Fruit Growers' Association](#)