



Healthy Fruit, Vol. 30, No. 2, April 12, 2022

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor

### Current degree day (DD) accumulations



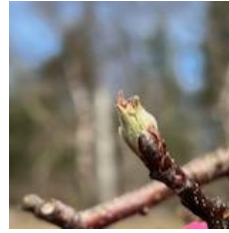
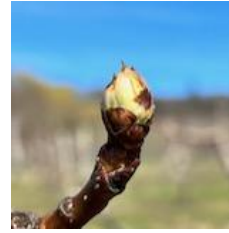
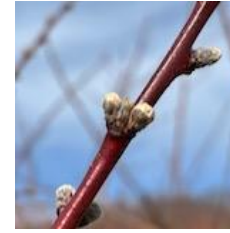
UMass Cold Spring Orchard, Belchertown, MA (NEWA, since March 1)	11-April
Base 43 BE	124
Base 50 BE	47

### Upcoming pest events

Pest	DD's Base 50 F. BE	Recommendation
San Jose scale (adult)	36-129	Apply oil
European red mite (hatch)	51-129	Apply oil
Obliquebanded leafroller (larvae)	90-109	Monitor for larvae presence
Aphids (1st egg hatch)	109	Monitor, if rosy apple aphid present apply insecticide at open cluster through pink

### Current bud stages

Current bud stages. 11-April, 2022, UMass Cold Spring Orchard, Belchertown, MA (more current bud stages [here](#))

				
McIntosh apple <i>Green tip +</i>	Honeycrisp apple <i>Early green tip</i>	Gala apple <i>Green tip +</i>	Crispie pear <i>Swollen bud +</i>	Redhaven peach <i>Bud swell +</i>

## Upcoming meetings

**Every Tuesday at noon** - UMass Fruit Team Open Office Hour

<https://umass-amherst.zoom.us/j/97190816203> Bring your own lunch.

**Tuesday, April 19, 2022, 4:30 PM** - UMass Fruit Team Twilight Meeting, UMass Cold Spring Orchard, 393 Sabin Street, Belchertown, MA. 1 pesticide recertification credit. (There will be a \$20 per person charge for those requesting pesticide credit. Donations gladly accepted.) A light supper will be served. *Note the 4:30 start time!* Agenda to include orchard walk and entomology (rosy apple aphid, scale, pear psylla), pathology (apple scab, brown rot) and horticulture (peach pruning, prohexadione-calcium application at pink) topics.

**Wednesday April 20, 2022, 12:00 PM** - UMass Fruit Team Grape Noon Zoom with Dr. Elsa Petit

Use this link to join:

<https://umass-amherst.zoom.us/j/99828717909?pwd=NUhWZkZnNlZ6Z3pMZUJRRFhqcE9Mdz0> (Note this will be a grape-centric meeting, we don't expect to discuss tree fruit topics.)

**Wednesday, May 4, 2022, 4:30 PM** - UMass Fruit Team Twilight Meeting, Mann Orchards Riverside Farm, 445 Merrimack Street, Methuen, MA. Details forthcoming. 1 pesticide recertification credit. A light supper (BBQ!) will be served. *Note the 4:30 start time!*

**Wednesday, May 18, 2022, 5:30 PM** - URI/UMass Twilight Meeting, Spencer Morris's Orchard, Warren, RI. Details forthcoming.

## The way I see it

Jon Clements

This WILL be your last Healthy Fruit (HF) Electronic Subscription, unless you go to the UMass Extension Bookstore (<http://umassextensionbookstore.com>) and purchase a new 2022 subscription to HF (\$65, e-mail delivery only). Alternatively, 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 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 5, 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/97190816203>

Above average temperatures are predicted for the remainder of the week, and it should be drying out a bit. Ideal week to **plant trees**. Early planting allows roots to get established, extends the growing season, will result in earlier flowering (if they have any flowers) and less fire blight risk (assuming it only gets hotter as early summer approaches). Ideal planting timeline: dig planting trench or holes, fertilize planting trench with MAP (mono-ammonium phosphate, but you should be doing a soil test too, if P is high or soil is very acidic skip MAP; but if soil is very acidic now is also the last best time to adjust pH with lime in the planting trench or holes), install posts and support wire, plant trees, install drip irrigation and water immediately, fertilize at strong bud break with calcium nitrate.

## Entomology

Jaime Pinero

*European Red Mite*. 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.



Masses of European red mite eggs may be laid together. 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.

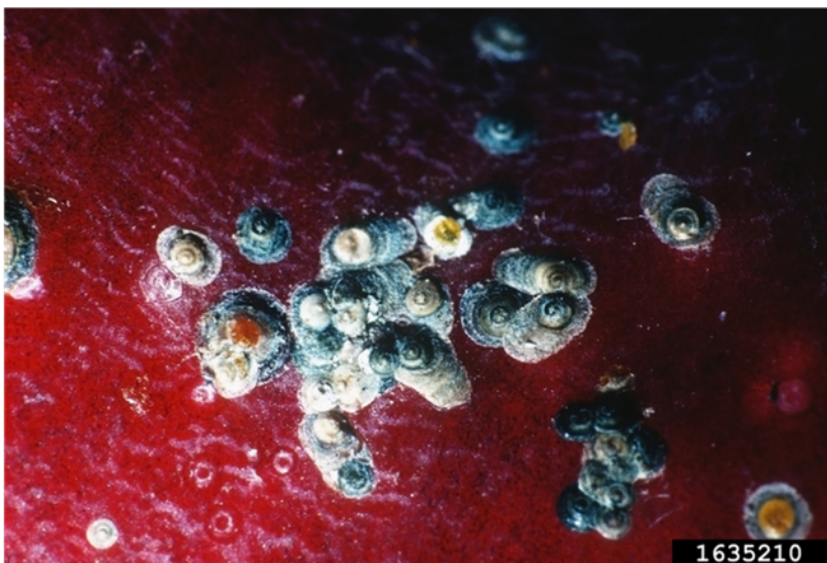
European red mite eggs may be evaluated in the dormant period up to prepink. Inspect with a hand lens the bases of twigs and spurs on the 5 to 10 selected trees. Look for clusters of tiny (less than 1/50 inch), red spheres. If overwintering eggs are easily visible, especially to the unaided eye, then a prebloom application of oil or a miticide-ovicide is recommended to prevent mite injury through June

Control. Horticultural oil is recommended to control overwintered eggs. Rate: 2 gal/100 at the green tip through half-inch green stage, or 1 gal/100 at tight cluster.

Phytotoxicity is more likely if horticultural oils are applied in sprays concentrated more than 3x. Use 2 gal. oil per 100 gal. for application between green tip and tight cluster. Do not use it within 24 to 48 hours before freezing temperatures, or if temperature is below 35F following a freeze.

*San Jose Scale.* Three major factors promoting SJS infestations are: its high number of potential host plants (over 700 species); high female fecundity (potential for 100–400 nymphs/female); and an absence of effective natural controls in commercial orchards subjected to standard pesticide programs.

Early-season populations can be monitored by either checking adult male emergence or crawler emergence. For adult males, pheromone traps should be placed in trees with known active populations (if any) at the pink stage. Crawlers can be monitored by wrapping black electrical tape that has been coated with petroleum jelly around infested branches. The tape should be inspected daily with a hand lens until active crawlers are found.



San Jose scales are disk-shaped (females) or oval (males) and are composed of concentric rings of gray-brown wax radiating from a tiny white knob.



The decision to treat is usually based on finding infested fruit at the previous year's harvest. At harvest, examine 50 fruits per tree on 2 trees per acre and treat in the following year if you find more than 0.1% fruit with SJS injury.

Control. Established, heavy San Jose scale populations are difficult to manage and may require dormant or delayed dormant oil application and insecticide application targeting crawlers. These should be applied at a high volume to completely wet the wood surfaces. For best results, apply horticultural oil (3 gallons per 100 gallons of water for heavy infestation; otherwise use 2 gallons per 100 gallons of water) around half-inch green. Pre-bloom sprays are more effective if applied dilute, at higher volume. For severe infestations, combine oil with Esteem 35WP.

## Pathology

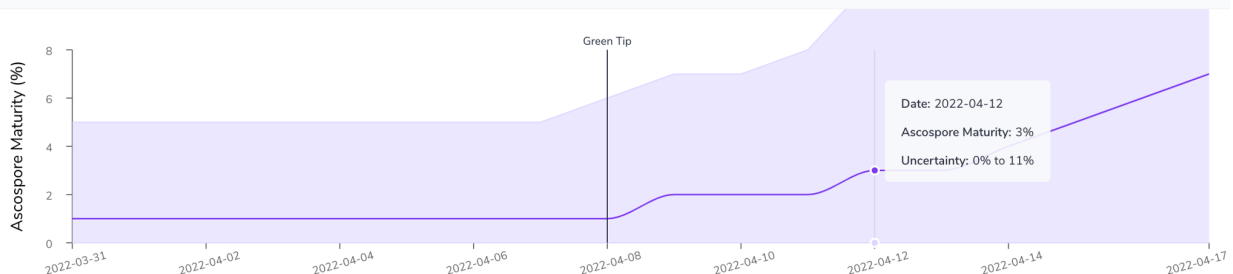
Elizabeth Garofalo

NEWA currently estimates ascospore maturity to be at 3%. Numbers of spore shot in the funnel trap are increasing but none were found today in the petri plate assay. Spore density on forced release remains low, field pressure, especially in clean blocks should also be low. I suspect, however, with temperatures on the rise and largely above historical average) and moisture plentiful (in line with historical average precipitation), the spore picture will likely shift quickly over the next few days.

The Ascospore Maturity degree day model begins at 50% green tip on McIntosh flower buds. To recalculate ascospore maturity for your orchard, enter your green tip date.

Green Tip Date

Ascospore Maturity Graph



# Horticulture

Jon Clements

## 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 Perlman 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

Early season applications to improve fruit size and control bitter pit in apple.



[Posted](#) on April 11, 2022 by S. Sherif



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### Prohexadione calcium to reduce bitter pit incidence:

- Shoot growth reduction by prohexadione calcium (PC) early in the season (at Pink) can significantly reduce bitter pit incidence in ‘Honeycrisp’ apples.
- PC applications at pink also reduce the incidence of shoot/fire blight.
  - Use at the rate of 6 oz/acre.
  - PC should not be mixed with calcium or boron.
  - Adding a non-ionic surfactant (e.g., Regulaid or LI700) to the tank increases the efficiency of PC applications.
  - If the water source contains high levels of calcium carbonate (hard water), add spray-grade ammonium sulfate (AMS) to the spray tank at a rate of (1 lb AMS to 1 lb PC) or according to the product label.
  - Don’t spray if rain is expected within 8h of application.
  - Both Kudos and Apogee are PC products labeled for use at the pink stage.

### Calcium applications

- Between 15-50 lb of calcium chloride ( $\text{CaCl}_2$ ) should be added per acre per year to reduce bitter pit incidence. In other words, 2-8 pound/cover spray.
  - Early season applications of calcium (starting @Pink) are more critical than late-season applications.
  - Foliar applications of Ca nitrate are not recommended for Delicious and York. They might cause cork-spot-like symptoms.
  - Avoid  $\text{CaCl}_2$  applications at temperatures above 75 oF or under slow drying conditions (e.g., early morning) as this might cause damage to the foliage, especially in sensitive apple cultivars (e.g., Idared and Golden Delicious).
  - Soil applications of Ca are not efficient.
  - Boron deficiency may reduce Ca movement in the tree.

### Boron applications

- Boron is an essential element for flower development and fruit set, and boron deficiency can negatively affect yield and fruit size.



– Boron is also crucial for Ca movement, and Boron deficiency may lead to Ca-deficiency disorders, including bitter pit.

- Maintenance rate: 0.5-1 lb of Boron/acre (2.5 – 5 lb of Solubor/acre)
- Apply at Pink stage, a tank mixed with calcium chloride.
- OR, 7-10 after petal fall; or with the first cover spray.
- Research at WA state showed a significant positive relationship between splitting in Gala and fruit boron content. So, it is recommended to use the lowest rate of boron with Gala.

### Urea applications

Foliar applications of urea at bloom (3 lb/100 gal) and at petal fall and early cover sprays (5-6 lb/100 gal) can promote cell division, especially for Gala. These applications are particularly important when king blooms, which usually give the largest fruit, are lost to frost.

### 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/jmcectman>)

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

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

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

The next Healthy Fruit will be published on or about April 19, 2022. 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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