



**Healthy Fruit, Vol. 26, No. 4, April 24, 2018**

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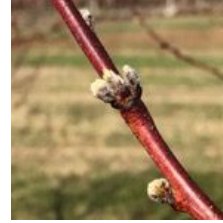

**Current degree day accumulations**

UMass Cold Spring Orchard, Belchertown, MA	23-April
Base 43 (NEWA)	90
Base 50 (NEWA)	28


Note that apple green tip should occur app. 101 DD (Base 43), although obviously there is a range. We are at half-inch green (23-April) in Belchertown.

## Current bud stages

Current bud stages. April 23, 2018, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Half-inch green	Honeycrisp Quarter-inch green	Crispie pear Swollen bud	Redhaven peach Swollen bud	Regina sweet cherry Swollen bud

## Upcoming pest events

Coming events	Degree days (Base 43)	Meaning?
Green fruitworm 1st catch	50 to 148	Too early to do anything! You are not targeting the moths, but the worms when they hatch later.
Green fruitworm peak catch	96 to 231	Coming soon...
Pear psylla adults active	31 to 99	
Pear psylla oviposition continues	40 to 126	Oil, oil, oil. Adults continue to lay eggs. Keep early populations down to reduce future pressure!



## New England Tree Fruit Management Guide available online

• The New England Extension tree fruit specialists -- which include myself and Dan Cooley at UMass, Mary Concklin at UConn, Heather Faubert at URI, Terry Bradshaw at UVM, George Hamilton and Alan Eaton at UNH, and Glen Koehler and Renae Moran at UMaine -- have officially launched an online edition of the New England Tree Fruit Management Guide. Note that is it 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, and especially if you have Amazon Prime, search 'New England Tree Fruit Management Guide' on amazon.com. Your comments/feedback on this work in progress would be appreciated. How do you get your spray/pesticide information these days?

## Insects

Jaime Pinero

### **A synopsis of spider mite biology, monitoring, and management using oils in the early growing season, with some notes on predatory mites.**

In many cropping systems, like tree fruits, spider mites are secondary pests. They only become a management issue when pesticides are applied to control other pests. This is typically attributed to the non-target effects of many pesticides on spider mite natural enemies, especially predatory mites, which result in disruption of biological control. When mites do become a problem, then the European red mite is considered by many growers to be the most difficult pest to control.

A couple of growers reported problems with spider mites last year (in one case the outbreak occurred in Honeycrisp). This article provides a brief overview of the biology, monitoring and management (with a focus on oils) of the European red mite and the two-spotted spider mite. This information is presented in the table (see next page). *Some of the information being presented was extracted from the New England Tree Fruit Management Guide.*

**Some notes on the application of oils against spider mites:** Since tree architecture includes many cracks and crevices as well limbs and twigs that exponentially increase surface area, **coverage to the point of drip is key**. Mite eggs are most vulnerable just prior to hatching; therefore, true dormant sprays will not be as effective. The value of **delayed-dormant oil application** (at about half-inch green tissue) aimed at overwintering eggs of European red mite has been proven, based on research done by other Universities. Usually European red mite populations are prevented from building up through May and June because of the delayed-dormant oil spray, although by itself it does not provide season-long control. It does,



however, help suppress European red mite populations long enough for predators to become established in the trees.

	European Red Mite	Two-spotted spider Mite
<b>Overwintering stage</b>	Eggs	Orange-colored adult females
<b>Overwintering sites</b>	Overwintering eggs are laid on twigs and small limbs, especially in the crevices, and roughened bark of apple trees	Orchard ground cover
<b>Timing of egg-hatch</b>	Egg hatch begins at Tight Cluster, is about half complete by Pink, and is complete by Petal Fall.	Eggs of two-spotted spider mite don't overwinter. Egg-laying by females starts a few days after feeding begins on ground cover host plants.
<b>Feeding sites during spring</b>	Young mites move to newly opened leaves where they feed, mature, and reproduce.	Weeds and grasses (mites move to fruit trees (underside of leaves) in the summer
<b>Early-season monitoring</b>	<p>Scouting for mites should begin early enough to determine if European red mite populations are at a level that could cause economic injury.</p> <p>Monitoring of European red mite <b>eggs</b> can be done by visually inspecting the bases of twigs and spurs on 5 to 10 selected trees with a hand lens. Look for clusters of tiny (less than 1/50 inch), red spheres. See pictures below.</p> <p>Mite injury during the weeks following <b>Petal Fall</b> can damage fruit crop. Monitor mite populations by examining underside of fruit cluster leaves through May and June. Action threshold is 1-2 motile (not eggs) mites per leaf or 30% of leaves with one or more mites</p>	
<b>Early-season management</b>	<ul style="list-style-type: none"> <li>• Oil is recommended at the <u>2-3 gal</u> rate during the <b>dormant</b> period.</li> <li>• Use <u>2 gal</u> rate until <b>Tight Cluster</b></li> <li>• Reduce to 1 gal rate from <b>Tight Cluster to Pink</b>. <u>Oils can be safely applied up to the pink stage.</u></li> <li>• <u>Good coverage is essential</u> (300 gal/A recommended).</li> </ul> <p><i>Do not use oils within 24 to 48 hours before freezing temperatures, or if temperature is below 35F following a freeze. Do not apply within 10 to 14 days of sprays containing <u>captan</u> or sulfur.</i></p>	

*The pictures below can aid in the identification of overwintered eggs of the European red mite:*



**Identification tip:** *Masses of eggs may be laid together.*

Photo credit: [University of Georgia Plant Pathology](http://University of Georgia Plant Pathology) , [University of Georgia, Bugwood.org](http://University of Georgia, Bugwood.org)



**Identification tip:** Masses of eggs may be laid together. Photo: Jack Kelly Clark.



**Identification tip:** Eggs are slightly flattened, red, and have a small stalk. The stalk is approximately the length of the diameter of the egg, arising from the top, and can be seen with a hand lens. Photo: Jack Kelly Clark.



**Some notes on the predatory mite, *Amblyseius fallacis*:** In sprayed orchards this predatory mite generally assumes prominence because it is more tolerant of organophosphate-based spray programs than are many of the other species in the family. Several studies have shown that it was the only predatory mite to remain common in sprayed orchards throughout the year.

Populations of predatory mites (e.g., *Amblyseius fallacis*) populations can be monitored at the same time growers are scouting for spider mites since they occupy the same habitat. Initial populations in the spring may be assessed by selecting 10 apple leaves from suckers beneath each of 10 randomly selected trees in a block. Examine the surface for *Amblyseius* moving across the leaf surface. They move faster than pest mites. Research conducted in Michigan has yielded tentative thresholds for predicting success of biological control by *Amblyseius*:

- ❖ A ratio of predators to prey of at least 1:10 presents a good probability of biological control
- ❖ Higher ratios increase the probability of success, particularly on cultivars such as 'Red Delicious' where European red mites are known to reproduce more.
- ❖ Lower predator to prey ratios (e.g., 1:20) may result in successful control on apple varieties that are less conducive to spider mite reproduction than 'Red Delicious'.
- ❖ Did you know that this predatory species is commercially available? (10,000 mites cost about \$152.00)

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

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## Diseases

Dan Cooley

## Spring Sprung

With a little warm weather and rain predicted for Tuesday evening and Wednesday, conditions are set for the first scab infection. NEWA and SkyBit simply say there will be an infection, while the more nuanced RIMpro forecasts a "moderate" scab infection for Massachusetts. Best to have some fungicide protection on going into the rain, unless you've put on copper in the last five days. At this point, mancozeb at 3 lb/A should be sufficient unless scab was an issue last year. If so, mancozeb combinations may be better: either captan, with the usual warning about no captan within 10 days of oil, or Syllit, Vanguard or Scala are good options at this time.

## Horticulture

Jon Clements



**Pruning newly planted apple trees** -- while on a recent visit with a grower who was planting a bunch of new apple trees, I was being asked for pruning advice, and I had to remember I do have a few rules for pruning these trees. Let me see if I can put them in words:

1. Know your system -- central-leader trees planted wider apart than tall-spindle trees would be pruned differently
2. Whips, trees with no or just 1-2 branches, should be headed at waist height (after removing the errant couple branches); EXCEPT for a tall- or super-spindle system where trees are planted 2 to 3 feet apart, don't head those trees!
3. Remove any branches/feathers that break the diameter-based pruning rule, that is if the branch is 50% or more of the diameter of the leader from which it originates; leave a stub if re-growth is desired
4. Did I tell you to remove all branches below knee-height using a flush cut!
5. If there are just 1-2 or maybe even three branches on the tree, it's probably best to cut them off using a stub cut and start the tree over; then use a heading cut if necessary to grow new branches
6. Small branches, feathers, are great, IF they are numerous, IF they are small, IF they are not otherwise a problem; leave them, that is where you fruit will come from next year
7. Strive to end up with a tree that is balanced, in other words all remaining branches are about the same size, with good positions
8. Any forks or V's need to be cut out, this situation often breaks the diameter-based pruning rule anyways
9. Did I tell you broken, diseased branches need to go?
10. Some tipping (click-pruning) of remaining branches could be a good thing, but this is a more advanced topic!

Pear trees can be pruned similar to apples. Stone fruit are a whole other story! Let me know if you have questions or need advice after planting your trees. Good luck!

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

Liz Garofalo

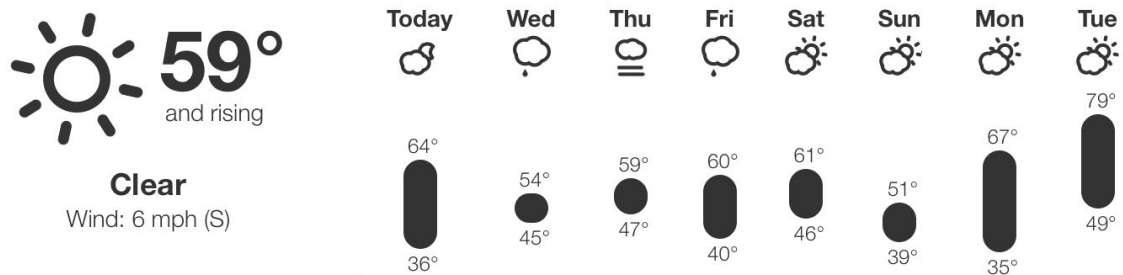
With this beautiful weather comes some great news: The bees are back! There are more than 4,000 native pollinators in the United States and it is estimated that ~200 of them live in the Northeast, pollinating our fruit (and other) crops. Many of them are ground nesters! So, when you see holes in the ground like this (below), don't assume they are ants! These bees are a critical part of the success of our orchards as they are more effective pollinators than the average imported honey bee. They are generally not aggressive, you have to work pretty hard to get one of them to sting you.



Speaking of weather, don't break out your swimsuits just yet. As Dan mentioned above, we have a decent infection event coming our way, beginning Wednesday morning. This infection event looks like it will last through Thursday's grey wetness. (Infographic below.)

### Weather for Belchertown, MA

More at [Dark Sky](#)



Bees aren't the only interesting organisms making their way out of the winter doldrums! Field horsetail's (*Equisetum arvense*) reproductive structures are poking up, sending spores out. (Pictured below.) The spores don't contribute to its spread so much as the underground rhizomes do though, so, try to avoid disruptive cultivation of this plant to minimize its spread. Later in the season, you'll see their fern-like vegetative forms creeping around. These tend to grow in sandy soils, so, you may not have ever seen it inside of your orchard. For other weed management check out last week's [Healthy Fruit](#).



This week's Hawkeye Pest Sighting actually comes from Jon! Can you see it? (Pictured below.) Tarnished plant bug is out and about after spending the winter in its adult form in weeds in and around your orchard. Since they are active, now is not the best time to be mowing or otherwise disturbing the weeds **around** the orchard as it will drive adults out of their current sites, straight into the buds that are finally opening. One more reason to get on top of weed management and stay on top of it!



## Guest article

No guest article this week...

## Facebook Me



**Jon Clements**

Just now · 🌐 ▼



Pear psylla are out in vengeance. Oil your best friend, other management options at this time here:

<http://netreefruit.org/pears/spray-table/2-swollen-bud>



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## 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>



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[Acimovic Lab at Hudson Valley](#)

[Peter Jentsch's Blog](#)

The next Healthy Fruit will be published on or about May 1, 2018. 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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