



Healthy Fruit, Vol. 31, No. 2, April 11, 2023

Prepared by the University of Massachusetts Amherst Fruit Team



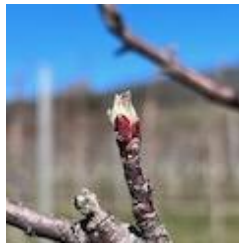


Jon Clements, Editor

Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (NEWA, since January 1, 2023)	3-April
Base 43 BE	131
Base 50 BE	37

Current bud stages

Current bud stages. 10-April, 2023, UMass Cold Spring Orchard, Belchertown, MA (more current bud stages [here](#))

				
Rubymac apple <i>Half-inch green?</i>	Honeycrisp apple <i>Green tip</i>	Gala apple <i>Green tip ++</i>	Cripps pink apple <i>Half-inch green</i>	Crispie pear <i>Swollen bud+</i>

Upcoming meetings

Every Tuesday at noon (12 PM), beginning April 11 - UMass Fruit Team Open Office Hour.

Bring your own lunch. Join Zoom Meeting

<https://umass-amherst.zoom.us/j/97712996237>

Wednesday, April 19 - URI/UMass Fruit Twilight Meeting, Jaswell's Farm, 50 Swan Road, Smithfield, RI. 6:30 PM.

Wednesday, April 26 - UMass Fruit Twilight Meeting, Mann Orchards Riverside Farm, 445 Merrimack St, Methuen, MA. 4:30 PM. Two (2) pesticide recertification credits available.

Thursday, May 4 - UMass Fruit Twilight Meeting, Riiska Brook Orchard, 101 New Hartford Road, Sandisfield, MA. Details TBD.

The way I see it

Jon Clements

This will be your last Healthy Fruit (HF) Electronic Subscription, unless you go to the UMass Extension sales portal (<https://extensionsalesportal-umass.nbsstore.net/fruit>) and purchase a new 2023 subscription to HF (\$75, e-mail delivery only) in the next week or two. Alternatively, you can send me (Jon Clements, 393 Sabin St., Belchertown, MA 01007) a check for \$75 made out to 'University of Massachusetts.' Make sure you note it is for Healthy Fruit subscription, and include your email address. You can also use this mail-in form to order Healthy Fruit and other UMass fruit publications. You can ignore this of course if you have already sent in your payment. And we very much appreciate your subscription, thanks for supporting the UMass Fruit Team.

Beginning April 11, and then every week on Tuesdays at noon (12 PM), the UMass Fruit Team will host an informal Open Office hour via Zoom. We will generally have brief updates on entomology, pathology, and horticulture and leave time for questions and answers. We hope you can come in from the field 15 minutes early at 11:45, make a sandwich, and join us and be back out in the field no later than 1 PM. Sounds like fun, eh? Here's the Zoom link, it will be the same every week: <https://umass-amherst.zoom.us/j/97712996237> Be patient as I let you in from the "waiting room."

Peaches – and most all stone fruit for that matter – here at the UMass Orchard do not look good. At all. I may be panicking and maybe we need some heat, but I am concerned there is damage to vegetative buds too. TBD. Pruning is going to be extremely tricky, I'd wait until I see some shoot growth to cut back to. But that is just me. **Join us for an informal discussion about pruning peaches with no crop at Carlson Orchards, 115 Oak Hill Road, Harvard, MA this Wednesday (April 12) at 2 PM.** I know it's Ag Day at the state house, but you should be able to do both?

I have started a WhatsApp Group to message those who join the Group about semi- or very important things I am seeing out in the orchard. I may, for example, send out a WhatsApp message reminding you “there is a twilight meeting tonight at 5:30!” (Well not really TONIGHT, but when there is one.) It’s a one-way Group, i.e., only I (as administrator) can send to the Group, it is not a two-way (or many-way?) discussion. If you are using WhatsApp here is the joining link: **Open this link to join my WhatsApp Group:**

<https://chat.whatsapp.com/BldQ4nRkOCaE7LXJb8qmRB> I already pre-joined several of you, but anyone who subscribes to Healthy Fruit is free to join. If you don’t have WhatsApp, it’s kind of a universal messaging app used worldwide by most anyone who is “hip.” When I was in Italy last fall with IFTA, the tour leaders used this feature of WhatsApp to keep us informed daily about what was going on that day, like the bus leaves at 7:30 AM sharp! Or what the dinner plans were. Very handy, we will see how it goes here...

Finally, the Cornell Cooperative Extension Eastern New York Commercial Horticulture Program (CCE ENYCHP for short) has started a **FREE TREE FRUIT BLOG:**

<https://blogs.cornell.edu/enychp/category/tree-fruit/> I highly recommend it. For example, a recent article posted by Mike Basedow and Janet van Zoeren: [Tree Fruit Blog: Spring Orchard Pre-Emergent Herbicides](#) Does anyone out there use News Feeds to see the latest posts? If so, let me know what you are using? I been doing Yahoo (my.yahoo.com) for the current Feed(s).





Entomology

Jaime Piñero

Aphids. On April 10th, apple grain aphids were found in one apple orchard. The apple grain aphid usually does not need to be controlled because it migrates to grain and grasses for the summer. The presence of this aphid can actually be beneficial, as it may encourage aphid predators and parasites to build up in early spring, increasing chances of biological control of pest aphids appearing later.



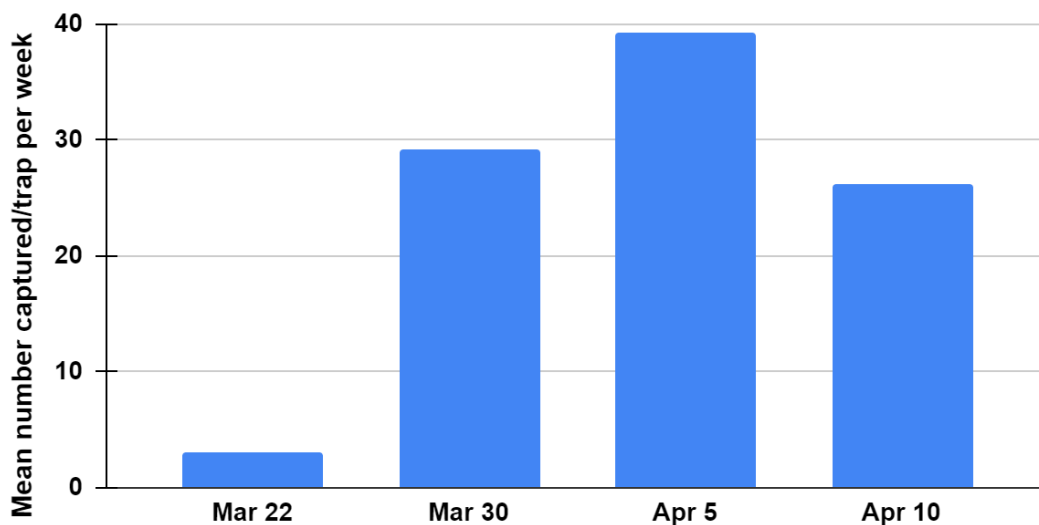
The table below provides an overview of four aphid species that are present early in the season. Note that the green apple aphid and the spirea aphid are both widely distributed species that look and behave similarly, so management for both species is the same.

	Green apple aphid	Spirea aphid	Apple grain aphid	Rosy apple aphid
Scientific name	<i>Aphis pomi</i>	<i>Aphis spiraecola</i>	<i>Rhopalosiphum insertum</i> (= <i>fitchii</i>)	<i>Dysaphis plantaginea</i>
Main characteristics	The eggs are shiny black. Wingless adults are bright green with black cornicles.	The eggs are shiny black. The adults and nymphs are olive-green with brown-black legs	Eggs are shiny black. They usually hatch around silver tip or about 7 to 10 days earlier than the others. Adults are green with a dark stripe on its back.	Overwinters as black eggs on the bark of twigs and branches of apple trees. Rosy apple aphids are rose-purple.
Pictures				
Main crops attacked	Apple, occasionally pear	Apple and pear	Apple and pear	apple
Damage	Developing foliage may become curled and discolored by heavy feeding, and younger or weaker trees may experience a reduction in growth.		Rarely causes damage to apples, as it migrates to grain and grasses for the summer	Feeding causes leaves to curl and deforms shoots. Toxic saliva injected into the tree as the aphid feeds on the leaves of fruit clusters stunts and distorts fruit growth resulting in small, misshapen apples
Monitoring	To prevent populations from reaching damaging levels, sample 10 new shoots (water sprouts) from each of 10 sample trees beginning at the first cover spray and continuing through the middle of July. Treatment threshold is 50% of vegetative terminals infested AND less than 20% of infested terminals with biocontrol agents present OR 10% of fruit with honeydew or aphids		Monitoring and management of this species in most orchards is unnecessary since it rarely causes a problem.	Starting at early pink, select 5 to 10 trees per block. Sensitive varieties such as 'Cortland', 'Ida Red', and 'Golden Delicious' should be selected if present. For 3 minutes, on each tree, count the number of fruit spurs showing curled leaves. The presence of more than one aphid-infested cluster per tree justifies an insecticide treatment.
Control	<ul style="list-style-type: none"> • A delayed dormant oil application between green-tip and half-inch green controls newly hatched aphids. • Limit nitrogen fertilization to the level necessary for optimum tree growth. • Summer prune to remove water sprouts. 			

	If finding aphid populations above threshold, consider waiting one week and then check again for biocontrol agents. If treatment threshold is still exceeded, apply an insecticide.	
	Consult the New England Tree Fruit Management Guide for materials recommended for application at Green tip Half-inch green Tight cluster Pink Petal fall	After petal fall, because the curled leaves protect the aphids, then the best control will be achieved with a systemic insecticide. Some insecticide options include Admire Pro and Movento.

Pear psylla update. As shown in the chart below, trap captures at the UMass CSO pear block declined last week but we expect to see another bump given the warm weather that is forecasted for this week.

Captures of pear psylla - traps deployed on March 16, 2023



Apple insect pest monitoring. We have deployed traps for tarnished plant bug (EAS), European sawfly, Oriental fruit moth, and plum curculio. One TPB was found at each of two orchards. Weekly updates will be provided.

Mating disruption - an overview. The ideal orchard would be square to rectangular and at least 5 acres in size. Long, narrow orchards have too much “edge,” which is not ideal for effective mating disruption due to dilution of the pheromone at the edges and the increased opportunity for mated females to move from nearby, non-disrupted orchards into the pheromone-treated block. Orchards that are very young and do not have a well-developed canopy are not great candidates. Additionally, an orchard with many missing trees is not ideal for mating disruption. The best strategy is to apply mating disruption on a whole-farm or area

wide basis. This approach entails growers applying pheromone to all of their stone and pome fruit plantings and convincing neighboring growers to do the same.

An effective oriental fruit moth disruption program also requires monitoring with pheromone-baited sticky traps. If the male moths can find the traps, then it is likely they can also find the calling females and mate with them. Thus, if OFM is not captured in traps, this is an indication that the mating disruption program is working.

The reliability of the monitoring program increases as more traps are deployed. The minimum trapping density is three traps in smaller blocks (less than 10 acres) and five traps in larger blocks. At least one trap should be placed close to a border. A few OFM are often captured in border traps, as pheromone coverage on borders is sometimes lower and less uniform than required for complete disruption. If moths are captured on the border, inspect trees for signs that larvae have entered shoots, (i.e., flagging) or fruit damage and apply a border spray of insecticide if an infestation is detected.

OFM damage to shoots is a more direct measure of mating disruption success than monitoring male moth capture in traps and should be assessed even when no moths are caught. Shoot counts are an especially important measure of efficacy early in the season. Examine 20 shoots on 20 trees per block, looking for flagging or other signs of damage. An insecticide spray is likely needed if 1 percent or more of the shoots are infested or if fruit damage is detected.

Mating disruption dispensers need to be in place before the expected emergence of adult moths

Pathology

No disease update this week, stay tuned...

Horticulture

Jon Clements

Apple half-inch green

Not quite there yet, as of early afternoon, Monday, April 10. Will be there and maybe more by the time you read this, Tuesday afternoon/evening. With all the new varieties, there is quite a bit of variability, ranging from green tip (Honeycrisp, Golden Delicious) to almost mouse-ears (Cripps Pink).



Honeycrisp 'green tip'	Cripps pink 'half-inch green+'
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Branching young apple trees



Decision support recommendation for branching and avoiding blind wood in young, non-bearing apple trees

Start with what age of the wood do you want to promote branching? Then jump to the appropriate heading below. 6-BA as a branching agent comes in the following commercial products: Maxcel or exilis 9.5 SC (6-BA only) and Promalin or perlan (6-BA + GA4/7). As a rule of thumb, the 6-BA alone products are more effective at breaking buds while 6-BA + GA4/7 can break buds and promote shoot elongation/growth. Be sure to consult the label for appropriate application instructions and recommended rate(s) per the application(s) described below.

This season's shoot growth?

Apply Maxcel or exilis (250 to 500 ppm) or Promalin or perlan (125 to 500 ppm) to the rapidly growing shoot tip where the initiation of branching is desired; repeat until mid-summer as shoot growth grows and elongates. This is typically used when growing trees in the nursery, but may be applied where branching and/or promoting this year's shoot growth is desired, including newly planted and bearing apple trees. (But using the maximum thinning rate of 200 ppm of Maxcel or exilis for bearing trees.)

One-year old wood?

Is the wood dormant? If yes, apply Maxcel or exilis (1500 to 5000 ppm) or Promalin or perlan (5,000 to 7,500 ppm) in latex paint (any color) to the area of last year's shoot growth where you want to promote bud break and branching. Wood must be dormant, no green tissue showing, or the high concentration of 6-BA in the paint will kill it! Suggest NOT using the maximum label rate, the higher rate can stunt later growth on the wood (but is more likely to promote bud break).

If the wood is breaking bud (green tissue showing). Two options:

1. spray Maxcel or exilis or Promalin or perlan per label directions using a directed spray to the area where you want to promote branching and/or shoot elongation. On newly planted whips your results in terms of branching may be underwhelming, but it will

promote shoot elongation, particularly if Promalin or perlan is used. In a young, bearing orchard, this can be applied with an airblast sprayer directed to the tops of trees, but the maximum label rate for a thinning application of 6-BA at 200 ppm must not be exceeded. And note it can cause thinning! Best results achieved when the weather is warm.

2. use a double-edged/cutting, anvil-style pruner, notch above breaking (or non-breaking) buds to promote bud break and shoot elongation. Be sure to cut well into the cambium but not so far as to be-head the leader! Time consuming but very effective if you have good, viable buds.

Two-year old wood?

You missed the boat as per above? Now you got older blind wood? Using a utility knife, make a beaver-style deepish notch above the para-dormant buds where you want to initiate growth. Then spray the cuts with a Maxcel or Perlan solution at 1,500 ppm. Best done when the rest of tree starts actively growing. Even more time consuming, but it works. This is a last ditch effort to break buds and induce branching on blind wood, typically only done on the central-leader.

Three-year old or older wood?

Give up and relax, it is what it is, all will be fine... :-)

For more information:

- Double-notching Whip Apple Trees at Bud Break Is Effective at Promoting Branching <http://umassfruitnotes.com/v86n3/a1.pdf>
- Increasing Branching of Cider Apple Trees <http://umassfruitnotes.com/v85n1/a6.pdf>
- Increasing Branching of Newly Planted Apple Trees in the Orchard, an Update <http://umassfruitnotes.com/v80n1/a2.pdf>
- Increasing Branching of Newly Planted Apple Trees <http://umassfruitnotes.com/v79n3/a2.pdf>
- Using Heading vs. Notching With or Without BA Application to Induce Branching in Non-feathered, First-leaf Apple Trees <http://umassfruitnotes.com/v75n3/a3.pdf>
- F-140 Branching Young Apple Trees with Plant Growth Regulators <https://ag.umass.edu/fruit/fact-sheets/f-140-branching-young-apple-trees-with-plant-growth-regulators>

Guest article

Sunflower family's spiny pollen vastly reduces prevalence of widespread parasite in bumblebees, increases production of queens

Laura Figueroa and Lynn Adler
University of Massachusetts Amherst

It's the spines. This is the conclusion of two new papers, led by researchers at the University of Massachusetts Amherst, showing that the spiny pollen from plants in the sunflower family (Asteraceae) both reduces infection of a common bee parasite by 81–94% and markedly

increases the production of queen bumble bees. The research, appearing in *Functional Ecology and Proceedings of the Royal Society B: Biological Sciences*, provides much-needed food for thought in one of the most vexing problems facing biologists and ecologists: how to reverse the great die-off of the world's pollinators.

Insect pollinators — those flying, buzzing, flitting bugs that help fertilize everything from blueberries to coffee — contribute upwards of \$200 billion in annual ecosystem services worldwide.

“We depend on them for diverse, healthy, nutritious diets,” says Laura Figueroa, incoming assistant professor of environmental conservation at UMass Amherst and lead author of the paper on pollen spines. Many pollinators, however, are suffering an unprecedented decline due to the widespread use of pesticides, habitat loss and other causes, and scientists around the world are working diligently to figure out how to fight the apocalypse.

One of the big breakthroughs in helping pollinators, and especially bees, is the discovery that certain species of flowers can help pollinators resist disease infections, and that sunflowers are particularly effective at combatting a widespread pathogen that lives in a bee's gut, called *Crithidia bombi*.

But until now, no one knew why sunflowers were so effective at staving off *C. bombi*, or if other flowers in the sunflower family had the same pathogen-fighting powers.

Physics, not chemistry

“We know that the health benefits from some foods come from the specific chemicals in them,” says Figueroa. “But we also know that some foods are healthy because of their physical structure — think of foods high in fiber.”

To discover how sunflowers help bumblebees withstand *C. bombi*, Figueroa and her team devised an experiment that hinged on separating out the pollen's spiny outer shell from the chemical metabolites in the pollen's core. They then mixed the spiny sunflower shell, with the chemistry removed, into the pollen fed to one batch of bees, while another batch was fed wildflower pollen sprinkled with sunflower metabolites and no sunflower shells.

“We discovered that the bees that ate the spiny sunflower pollen shells had the same response as bees feeding on whole sunflower pollen, and that they suffered 87% lower infections from *C. bombi* than bees feeding on the sunflower metabolites,” says Figueroa.

But that's not all. Bees fed pollen from ragweed, cocklebur, dandelion and dog fennel — all members of the sunflower family and with similarly spiny pollen shells — had low rates of *C. bombi* infection similar to the bees who ate sunflower pollen — which raises the possibility that such disease-fighting medicinal effects may be common to plants in the sunflower family.

To access the full article, click [HERE](#).

Useful links

UMass Fruit Advisor: <http://umassfruit.com>

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

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The next Healthy Fruit will be published on or about April 18, 2023. 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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