



Healthy Fruit, Vol. 31, No. 3, April 18, 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)	17-April
Base 43 BE	274
Base 50 BE	134

Current bud stages

Current bud stages. 17-April, 2023, UMass Cold Spring Orchard, Belchertown, MA (more current bud stages [here](#))

				
Rubymac apple <i>Early pink</i>	Honeycrisp apple <i>Late tight cluster to very early pink</i>	Gala apple <i>Late tight cluster</i>	Cripps pink apple <i>Very early pink</i>	Crispie pear <i>White 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. Pesticide credit(s) available (presumably). No food, eat before or after.

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

It's not too late to renew your **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 (lunch bunch) 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."

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...

So now that the easy part is out of the way, what's next? I can't stay caught up. Expect apple and pear bloom this weekend (on average) with warm weather forecast Thursday-Saturday. According to NEWA, degree day accumulation for Belchertown will be at 348 (Base 43 BE) on Sunday, April 23. McIntosh bloom is supposed to range from 344-415 DD's. It seems we are on the earlier side of DD's vs. phenology this year. That would put bloom a good one to two weeks ahead of 'average.' I don't expect fire blight risk to be high, but that could change if we have enough open bloom coinciding with warm temperatures. Better have some antibiotic(s) on hand. Scab is a no-brainer, any significant wetting is going to mean a significant infection period. Now – when the wind dies down – would be a good idea to apply Apogee (or Kudos) during the pink bud stage of apples to reduce fire blight (shoot) risk, control excessive vigor, and (maybe) ameliorate the bitter pit problem in Honeycrisp.

Entomology

Jaime Piñero

Weekly report of insect pest captures in monitoring traps at UMass Cold Spring Orchard (Belchertown, MA)

Multiple insect pests have become active. For example, the first plum curculio was captured by an odor-baited trap, and this occurred at 193 DD₄₃, just a little short of the expected 210 DD₄₃ which is the average of 9 years.

Period: April 12-18

Insect	Average captures/trap	Notes
Obliquebanded leafroller	0	Pheromone-baited delta trap
Codling moth	0	Pheromone-baited delta trap
Oriental fruit moth	2	Pheromone-baited delta trap
Redbanded leafroller	0	Pheromone-baited delta trap
Plum curculio	0.5	2 odor-baited black pyramid traps

Insect pest activity in other orchards. After visiting five orchards on Monday, we found no aphids, a few caterpillars which may be pug moth, one RBLR caterpillar, and one TPB on foliage (none in traps).

**Winter moth larva? It
may well be pug moth**

4 found in 16 trees in
unsprayed block



Redbanded leafroller

1 found in 16 trees at CSO



Aphids. The apple grain aphids that we reported last week in one orchard are gone! Yesterday, we scouted 10 trees and only 2 aphids were found. In contrast, a number of predatory insects including adult lady bugs and hoverfly eggs (see picture below). Hungry hoverfly larvae will hatch from the eggs.

Some good friends



10+ lady beetle adults
and 1 egg mass

Some hover fly eggs (shown below)


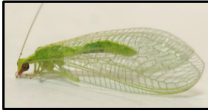


Aphids are attacked by many species of parasitic and predatory insects. The pictures below show representative examples of natural enemies of aphids. Not spraying when there is no need can provide the best protection of natural enemies of pests.



Important parasitic and predatory insects that attack aphids



Predatory midge larva (left) and adult (right)



Lacewing larva (left) and adult (right)

Lady beetle larva (left) and adult (right)

Minute pirate bug nymph (left) and adult (right)

Parasitic wasps

Oil application. Prebloom is an important time for preventive management of several key insect and mite pests that can cause problems down the road. Among these are San Jose scale, European red mite, and rosy apple aphid. Oil applications at green tip are highly effective at suppressing overwintering scales and ERM eggs, and can help to suppress populations later in the season. However, additional insecticide use is often necessary for season-long control of scale and sometimes mites.

San Jose scale control options. One effective scale product is Esteem (it can be applied between green tip and pink in apples). Esteem is an insect growth regulator. Applications before bloom are targeting overwintering immatures and recently developed adult scales, while applications after bloom target first generation crawlers that emerge shortly after first cover (see figure below).

Movento is another insecticide that will control scale, but it should be applied between petal fall and first cover, when sufficient leaf tissue is present for this systemic insecticide to be taken up. It must be applied with a spreading and penetrating adjuvant for effective leaf uptake. Because of the systemic activity of this product, it will also control woolly apple aphid, a pest of sporadic occurrence.

Codling moth management plan. Below are recommendations for CM management in high-pressure blocks.

Monitoring: Needs to be started ASAP. The **CM-DA lure is the standard and it combines sex pheromone plus pear ester** - a plant volatile.

Spray times will be decided based on a “Biofix”, which is the first sustained moth catch. Depending on the temperature and weather prevailing after the biofix is set, an approximate spray date should be calculated based on Degree Days (base 50°F). For this you can access a nearby weather station registered in NEWA.

Key events in CM life cycle estimated by use of Biofix¹ and subsequently accumulated degree days. These estimates are adapted from Michigan State University and Cornell University.		
Event	Degree Days base 50 required following Biofix	Spray timing
Biofix (1 st sustained capture of moths in pheromone traps)	On this date we start accumulating DD base 50	-----

Egg hatch begins (calculated after Biofix has been established)	100 (against eggs ¹) 220-250 (against larvae ²)	1st spray
Peak period of 1 st generation egg hatch/critical control period	500-600	Timing for 2nd spray (against larvae) if monitoring indicates a treatment is needed. <i>An 'easier' recommendation: in high-pressure blocks, 2nd spray goes 10-14 days after 1st spray.</i>
End of first-generation egg hatch	Approx. 920	
First egg hatch, 2nd generation	1000-1260	3rd spray (spray again 10-14 days later <u>only</u> if CM pressure is severe).
Peak period of 2nd generation egg hatch/critical control period	1320-1720	
End of 2nd generation egg hatch	2100	

Refer to the [New England Tree Fruit Management](#) Guide for specific materials and rates recommended for managing CM.

¹Egg control. Although several insecticides have limited ovicidal activity, Rimon is considered a strong ovicide material, thus CM egg laying is the optimal timing for this material. But we need to be precise timing-wise. Rimon applied at CM biofix plus 100 GDD also provides excellent control of OBLR.

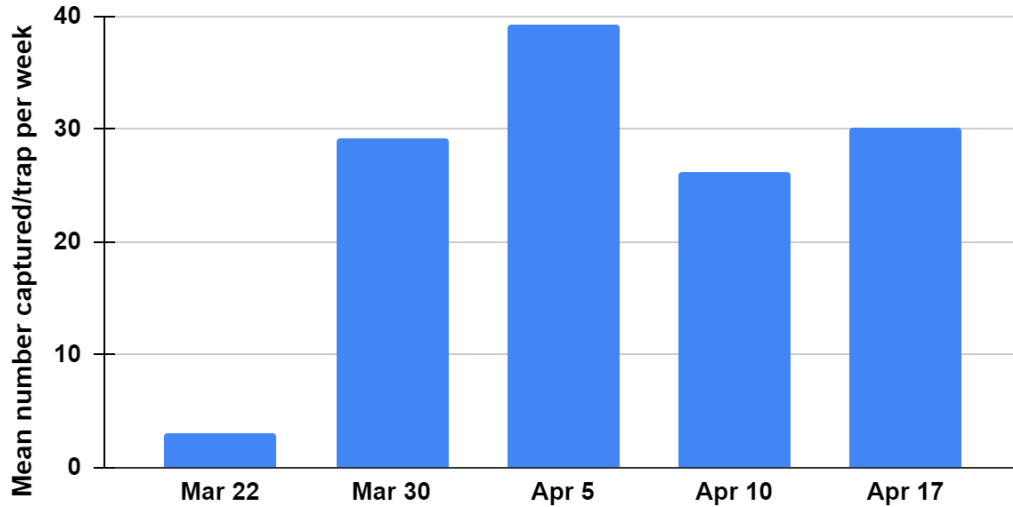
²Larval control. Refer to the NETFMG for a list of materials that are effective at controlling CM larvae.

- **Insecticide rotation:** For 1st cover, after the petal fall spray, Altacor or Exirel at high label rates will be highly effective. For the 2nd cover, the use of the neonicotinoid Assail 30 SG, Delegate, or Imidan to manage apple maggot (AFM) during 2nd generation CM larval emergence has been a good option. Assail will provide very good control of CM with a residual action of 10-14 days. This compound is primarily larvicidal, but also has some ovicidal activity when applied over the top of the egg.

- **Mite Flaring Potential.** Imidan: Low to moderate; pyrethroids: very high; Delegate: moderate; Verdepryn, Altacor, Exirel: low; Assail and other neonics: moderate.

Pear psylla update. The level of psylla captures at the UMass CSO pear block showed a slight increase relative to those recorded the past week. Such a slight increase in activity despite the very warm days suggests that the peak activity has already passed and most eggs should have been laid by now. When scouting for early egg laying, focus on the terminal end of the fruiting branches using magnification.

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

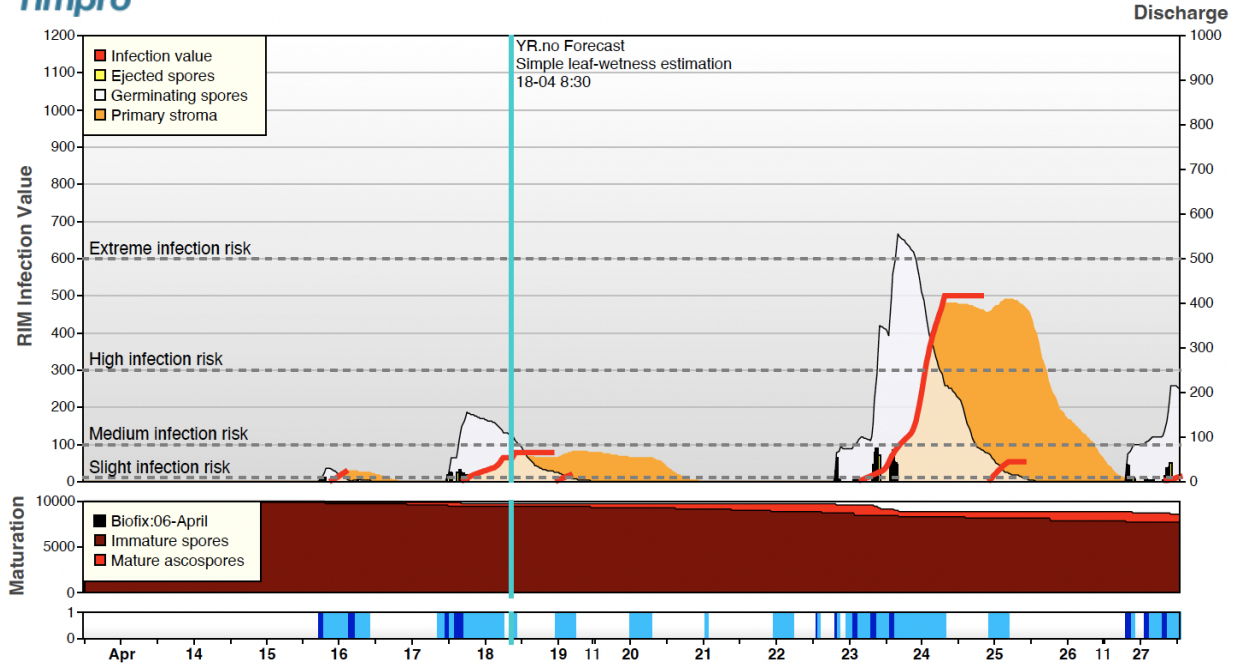


Pathology

Jon Clements



Venturia 3.0 - UMass Orchard - 2023



A picture is truly worth a thousand words. Better be covered up with fungicide prior to the weekend. Don't forget to include something that works – (FRAC Groups 3 or 7+11 the best) – for powdery mildew, although the literature suggests that most (some?) of it will get killed when the winter temperature drops below -11 degrees F. But why take the chance, mildew has been getting worse every year.

Regarding fungicide choices, I kind of like this presentation in the Penn State Tree Fruit Production Guide.

Pesticide recommendations for apples, pink through bloom.
CHOOSE one of the following:

FRAC Group	Pesticide	Recommended Rate Per Acre
3	Cevya ^a	4–5 fl oz
3	Indar 2F ^a	8 fl oz
3	Procure 480SC ^a	12–16 oz
3	Rally 40WSP ^a	10 oz
3	Rhyme ^a	4–6.5 fl oz
3	Topguard ^a	13 fl oz
3	Trionic 4SC ^a	12–16 fl oz
3 + 9	Inspire Super ^a	12 fl oz
7	Aprovia ^a	5.5–7 fl oz
7	Excalia ^a	3–4 fl oz
7	Fontelis ^a	16–20 fl oz
7	Kenja 400SC ^a	12.5 fl oz
7	Miravis ^a	3.4 fl oz
7	Sercadis ^a	3.5–4.5 fl oz
7 + 9	Luna Tranquility ^a	11.2–16 fl oz
7 + 11	Luna Sensation ^a	4–5.8 fl oz
7 + 11	Merivon ^a	4–5.5 fl oz
7 + 11	Pristine ^a	14.5–18.5 oz
9	Scala SC ^a	7–10 fl oz
9	Vanguard WG ^a	5 oz
11	Flint Extra ^a	2.9 fl oz
11	Sovran ^a	4–6.4 oz
M2	Lime sulfur ^b	2.5–3% solution

In combination with one of the following:

FRAC Group	Pesticide	Recommended Rate Per Acre
M3	Manzate Pro-Stick ^c	3 lb
M3	Ziram 76DF	3 lb
M4	Captan 80WDG ^{d,e}	2.5–3 lb

OR select one of the following to be applied alone:

FRAC Group	Pesticide	Recommended Rate Per Acre
M2	Sulfur	7–10 lb
M3	Manzate Pro-Stick ^c	6 lb
M3	Ziram 76DF	6 lb
M4	Captan 80WDG ^{d,e}	5 lb

Horticulture

Jon Clements

Apple pink

	
Honeycrisp 'early pink'	Rubymac 'not quite pink'

Apply prohexadione-calcium (Apogee [2EE label] or Kudos), pink (pre-bloom) application for growth control, fire blight (shoot) suppression, and bitter pit suppression (Honeycrisp, Jonagold). Although there is disagreement if this actually works or not to reduce bitter pit. For details see: [HRT-2022-Suggestions for the use of prohexadione-calcium on apples](#) Or see Guest article below.

Planting trees? It's been great weather for it, but make sure they get some water. Do not apply any fertilizer to the planting hole, wait until the buds break to apply any fertilizer. Calcium nitrate at 4 oz. per tree (twice for a total of 8 oz.) is my recommendation. Need help with branching? See [last week's Healthy Fruit](#) or [F-140 Branching Young Apple Trees with Plant Growth Regulators](#).

Apple trees could always use some spring tonic: [Prebloom Nutrient Applications for Apple Trees](#)

Still no peaches, but at least they are leafing out :-). Good time to get your pruning of peaches wrapped up sooner than later. Missed our peach pruning session at Carlson Orchards last week? <https://www.facebook.com/jmcextman> for the Live recording, although I have not watched it! I've heard there is some wind noise, but you may find it both useful and entertaining.

Guest article

The Honeycrisp Playbook: An Apogee Application at Pink for Bitter Pit Suppression

Dan Donahue, CCE-ENYCHP, Hudson Valley. Reprinted from [Cornell ENYCHP Tree Fruit E-Alert](#), Donahue & Basedow, April 18, 2023.

Ed. note: there is some difference of opinion on Apogee (or Kudos) application at pink (vs. post-bloom) to Honeycrisp to suppress bitter pit. Regardless, the real goal of prohex-cal application here is to control growth.

For BP suppression, Apogee should be applied to mature bearing tall spindle Honeycrisp (HC) at pink stage at a rate of 6 oz./A. Cover the foliage well. Apply at full or late pink, not early pink. Use a water conditioner, "hard" water deactivates Apogee.

Temperature at application and during the 8-hours post is a critical factor. Prohexadione calcium (Apogee, Kudo) are plant growth regulators and require metabolic activity within the plant for uptake and metabolism. Temperatures below the mid-60's are questionable for uptake when an application is timed at pink. Delay your application until temperatures are warm enough for up to eight hours post.

Reviewing our 5-years of data in ENY and 2-years statewide, it's clear that Honeycrisp bitter pit management recommendations need to take the rootstock into account. Our detailed survey data from ENY 2016-2018 clearly demonstrates that HC fruit produced on the B.9 rootstock will have on average substantially less bitter pit (11%) than fruit produced on the M.9 clones (25%), M.26 (30%) after 120 days of regular storage. In a 2020 trial, after 74 days of regular storage, G.41 expressed 22% BP vs 10% for M.9. Our team found substantial variability between blocks by site, region, and year, which is one reason why BP prediction and mitigation have been such a challenge over the last, say, 150 years?. I am recommending not to include B.9 Honeycrisp blocks in your pink Apogee program. For BP suppression. B.9 HC fruit already have a low probability of BP symptom expression, and the low-vigor characteristics of the combination result in a tree that can have trouble filling its allotted space. Prohexadione calcium formulations (Apogee, Kudos) applied at pink will suppress vegetative growth to some degree, so if not needed, don't use it.

To avoid aggravating BP in Honeycrisp, do not use Apogee (prohexadione calcium) for vegetative growth reduction post-bloom as is generally recommended. Our data shows that in 2 years out of 3, "conventional" Apogee use significantly aggravated BP. Contrary to commonly held belief, our data over three years indicates that the reduction of vegetative growth achieved by Apogee is not correlated with a reduction of BP incidence.

If fire blight is a problem, there are real benefits to using Apogee to suppress shoot infections, in this case, you must pick your poison as they say. However, the single pink application timing on its own will help suppress FB infections. Follow an aggressive blossom blight protection program, use the NEWA models and deploy other tools such as ASR materials to help. Specifically for HC, reserve post-pink Prohexadione calcium applications as an FB suppression measure of last resort. For example, if you have cankers from prior seasons, or active shoot blight infections, or perhaps concern over hail damage prior to terminal shoot set.

Can I include foliar calcium in my Apogee tank mix? Generally not because calcium in solution (i.e. hard water) will deactivate the Prohexadione calcium. However, there is an exception! The Agro-K company produces a foliar calcium product System-CAL™ which has been tested and shown to be compatible with Prohexadione calcium formulations (Apogee, Kudos) in tank-mix combinations. Follow the link here for more details. I will be discussing foliar calcium applications in the next installment of the 2021 Honeycrisp Playbook.

Would you like to conduct your own test? Leave a trellis panel unsprayed as a control. Sample 100 apples from the control trees, and 100 apples from the treated trees, and hold in regular storage for 60 days. If you really want to push the envelope, pre-condition at 50 degree F. for 7 days as pre-conditioning aggravates bitter pit. Taking a sample like this is necessary for

accurate on-farm evaluation. This is also true of your calcium applications. BP evaluations by "eyeball" at harvest, on-the-tree or in-the-bin, or even off the packing line are not reliable due to sampling bias and the fact that BP symptoms will visibly express at different timings depending on the year, site, and rootstock.

A single application of Prohexadione calcium (Apogee, Kudos) at pink will result in a degree of vegetative growth reduction. Therefore, do not apply Apogee at pink for BP suppression to young-bearing orchards that haven't filled their allotted space. Use POMA, System-CAL, CorClear, or a similar foliar calcium program in young bearing orchards.

You must have the 2EE label in your possession to use Apogee at pink for BP suppression. A copy of the NYS 2EE label can be found [here](#).

Want to know more? [Read this article](#) from the March 2019 issue of CCE-ENYCHP Tree Fruit News, or contact Dan Donahue, CCE-ENYCHP Regional Tree Fruit Specialist at 518-322-7812 or djd13@cornell.edu.

Useful links

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

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

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[The Jentsch Lab](#) (Peter Jentsch, Poma Tech)

[Acimovic Lab](#) (Srdjan Acimovic at Virginia Tech)

[Tree Fruit Horticulture Updates](#) (Sherif Sherif at Virginia Tech)

[CCE ENYCHP Tree Fruit Blog](#)

The next Healthy Fruit will be published on or about April 25, 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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