



## Healthy Fruit, Vol. 29, No. 1, April 6, 2021

Prepared by the University of Massachusetts Amherst Fruit Team

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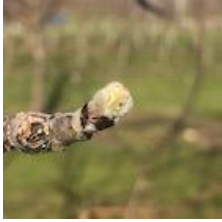



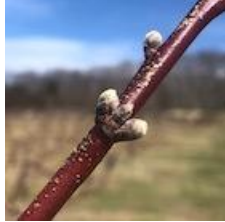
### Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (Since January 1)	5-April
Base 43 BE (NEWA, since January 1)	140
Base 50 BE (NEWA, since January 1)	63

According to the NEWA Degree Days prediction, by April 12 (next Monday) we will have reached 208 DD's Base 43 BE. Half-inch green bud stage should occur 150-221 DD's Base 43 BE.



### Current bud stages

Current bud stages. 5-April, 2021, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Green tip ++	Honeycrisp apple Green tip	Gala apple Green tip	Crispie pear Swollen bud	Redhaven peach Swollen bud

More 2021 bud stages [here...](#)

This just in, Zestar! On 6-April in southeast MA. Note the little black “spot” which might be a “bug,” I noted similar on McIntosh at the UMass Orchard. Because both orchards have had some problems with rosy apple aphid in the past, I suspect it might be newly hatched nymph, but I have not confirmed that. Where’s an entomologist when you need one? :-). See [green tip sprays](#) in the New England Tree Fruit Management Guide, this is the time to control this pest if you have a history of problems with it.

	
Zestar! on 6-April in southeast MA. Note the little black “spot” on the leaf, lower right.	Similar black “spot” which was moving on McIntosh, 5-April, at UMass Orchard. Rosy apple aphid?

## Upcoming pest events

Coming events	Degree days (Base 43 BE)
Green apple aphids present	111-265
Green fruitworm peak flight	91-226
Pear psylla 1st oviposition	40-126
Redbanded leafroller 1st catch	111-176
Spotted tentiform leafminer 1st catch	120-217
McIntosh half-inch green	150-221

## Upcoming meetings

**April 7, Wednesday** - Ask the Expert Series Orchard Edition - Tree Fruit Thinning. Via Zoom. 9 AM. For more information:

<https://ag.umass.edu/fruit/events/ask-expert-series-orchard-edition-tree-fruit-thinning>

**April 13, Tuesday** - Fruit Twilight Meeting via Zoom. 5:30 PM. Meeting details and pre-registration information will be sent out later this week.

## The way I see it...

Jon Clements

- This MAY be your last Healthy Fruit (HF), unless you go to the UMass Extension Bookstore (<http://umassextensionbookstore.com>) and purchase a new [2021 subscription to HF](#) (\$65, e-mail delivery only) in the next week or two. Alternately, you can send me (Jon Clements, 393 Sabin St., Belchertown, MA 01007) a check for \$65 made out to 'University of Massachusetts.' Make sure you note it is for Healthy Fruit subscription, and

includes your e-mail 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..

- Our fruit “twilight” meeting via Zoom will be next Tuesday, April 13, 2021 at 5:30 PM. One pesticide recertification credit will be offered upon successful completion of a poll or two and you MUST pre-register here: [https://umass-amherst.zoom.us/meeting/register/tJwqfu-hpj0iGNJrP\\_IMQSjvKime-c8nnk](https://umass-amherst.zoom.us/meeting/register/tJwqfu-hpj0iGNJrP_IMQSjvKime-c8nnk) Hope to see you there!
- Dry weather forecast abounds. Good for planting trees, fertilizing, putting on copper and oil sprays (if you have not already done so, and the wind ever dies down!), not good for diseases (yea!). But that just means they will be delayed (boo!). Enjoy the week before things get hectic out there...
- Grab a second cup of coffee tomorrow, Wednesday, 7-April at 9 AM and join us for a Zoom meeting sponsored by Megan Muehlbauer at Rutgers University: “Ask the Expert Series Orchard Edition - Tree Fruit Thinning.” More info [here](#) and here is the direct Zoom meeting link at 9 AM: <https://go.rutgers.edu/tdi8p1lm>

## **New England Tree Fruit Management Guide available online**

A reminder about the online edition of the New England Tree Fruit Management Guide here: <http://netreefruit.org>. Note that it's easy to print any of the sections, if you want to have an 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 it here: <http://netreefruit.org>. The print version has been discontinued, only the online version is being updated now.

## **Insects**

Jaime Piñero

**European red mites.** Overwintering eggs are laid in groups on roughened bark, in crevices and cracks, and around bud scales on twigs and branches. Eggs begin to hatch at pre-pink bud stages and continue throughout bloom. Young mites move to newly opened leaves where they feed, mature, and reproduce.

Mites were not reported as a serious pest in 2020. If management is deemed necessary, then oil is recommended at the 2-3 gal rate during the dormant period. Use 2 gal rate from green tip through the half-inch green stage, and reduce to 1 gal rate from tight cluster to pink. Good coverage is essential (300 gal/A recommended).

*Phytotoxicity is more likely to occur if horticultural oils are applied in sprays concentrated more than 3x. Do not use oils within 24 to 48 hours before freezing temperatures, or if temperature is below 35F following a freeze.*

*Many beneficial insect and mite species prey on pest mites and provide some level of biological control. Minimizing the use of pesticides harmful to mite predators is critical for conserving natural enemies and enhancing biological control of mites.*

**San Jose Scale.** An application of dormant oil or an effective insecticide directed against the overwintering immatures under the 'black cap' scale covers on trunks and scaffold branches between the half-inch green and tight cluster stages will effectively reduce the potential for serious infestations later in the season. Pre-bloom sprays more effective if applied dilute, at high volume; for severe infestations, follow up with summer applications of appropriate materials

**SEE GUEST ARTICLE ON SAN JOSE SCALE BY PETER JENTSCH (CORNELL)**

**Tarnished plant bug.** Tarnished plant bug (TPB) feeds on developing buds. TPB populations can vary from year to year and in some regions are largely dependent on management practices of surrounding areas. If fruit injury at harvest is 0.25% to 1.00%, is it cost-effective to spray specifically against TPB? Most likely not. Many growers in Massachusetts do not spray insecticides targeting this pest. One reason is that, despite control efforts, a small amount of fruit injury is often inevitable, and most of the damage is shallow and barely noticeable.

*Avoid mowing or using herbicide between Pink and Petal Fall because disturbance of alternate hosts in the groundcover may cause TPB to move into apple trees.*

**Early-season pest monitoring:** TPB and European apple sawfly can be monitored as shown in the table below.

**Today (4.6.2021) the first TPB was captured by monitoring traps in two commercial orchards...**

	TPB	EAS
<b>Trap type</b>	White sticky card	White sticky card
<b>Lure</b>	None	None
<b>Timing</b>	At or before the silver tip stage. Check traps weekly.	At early pink stage
<b>Trap positioning</b>	2 feet above ground	Place sticky white rectangle traps at head height, on the south side of the tree

## Diseases

Liz Garofalo and Dan Cooley

### Apple scab

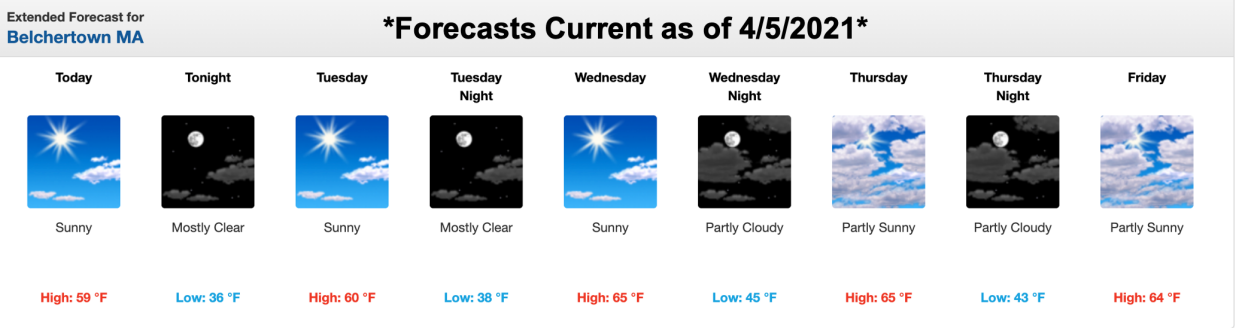
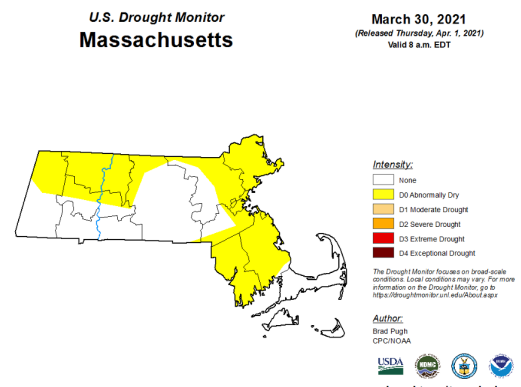
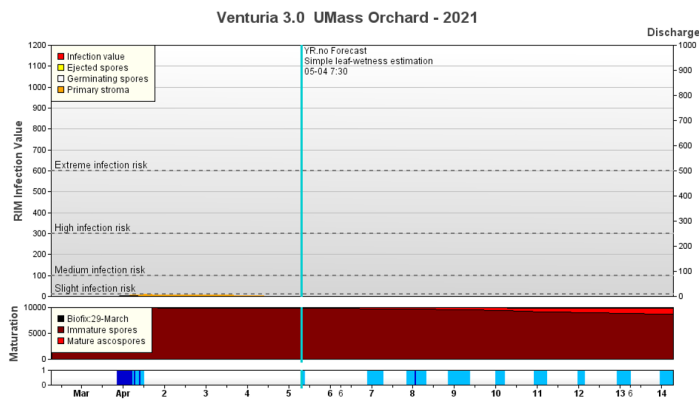
A whole year has come and gone since you had to suffer through terrible apple scab jokes. No worries, they are back and as corny as ever! As are *V. inaequalis* ascospores.



	Ascospore Observation Method and Spore Count	
Date	Petri Plate Assay	Funnel Trap
3/26/2021	0	0
4/1/21	0	0
4/5/21	121	125

A total of 246 ascospores were observed in the home lab this week. These are the first of the 2021 season. I am still using the funnel trap, a device equipped with a small fan that forces spores that are ready to eject to do that, and concentrates them on a small portion of a single microscope slide. The Petri plate assay (PPA) is more passive. Leaves are wet, which makes mature spores eject, but onto two slides rather than concentrated on one particular spot. This can make finding them more difficult on the PPA. However, the PPA has been and continues to be considered the “gold standard” in ascospore observation.

### Apple scab and the weather:



Upper left: [RIMpro](#) apple scab forecast as of 4/5. The bar with the blue sections indicates rain/leaf wetness, dark red represents immature spore, bright red represents mature spore. As of Apr. 5, RIMpro estimates 136 of the total 10,000 spores in the virtual spore bank\* are mature. No actual infection has been measured according to RIMpros metrics as of yet. Upper right: drought conditions as of Mar. 30, 2021 according to the [US Drought Monitor](#). In spite of the rain we received last week, *more* of MA is experiencing “abnormally dry” conditions. The dry parts of

the state are shown in yellow and account for 51.53% of the state up from 38.19% last week. Bottom: This week's weather forecast for Belchertown, MA according to NOAA. Precipitation is “normally” at an annual 10.93” in Belchertown for this week. Observed precipitation for this year so far in Belchertown is 7.18”. Precipitation data comes from [SC ACIS and the NOAA Regional Climate Center](#)

[NEWA](#) No rain, no scab infection events. You know it, I know it, NEWA agrees. And not a drop of rain in the forecast through the upcoming weekend.

**Powdery mildew** does not rely on rain events to infect the way scab does. In fact, spores will not germinate in free water on a leaf's surface. All the pathogen needs is: susceptible tissue which is typically readily available when the first spores are since infected buds (the pathogen's overwintering site) open later than others; high relative humidity; temperatures in the 50°F and 77°F range, although optimal temperatures are between 66.2°F and 71.6°F. The RIMpro powdery mildew model currently estimates first primary sporulation to occur on April 10. Management should be focused on blocks where the disease has occurred in the past and on more susceptible cultivars ([ie Ginger Gold, Baldwin and Cortland which are “highly susceptible”](#)). Fungicide applications for PM are typically targeted at the tight cluster to petal fall stages and then 12-14 day intervals post bloom through terminal bud set (no new growth, no susceptible tissue). FRAC 3: Cevya, Indar, Rally, and FRAC 11: Flint, Sovran are listed with a “high” efficacy rating. FRAC M2: Sulfur and FRAC NC (not classified) Stylet Oil are both listed with “moderate” efficacy. Of course, **don't mix sulfur and oil!** Read more on powdery mildew management in the [New England Tree Fruit Management Guide](#)

## Horticulture

Jon Clements

### Increasing branching and shoot growth on young apple trees

If you want to increase branching on 1-year old wood (last year's shoot growth) that is overly vigorous (a whip) and is likely to turn into blind wood:

- BEFORE bud-break: paint the area of shoot where branching is desired with 4 oz. of Maxcel (or Exilis) in one quart of white (or gray or brown) latex paint. Use a small brush or roller.
- AFTER bud-break: spray on an application of Maxcel\* at a rate of 1.6 to 3.2 oz per gallon using a backpack sprayer, treat the area where branching or enhanced shoot growth is desired

If you want to break “paradormant” buds on 2-year old (or older?) sections of blind wood:



- HALF-INCH green stage: aggressively notch (see picture, use a sharp utility knife) just above live paradormant bud and then spray (backpack or hand sprayer, don't over-saturate) with a solution of 9 oz Maxcel PLUS 3 oz Promalin

If you want to increase shoot elongation and growth in newly planted apple orchard or young (non-bearing) apple orchard:

- Spray green shoots (backpack or airblast) with a solution of Maxcel or Promalin (Promalin increases shoot elongation, Maxcel increases shoot breaks) at a rate of 1.6 to 3.2 oz per gallon. If apple trees are bearing, limit application rate to 1.28 oz. per gallon. Note that Maxcel or Promalin application might cause thinning in bearing apple trees.

For more information: [F-140 Branching Young Apple Trees with Plant Growth Regulators](#)

\*Note that Valent USA products are not the only solution, Fine Americas makes 6-BA and GA-7 products too, Exilis and Perlant, read label for specific use recommendations which generally mirror those of Maxcel and Promalin respectively.



“Paradormant” live bud on 2-year old wood, notches with utility knife and ready for spray application of Maxcel plus Promalin (courtesy Byron Phillips).

## Guest article

Article by **Peter Jentsch**, Senior Extension Associate, Hudson Valley Research Laboratory, Highland, NY

**San Jose scale.** In the Northeast, we have two to three generations of San Jose scale (SJS) each year. The scale overwinters as immature blackcaps and the adults mature during the bloom period. In conventionally treated orchards, SJS has become a major insect pest to manage in apple, requiring targeted applications for multiple generations. In 2015 we observed a 3rd generation in late September infesting late season varieties.

To address SJS in the field, seasonal programs will require targeted applications of specific insecticides during three key periods of the season. Addressing the overwintering population should begin at the first application of the season, shortly after snow melt and navigable ground conditions if a resident population is found either through trapping and scouting or if the presence of SJS on fruit was found during last year's packout.

In spring of 2020 crawler emergence was predicted to occur during the second week of June (10th – 14th June), with a biofix based on the 1st adult pheromone capture on the 26th of May using a 260-360 DD50 BE model. Nymphs were observed in Vaseline petroleum jelly on black electrical tape on the 11th of June, 1 day after the predicted emergence date.

In general, SJS scale levels were low in infested trees during first generation evaluations of trials last season. The infestation means ranged from 0.5% to 3.0% injury observed in HVRL research plots on 8th July representing 1st generation infestation levels. However, as is often the case with SJS, the 2<sup>nd</sup> generation caused economic injury of experimental plots in which early infestations led to explosive injury exceeding 33% in heavily infested plots.

In the treatment schedule and analyzed data table below, the McIntosh strain 'Red Max' received applications targeting SJS at pre-bloom or crawler emergence timings, evaluated as "% incidence of insect damaged fruit". To add further definition, if a single apple has 1 or more SJS red ring dots caused by SJS crawler and or adult feeding, then that one fruit in a sample of 100 fruit of the specific insecticide program would represent 1% injury.

In our research orchard we use a complete replicated block design with four replications. The data show that Lorsban, applied prebloom during tight cluster without oil, and Esteem, applied at the onset of SJS crawler emergence and without oil, were quite effective at managing SJS in this study.

In NYS, the DEC cancelled the registration of 29 pesticides containing chlorpyrifos on Dec. 31, 2020, and is cancelling the registration of the remaining 15 pesticides as of July 31, 2021. As such, tree fruit producers in NY will have the opportunity to employ chlorpyrifos (Lorsban

-Dow/DuPont) for the last time this season. We are fortunate to have replacement materials such as Esteem, Movento, Venerate and lest we forget the use of 3-1% dormant oil for SJS management in our toolbox.

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**Treatment Schedule for Seasonal Apple Insecticide Screen  
Hudson Valley Research Laboratory, Highland, NY - 2020**

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Treatment / Formulation	Rate	Timing	Application Dates
1. Actara Sivanto Prime	5.5 oz./A 14.0 oz./A	PF, 1C Pink	20 May, 1 June 23 April
2. Actara Sivanto HL	5.5 oz./A 7.0 oz./A	PF, 1C Pink	20 May, 1 June 23 April
3. Actara	5.5 oz./A	PF, 1C	20 May, 1 June
4. Actara Lorsban	5.5 oz./A 4.0 pt./A	PF TC	20 May, 1 June 15 April
5. Harvanta 50SL	22.0 fl.oz./A	Pink, PF-1C	25 April, 20 May, 1 June
6. Actara Venerate**	4.0 oz./A 3.0 qt./A	PF, 1C Pink	20 May, 1 June 25 April
7. Actara Esteem	4.0 oz./A 128.0 fl.oz. /100	PF, 1C 1 <sup>st</sup> gen SJS Emg.	20 May, 1 June 26 June
8. Actara	4.0 oz./A	PF, 1C	20 May, 1 June
9. UTC			

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Applications specifically timed for emergence of SJS crawlers. All insecticide calculations (presented as amt/A) are based on a standard dilution of 300 gal/A trees. Applications made using an airblast Slimline Tower sprayer mounted to a John Deere 5525 traveling 2.27 mph, delivering 53 GPA at 150 psi.\* LI-700 @ 0.25%. \*\* Nu-Film @ 0.25%

**Evaluation of Insecticides for Controlling Insect Complex on Apple \***  
**Hudson Valley Research Laboratory, Highland, NY - 2020**

Trmt. / Formulation	Rate	Incidence (%) of insect damaged fruit							
		PC	EAS	TPB	AMP	AMT	SB	SJS	Clean
1. Actara	5.5 oz./A	18.3 b	0.3	2.8	15.8 ab	12.5 ab	2.0	14.0 ab	35.0
Sivanto Prime	14.0 oz./A								
2. Actara	5.5 oz./A	16.3 b	0.3	1.3	16.3 b	10.8 b	1.0	15.5 ab	36.3
Sivanto HL	7.0 oz./A								
3. Actara	5.5 oz./A	12.0 b	0.3	4.3	27.0 ab	19.0 ab	0.3	23.0 ab	29.3
4. Actara	5.5 oz./A	18.5 b	0.3	2.8	26.3 ab	18.3 ab	1.5	1.0 b	38.5
Lorsban	4.0 pts./A								
5. Harvanta 50 SL	4.0 qt./A	33.5 ab	0.0	2.3	17.0 ab	12.5 ab	0.8	33.3 a	29.5
6. Actara	4.0 oz./A	16.6 b	0.3	5.0	23.3 ab	14.6 ab	1.3	12.1 ab	37.2
Venerate**	3.0 qt./A								
7. Actara	4.0 oz./A	15.8 b	0.0	5.5	13.3 b	9.0 b	0.5	7.0 ab	40.8
Esteem									
8. Actara	4.0 oz./A	22.8 ab	0.0	4.0	26.0 ab	17.8 ab	1.5	20.3 ab	27.3
9. UTC		54.3 a	0.5	0.5	51.0 a	39.1 a	1.3	15.3 ab	9.1
P value for transformed data		0.0036	0.7442	0.4356	0.0325	0.0267	0.9199	0.0270	0.0960

\* Evaluation made on 'Red Max' cultivar on 27 August. Applications specifically timed for emergence of SJS nymph. All insecticide calculations (presented as amt/A) are based on a standard dilution of 300 gal/A trees. All insecticide dilutions based on 300 GPA. Data were transformed using arcsine(sqrt(x)) prior to ANOVA (P ≤0.05). Means separation by Tukey-Kramer HSD (P ≤0.05); treatment means followed by the same letter are not significantly different. Arithmetic means reported. \* LI-700 @ 0.25%. \*\* Nu-Film @ 0.25%

Additional studies dating back to the days of Rick Weires and Dick Straub and be found under the Tree Fruit menu at <https://blogs.cornell.edu/jentsch>.



**Facebook Me**



**Jon Clements**

17h · 🌐



Who's this little guy showing up already???



Peter Mitchell, Arthur Kelly and 10 others

12 Comments

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**Scott Palmer**

There are many stem borers but I don't think that is black stem borer that goes into heart wood.

Like · Reply · 4h



Write a comment...



## 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>

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 13, 2021. 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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