



Healthy Fruit, Vol. 31, No. 5, May 2, 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)	1-May
Base 43 BE	373 (*413)
Base 50 BE	173

*forecast 7-May, this coming Sunday. Note that McIntosh petal fall should be approximately 439 to 52 DD's Base 43 BE.

Current bud stages

Current bud stages. 1-May, 2023, UMass Cold Spring Orchard, Belchertown, MA (more current bud stages [here](#))

				
Rubymac apple <i>Late bloom</i>	Honeycrisp apple <i>King bloom</i>	Gala apple <i>Very late pink</i>	Cripps pink apple <i>Early bloom</i>	Crispie pear <i>Late bloom</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 here:

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

Thursday, May 4 - UMass Fruit Twilight Meeting, Riiska Brook Orchard, 101 New Hartford Road, Sandisfield, MA. 5 to 7 PM. Sprayer calibrations, orchard walk, current pest management status. Light dinner will be served. 2 pesticide recertification credits available.

Friday, May 5 - Apple Talk Presents: Apple Thinning Update. 12 PM EDT.

Apple Thinning Update

MAY 5

12:00 P.M. EST

Join the Valent U.S.A. LLC team for a 2023 apple thinning update with current conditions and observations from Michigan and New York. Take a picture of the QR Code below and it will take you to the Teams meeting.



Meeting ID: 456 056 849 400

Passcode: CREv44

Thursday, May 11 – UMass Fruit Twilight Meeting, Tougas Family Farm, 246 Ball Street, Northboro, MA. 5:30 to 7:30 PM. Orchard walk, current pest management and fruit thinning situation. Light dinner will be served. 2 pesticide recertification credits available.

The way I see it

Jon Clements

What can I say other than rinse and repeat? At least we are in (McIntosh) bloom. Not sure if that is a good thing or a bad thing? Certainly pollinator activity has been minimal at best. But it does

not take much to get the job done, like the few hours we had yesterday (Monday?) Next chance for decent weather for bees will be this Saturday. Later blooming varieties (Gala, Honeycrisp) should be on still. See Honeybee Foraging Activity chart below in Horticulture.

I hope you can join us at Riiska Brook Orchard on Thursday, May 4 at 5 PM for a fruit twilight meeting hosted by “Emily and Calvin, who recently purchased the orchard from Bill Riiska, who is still on site to help manage the ownership transition.” I will be on hand to demonstrate sprayer calibration, Jaime Pinero will talk about the current entomology situation (plum curculio on the horizon?), and Hawkeye IPM might talk about how that scab is coming along? A light BBQ dinner will be served. There will be a \$20 charge per person receiving pesticide credits. See you there.

Frank Carlson passed away on March 31, he will be missed by all of us for his company, as an advocate for Massachusetts (and beyond) orchards, and his insight after many years of experience. There will be celebration(s) of Frank’s life at Carlson Orchards, 115 Oak Hill Rd., Harvard, MA on Friday May 5 from 3 to 6 PM and on Saturday, May 6 from 1 to 5 PM. In lieu of flowers, donations may be made to the UMass Cold Spring Orchard Research and Education Center via www.tinyurl.com/Cold-Spring-Orchard.

Entomology

Jaime Piñero

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

Trap-capture data at the UMass CSO.

Period: April 26 - May 2

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	6	By-catch pear ester-containing lure
Plum curculio	0	2 odor-baited black pyramid traps

Insect pest activity in other orchards: Very low insect pest activity, as expected.

Codling moth and Oriental fruit moth. No CM have been captured in any traps yet. As for OFM, the first captures at CSO took place on April 17th, and since they have been consistently low. As you know, the petal fall spray should control OFM larvae hatching early in the season. Although first generation OFM larvae can damage fruit, particularly in orchards with high pest population densities, most larvae from this generation in apples will infest only apple shoots. Therefore, the

primary reason to control the first brood is to cut down on resident populations in the orchard that could lead to more severe infestations later in the season.

Only 3 TPB were captured in 122 white sticky cards deployed in 10 commercial blocks. Feeding injury by TPB is very low (in 4 orchards):

CSO: 400 flower clusters inspected (over 1,500 individual flowers): 1 TPB injury (bleeding site).

Orchard A: 400 flower clusters inspected (over 1,500 individual flowers): 3 TPB injuries.

Orchard B: 400 flower clusters inspected (over 1,500 individual flowers): 0 TPB injury

Orchard C: 400 flower clusters inspected (over 1,500 individual flowers): 1 TPB feeding injury.

The petal-fall spray against PC and residual toxicity of insecticides in the presence of rainfall. The critical period for controlling PC is during the first few days of warm and humid weather following petal fall, when maximum temperatures remain approximately 70°F. Control is more difficult when PC activity is greatly reduced by low temperatures and rainfall because spray deposits are washed from fruit and foliage. Low temperatures also extend the period during which curculio is active in orchards. I hope this type of weather does not pose challenges concerning plum curculio control.

The following information was extracted from articles written by Dr. John Wise (Michigan State University). After the two tables, I then describe research that we will conduct this year, at around petal fall, to determine the actual relative toxicity of some insecticides in some Massachusetts orchards. This information is needed.

Previously, based on his research, Dr. Wise has reported “...*a two-inch rainfall will remove enough insecticide to make immediate reapplication necessary for all the insecticides he tested: Imidan (an organophosphate), Sevin (a carbamate), Capture/Brigade (the pyrethroid bifenthrin), Actara (a neonicotinoid), and Avaunt (an oxidiazine)*...”. His studies have also shown that in general organophosphates are the most sensitive to wash-off, whereas spinosyns, pyrethroids, and diamides are more rainfast. Neonicotinoid surface residues are sensitive to wash-off, but subsurface residues are not.

Not relevant to PC, but relevant to a few other pests: Dr. Wise’s studies show that several compounds, including spinetoram, the active ingredient in Delegate® WG insecticide, continue to provide plant protection despite rain showers.

A note on surfactants: Many surfactants improve the end-result of residue remaining after a precipitation event, but the data suggests that it is not necessarily that the surfactant directly inhibited wash-off. In many cases, it may simply increase the deposition because the surfactant treatment began with a lot more residue than the comparison without surfactant.

For the sake of space, below I provide some tables that present more detailed information. There are more tables available at the source: [Dr. John Wise, MSU](#).

Rainfastness rating chart: General characteristics for insecticide chemical classes

Insecticide class	Rainfastness ≤ 0.5 inch		Rainfastness ≤ 1.0 inch		Rainfastness ≤ 2.0 inches	
	<u>Fruit</u>	Leaves	<u>Fruit</u>	Leaves	<u>Fruit</u>	Leaves
Organophosphates	Low	Moderate	Low	Moderate	Low	Low
Pyrethroids	Moderate/High	Moderate/High	Moderate	Moderate	Low	Low
Carbamates	Moderate	Moderate/High	Moderate	Moderate	Low	Low
IGRs	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Oxadiazines	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Neonicotinoids	Moderate, Systemic	High, Systemic	Low, Systemic	Low, Systemic	Low, Systemic	Low, Systemic
Spinosyns	High	Moderate	High	Moderate	Moderate	Low
Diamides	High	High	High	Moderate	Moderate	Low
Avermectins	Moderate, Systemic	High, Systemic	Low, Systemic	Moderate, Systemic	Low	Low

Highly rainfast = ≤ 30% residue wash-off

Moderately rainfast = ≤ 50% residue wash-off

Low rainfast = ≤ 70% residue wash-off

Systemic = Systemic residues remain within plant tissue

Insecticide persistence, plant penetration and rainfastness rating			
Compound class	Persistence (residual on plant)	Plant penetration characteristics	Rainfast rating
Organophosphates	Medium - Long	Surface	Low
Carbamates	Short	Cuticle Penetration	Moderate
Pyrethroids	Short	Cuticle Penetration	Moderate - High
Neonicotinoids	Medium	Translaminar & Acropetal	Moderate
Oxadiazines	Medium	Cuticle Penetration	Moderate
Avermectins	Medium	Translaminar	Moderate
IGRs	Medium - Long	Translaminar	Moderate
Spinosyns	Short - Medium	Translaminar	Moderate - High
Diamides	Medium - Long	Translaminar	Moderate - High

2023 UMass research (residual toxicity of insecticides in the presence of rainfall). We will conduct an experiment to determine the level of protection provided by various insecticides applied **at petal fall** at various time intervals (**i.e., residual toxicity**).

Insecticides:

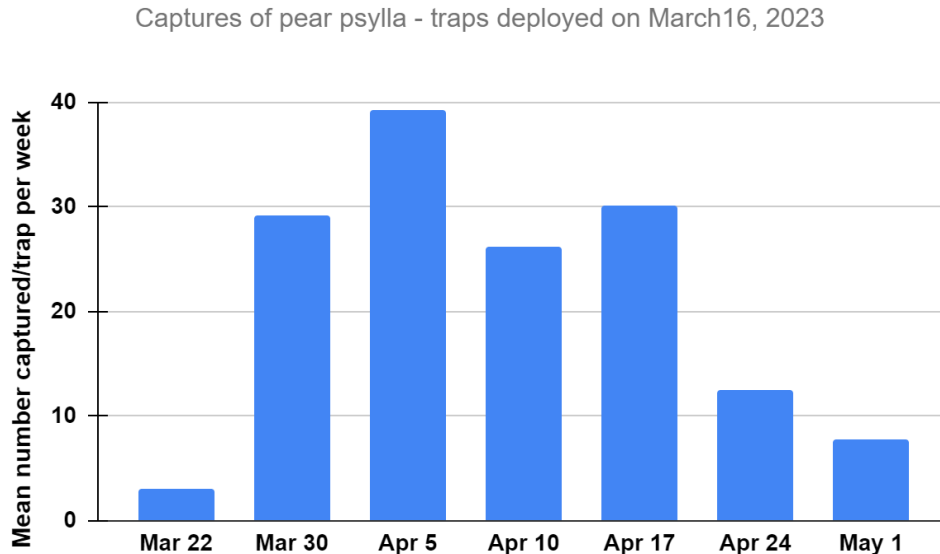
- Imidan
- Verdepryn
- Avaunt eVo
- SEVIN (thinning rate)

Experimental approach:

- **4, 7, and 10** days after the petal fall spray, we will drive to orchards to collect twigs with fruit.
- The material will be exposed to adult plum curculio and codling moth larvae.
- We will record insect mortality at 8, 24, 36 and 48 hours.

- Results will be posted in the HF Newsletter and in Fruit Notes (summer issue).

Pear psylla update. Adult pear psylla activity has subsided. See chart below.



[Scouting](#): summer treatment threshold for pear psylla is one nymph/ three leaves. Examine 25 spurs (one per tree) and terminal shoots per orchard to determine the threshold average.

Pathology

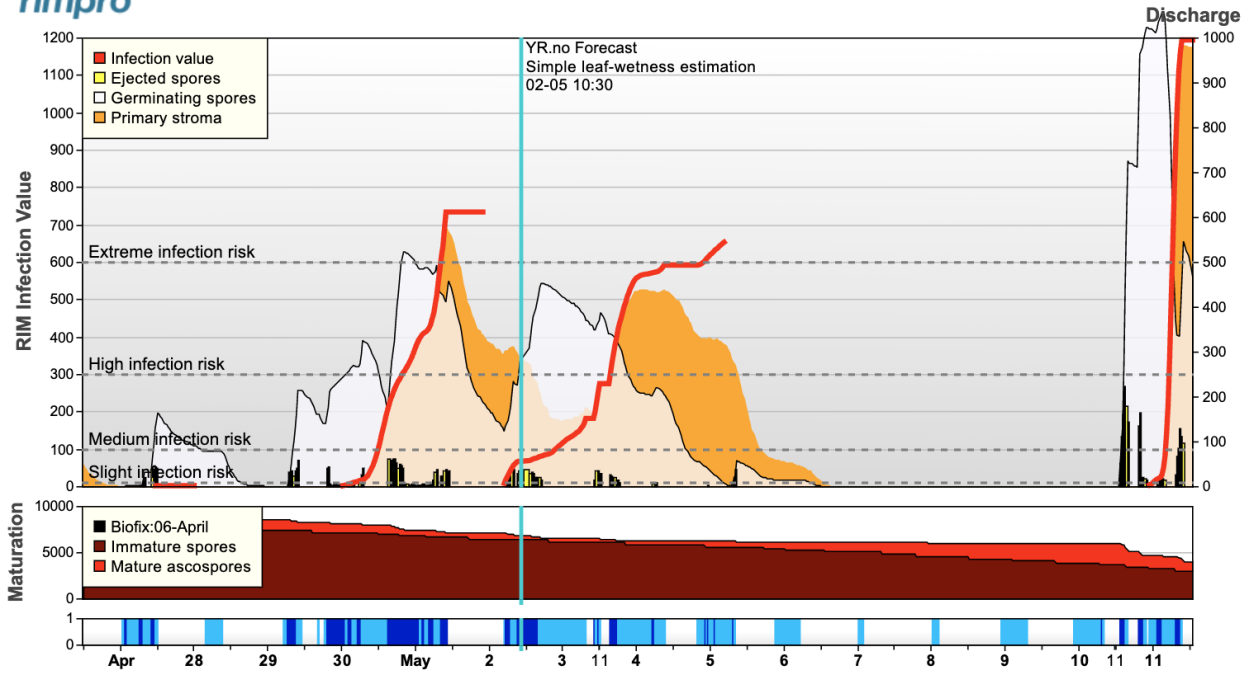
Jon Clements

As I already said, rinse and repeat. Apple scab is having a heyday, we are about half-way through the spore bank. See RIMpro Venturia 3.0 chart below for the UMass Orchard in Belchertown.. EXTREME infection risk through about May 6, then we get a break before the next off-the-chart biggie infection period predicted for May 11, based on the current forecast, the 11th being a long way out! Every scab spray fungicide tank should have a protectant (Captan*/mancozeb) mixed with some kick-back fungicide, which includes FRAC groups 3, 7, 9, and 11. Kick back time varies from 48 hours (generally FRAC 9 and 11) to 96 hours (generally FRAC 3 and 7), best not to stretch it out too far though. Fire blight is a non-issue right now until, if, and when it warms up significantly.

*be leary when using Captan during the bloom and petal fall period, particularly under slow drying/wet conditions as fruit finish issues are a concern. In fact, I'd avoid using it altogether, opting for the mancozeb protection option. Mixed with another fungicide of course. See Dave Rosenberger's latest blog post on this subject: [Beware: Extended Wetting Creates Unusual Risks](#).



Venturia 3.0 - UMass Orchard - 2023



Pesticide recommendations for apples, petal fall.

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 ^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	8–16 fl oz
9	Vanguard WG ^a	5 oz
11	Flint Extra ^a	2.9 fl oz
11	Sovran ^a	4–6.4 oz

In combination with one of the following:

FRAC Group	Pesticide	Recommended Rate Per Acre
M3	Manzate Pro-Stick ^b	3 lb
M3	Ziram 76DF	3 lb
M4	Captan 80WDG ^{c,d}	2.53 lb

Horticulture

Jon Clements

Apple - full bloom (McIntosh) to king bloom (Honeycrisp) to late pink (Gala)

Below pics taken afternoon on 2-May. Moving along, slowly. A solid week ahead of last year, and slightly ahead of “average?”

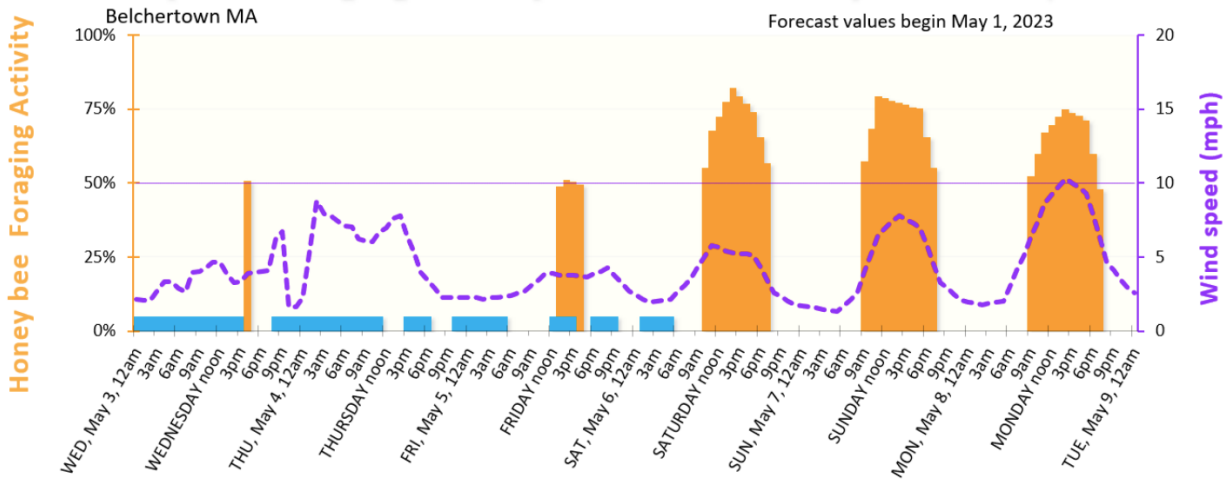
		
<p>Honeycrisp 'early king bloom' 2-May</p>	<p>Rogers Red McIntosh 'full bloom/early petal fall' 2- May</p>	<p>Gala 'Very late pink to early king bloom' 2-May'</p>

As discussed this afternoon, best to wait a few days until the weather cooperates to apply the bloom/petal fall thinning spray of NAA or NAD. Plant growth regulators work best when the temperatures hit the 70's or so, it's coming this weekend or early next week. No big rush. Chemical thinner sprays need to fully dry at a minimum before rainfall.

Subject also came up about using Promalin on apples as you might when there is a frost event to promote fruit set when pollination conditions are arguably poor? Although mother nature is pretty resilient, and it only takes 4 hours of bee activity to set an orchard full of apples. Yes and no, worth a try, leave an untreated section, and needs to go on by late bloom to be effective.

Regarding bee activity in this poor weather, thanks to Glen Koehler at U. of Maine for this Honey bee Foraging Activity chart. It shows when honeybees might be active based on the weather forecast, and although intended to advise on when not to spray to avoid bees, it's also indicative of when they are out and about pollination of the apples. Looks like this week is a no-fly week until Friday at the earliest.

Honey bee Foraging Activity & Wet Residue Exposure 6-day Forecast



Orange area = Honey bee foraging activity index for hour ending at marked time. This is a relative estimate based on honey bee flight response to temperature, amount of sunlight, and wind speed. This index does not represent activity of other important pollinators, including mason bees and bumble bees that work at lower temperatures. The chart serves to highlight hours to avoid spray application of materials hazardous to honey bees when they may be actively visiting flowering weeds, ground cover or crop plants. Application during active bee foraging exposes them to harm from direct spray contact and fresh spray residue. **Vertical green line = today's date and beginning of forecast values.** More background information for this chart at tinyurl.com/beehours

Blue line along bottom of chart indicates hours during which foliage is wet. Spray material that can be harmful to honeybees as undried surface residue applied during hours of wet foliage may not dry until foliage dries. One hour of good drying conditions is often sufficient to dry spray residue.

Purple dashed line = Wind speed. Wind speed between 2 and 7 mph reduces spray drift potential.

- Forecast begins
- Honey Bee Foraging Activity
- Leaf Wetness
- Wind speed

Guest article

No guest article this week.

Useful links

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

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

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(<http://www.facebook.com/jmccextman>)

[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 May 9, 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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