



Healthy Fruit, Vol. 29, No. 2, April 13, 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 March 1)	12-April
Base 43 BE (NEWA, since March 1)	217
Base 50 BE (NEWA, since March 1)	107

According to the NEWA Degree Days prediction, by April 19 (next Monday) we will have reached 256 DD's Base 43 BE. McIntosh bud stage should be approaching open cluster then.

Current bud stages

Current bud stages. 11-April, 2021, UMass Cold Spring Orchard, Belchertown, MA

				
McIntosh apple Late 1/2-inch green	Honeycrisp apple Late 1/2-inch green	Gala apple Early tight cluster	Crispie pear Bud burst	Redhaven peach Early 1/2-inch green

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

Upcoming pest events

Coming events	Degree days (Base 43 BE)
Green apple aphids present	111-265
Green fruitworm peak flight	91-226
Obliquebanded leafroller larvae active	158-314
Pear psylla 1st egg hatch	174-328
Rosy apple aphid nymphs present	134-244
McIntosh tight cluster	204-256

Upcoming meetings

April 13, Tuesday - Fruit Twilight Meeting via Zoom. 5:30 PM. Pre-registration required. One pesticide recertification credit. Topics include spotted lanternfly, early season orchard pest

management. Maybe a horticulture topic, TBD. Pre-register here:

https://umass-amherst.zoom.us/meeting/register/tJwqfu-hpj0iGNJrP_IMQSjvKime-c8nnkKi

Wednesday, April 14, 2021

Pick-Your-Own Revisited hosted by UConn Extension

Beginning at 7 pm

Free, registration NOT required. Join us using the following link:

<https://uconn-cmr.webex.com/uconn-cmr/j.php?MTID=mea833c098d80c07e0be5b6a4f59fb17f>

The way I see it...

Jon Clements

- This WILL be your last Healthy Fruit (HF), unless you go to the UMass Extension Bookstore (<http://umassexextensionbookstore.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 Today, 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-c8nnkKi Hope to see you there!

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

[Weekly report of insect pest captures in monitoring traps at Cold Spring Orchard \(Belchertown, MA\)](#)

Period: 4.6 - 4.12.2021

Insect	Average captures/trap	Notes
Tarnished plant bug	0	Unbaited white sticky cards
European apple sawfly	0	Unbaited white sticky cards
Plum curculio	----	Odor-baited traps to be deployed 4.15.21

Tarnished plant bug (TPB). In early April, graduate student Prabina Regmi deployed 153 unbaited white sticky cards in 10 orchards blocks in MA. The first TPB was captured on April 6, 2021 in one block not located at CSO. As of April 12, very low numbers of TPB have been captured in 3/10 orchard blocks. [None of those blocks is located in the Belchertown area; therefore, the table above presents zero TPB captures.](#) This trapping system is part of the grafting project. Updates will be provided throughout the year.

This week, Prabina is deploying 60 more sticky cards, in other apple blocks, as part of another field experiment aimed at evaluating selected plant volatiles for attractiveness to TPB and European apple sawfly.

Plum curculio (PC). Odor-baited black pyramid traps will be deployed in three blocks at CSO. For 9 years (2000-2005, 2018-2020), we have been monitoring the onset of PC activity using the same type of traps. We expect to have the first PCs captured when approximately 216 DD base 43 have accumulated. For PC, we continue to accumulate DD 43 not using the BE system. As of 4.12.2021, 178 DD43 have accumulated. Given that comparatively low temperatures will prevail for the next 10 days or so, then I would expect the first PCs to show up in about 2 weeks.

European apple sawfly (EAS).

Key aspects of EAS biology. Adult emergence from the spoil is well synchronized with the bloom period; the first adults usually show up at the pink stage. Adults feed on pollen or nectar of apple flowers. It has been shown that, in larger trees, EAS adults are attracted first to the top of the trees and then moved down the trees for egg-laying, particularly on the south side. Hence, the recommendation of setting up non UV light-reflecting white sticky cards at eye level. The first larval instars mine the fruitlet superficially, leaving a typical meandering scar on the epidermis of the growing fruitlet. Third-instar larvae move to a nearby fruitlet and burrow towards the seeds on which they feed

Monitoring. White sticky traps should be fully exposed to sunlight. A minimum distance of 50 yards between traps is suggested. Captured specimens should be carefully examined, because white sticky traps attract other sawfly species, such as *Hoplocampa* species from nearby pear or plum trees.

Does EAS have natural enemies? Only parasitic wasps in the family Ichneumonidae have been reported to parasitize EAS. *Lathrolestes ensator* is the usual larval parasitoid of EAS in European orchards. The flight of *L. ensator* starts when the flight of the adult EAS is almost over because this wasp targets the developing EAS larvae. This parasitic wasp was released in Canada around 1995-1999 (i.e., 5 consecutive years) by Agriculture and Agri-Food Canada in collaboration with CABI Bioscience Centre. Parasitism levels of >80% were reported by Dr. Charles Vincent and his team (2016) in Canada.

Is control of EAS needed in MA orchards? The need to apply insecticides against EAS adults before bloom is a difficult decision to make, as it largely depends on observations from the previous year. However, if a drastic reduction of ASF populations is needed, a pre-bloom application of an adulticide can be made, followed by a larvicidal treatment post-bloom. Remember, the goal of IPM is not to kill every single pest in an orchard, but to keep pest populations below damaging levels.

Action threshold. The need for pesticide application is based on cumulative captures from pink to petal fall. The action threshold is an average cumulative capture of 4-5/trap by petal fall in blocks receiving no pre-bloom insecticide

Level of apple fruit injury by EAS recorded in the 2020 harvest survey. Very low levels of EAS injury (0.16% on average) were recorded in 6 out of 11 commercial orchards located in MA (6), NH (3), and ME (1).

EAS information is based largely on Vincent, C.; Babendreier, D.; Swiergiel, W.; Helsen, H.; Blommers, L.H.M. 2019. A review of the Apple Sawfly, *Hoplocampa testudinea* Klug (Hymenoptera: Tenthredinidae). Bull. Insectol. 72: 35–54.

Diseases

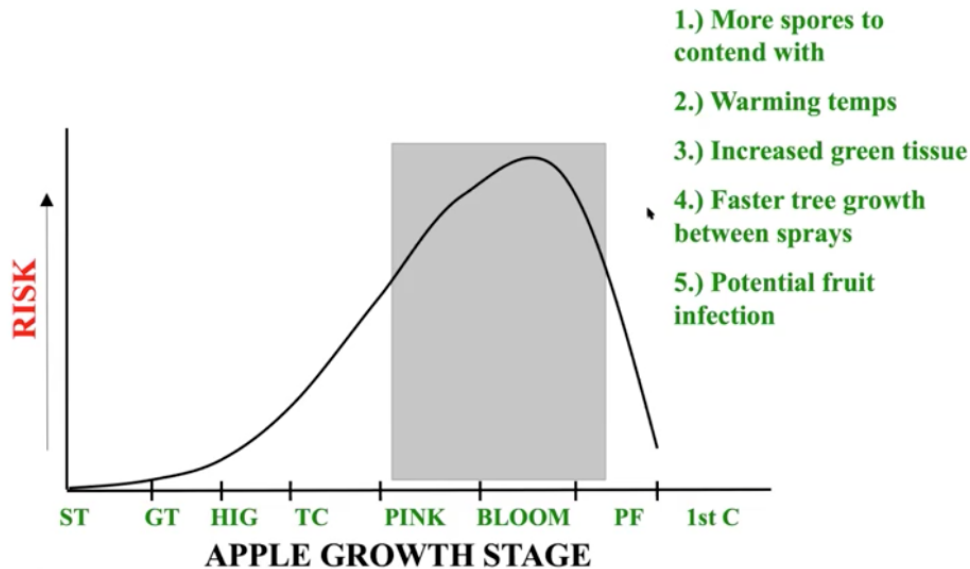
Liz Garofalo and Dan Cooley

Apple scab

As we know, every year is different. Still, it's worth looking at the general pattern of scab risk in order to decide how risk averse you want to be. The graph below, put together by George Sundin from Michigan State University based on Dave Rosenberger's original concept, shows the different growth stages in apples and the risk of scab infections. In an average season, risk in a normal orchard starts to go up from low at tight cluster, and is at its highest from pink

through petal fall. By normal, we mean scab the previous year was well controlled. George lists the reasons for increased risk, including more ascospores, warm weather making shorter infection periods, more leaf surface area, more growth between sprays and towards the end, the potential for fruit infection.

Pink to Petal Fall: in general, a higher inoculum timing



The take-home message from this is that the best scab fungicides should be focused on the pink through petal fall period. We'll talk more about what these are next week. Also, spray timing should be conservative. Get fungicides on BEFORE a predicted infection, and don't stretch spray intervals. (You should also consider using a decision support tool such as the apple scab models in NEWA or RIMpro.) Of course, the other part of the message is that risk is relatively lower now.

Does that mean that it's ok to be casual with green tip through tight cluster sprays? No. That's because even a little bit of infection early in the season can explode to produce a lot of new spores and new infections for the rest of the year. An early scab infection will produce far more conidia (is that secondary infection?) than last year's leaves on the ground will produce ascospores.

This is the time of year to use one of a few different options. **Captan plus mancozeb mix**, (2.5 lb./A Captan 80 plus 3 lb./A of a mancozeb product) is relatively inexpensive and effective. **Vanguard or Scala** are systemic, and so less susceptible to wash off in heavy rain. Also, this is a good time of year to use these Group 9 fungicides, because they're not that effective against fruit scab, but quite good against leaf scab. Mix one of them with either captan or mancozeb.

Syllit plus mancozeb is also a very effective early-season combination. Try to get these early season sprays on before a rain.

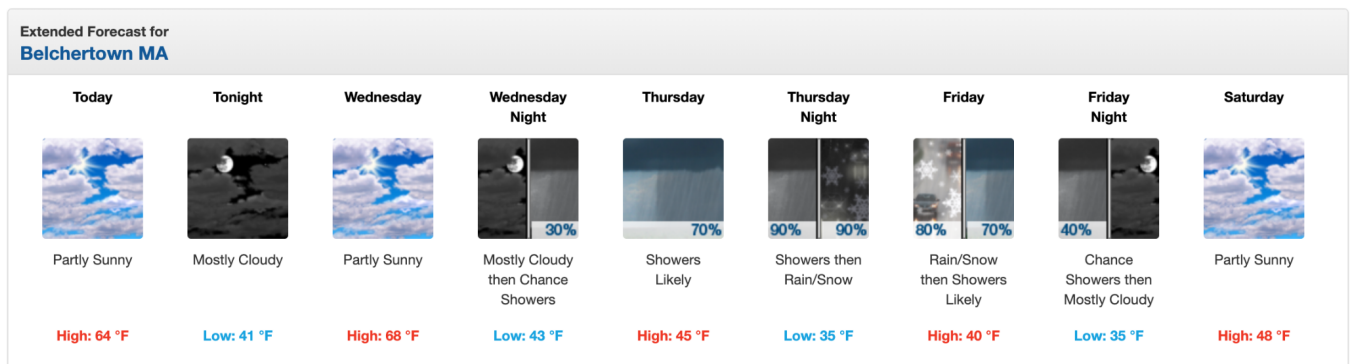
The Present Scab Picture

The weather, both past and predicted over the next few days, indicate that when it rains, probably Thursday and Friday, there is some risk of scab infections but it will be low.

Why? In part, because baby, **it's dry outside**. Wicked dry. Ascospores don't develop much in dry weather. Which may account for the lack of observed ejected spores in this week's lab tests.

Date	Ascospore Observation Method and Spore Count	
	Petri Plate Assay	Funnel Trap
3/26/2021	0	0
4/1/21	0	0
4/5/21	121	125
4/12/21	0	0

As of April 13, 2021, Belchertown has received 0.33" of rain for the month of April, Deerfield (the location of the closest weather station to the home lab) has only received 0.10" of rain in April. So far this year, Belchertown is down 4.81" from the average annual precipitation accumulation and Greenfield (home lab location) is down 2.54". Prolonged dry conditions cause ascospore maturation to slow, and if the dry continues for long enough, maturation comes to a grinding halt. This neat little trick allows the pathogen to prolong its (primary inoculum) life by waiting until conditions are more conducive to infection at which time the maturation process picks back up and spores are once again readily available. All that is needed is a little rain...

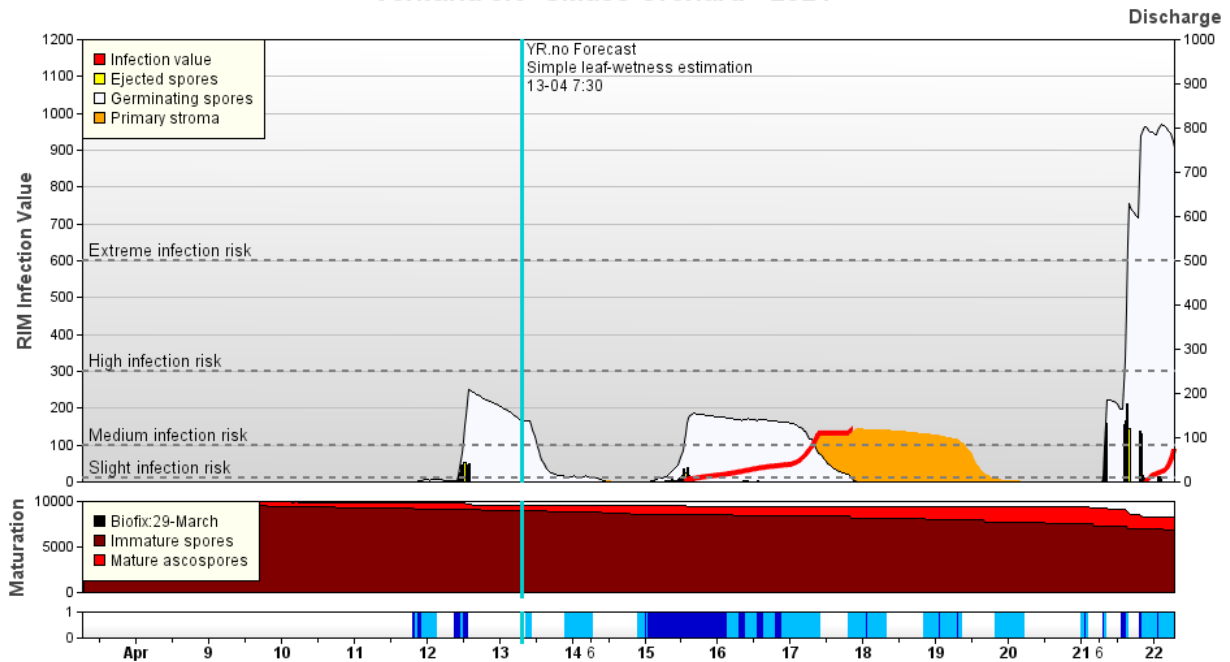


NOAA's forecast for Belchertown, MA (as of 11:00am Apr 13) estimates rain on Wednesday beginning with a "slight chance" around 6pm and steadily increasing in likelihood through Thursday, 9am when we see the forecast calling for "likely" rain and a total of 0.92" of estimated

precipitation through Friday evening. And just to keep things interesting, there is a chance of snow showers early Friday am as well. Based on the percent chance shown in the image above, NOAA estimates our best chance for precipitation to occur Thursday night into Friday morning. After watching these predicted rain events come and go over the years, I'd hazard to guess we will indeed see a little precipitation Thursday night. Fingers crossed!

Current **apple scab forecasts**; (as of 4-13-21, noontime) [RIMpro](#) currently predicts an infection beginning on Apr. 15 and continuing through the 17th. The RIM (relative infection measure) exceeds "medium" on the morning of the 17th but never reaches the "high". The "high" infection level is the line at which we consider the event to be significant, even in a "clean" orchard.

Venturia 3.0 UMass Orchard - 2021



[NEWA](#) indicates the estimated upcoming infection event will begin on Apr. 14 and last through Apr. 16 with a total potential seasonal ascospore discharge of 4%.

Another reason risk is low is that it will be cold. Look at the predicted average temperatures Thursday through Saturday, and they're struggling to reach 45 F. That means wetting periods have to go for a while, 15 to 35 hours, for infections to develop. And if it snows and sticks, that seals off ascospore release.

NEWA Apple Disease Models

Select a disease:
Apple Scab

State:
Massachusetts

Weather station:
Belchertown-2

Date of Interest:
4/13/2021

Map
Results
More info

Apple Scab Results for Belchertown-2

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 Summary

	Past	Past	Current	5-Day Forecast					Forecast Details
Date	4/11	4/12	4/13	4/14	4/15	4/16	4/17	4/18	
Ascospore Maturity	5%	5%	6%	8%	9%	9%	10%	11%	
Daily Ascospore Discharge	0%	1%	0%	0%	3%	1%	0%	0%	
Cumulative Ascospore Discharge	<1%	2%	2%	2%	6%	7%	7%	7%	

[Ascospore Maturity Graphs](#)

Infection Events Summary

	Past	Past	Current	5-Day Forecast					Forecast Details
Date	4/11	4/12	4/13	4/14	4/15	4/16	4/17	4/18	
Infection Events	No	No	No	Combined	Combined	Yes	No	No	
Average Temp (F) for wet hours	46	45	55	53	44	36	37	42	
Leaf Wetness (hours)	5	8	1	5	24	15	9	4	
Hours ≥90% RH	12	3	0	0	0	14	7	2	
Rain Amount	0.01	0.08	0.00	Trace	0.07	Night 82% Day 36%	Night 5% Day 4%	Night 9% Day 18%	

Download Time: 4/13/2021 10:00

Bottom line, given the relatively low inoculum potential at this time, cool prevailing temperatures, and recent lack of rain, **predicted apple scab infection risk is low.**

Powdery Mildew infection is currently low. While relative humidity is forecast to reach upwards of 93% over the next few days, this is forecast to occur when temperatures are below the 50°F base line for infection to occur.

Read more on powdery mildew management in the [New England Tree Fruit Management Guide](#)

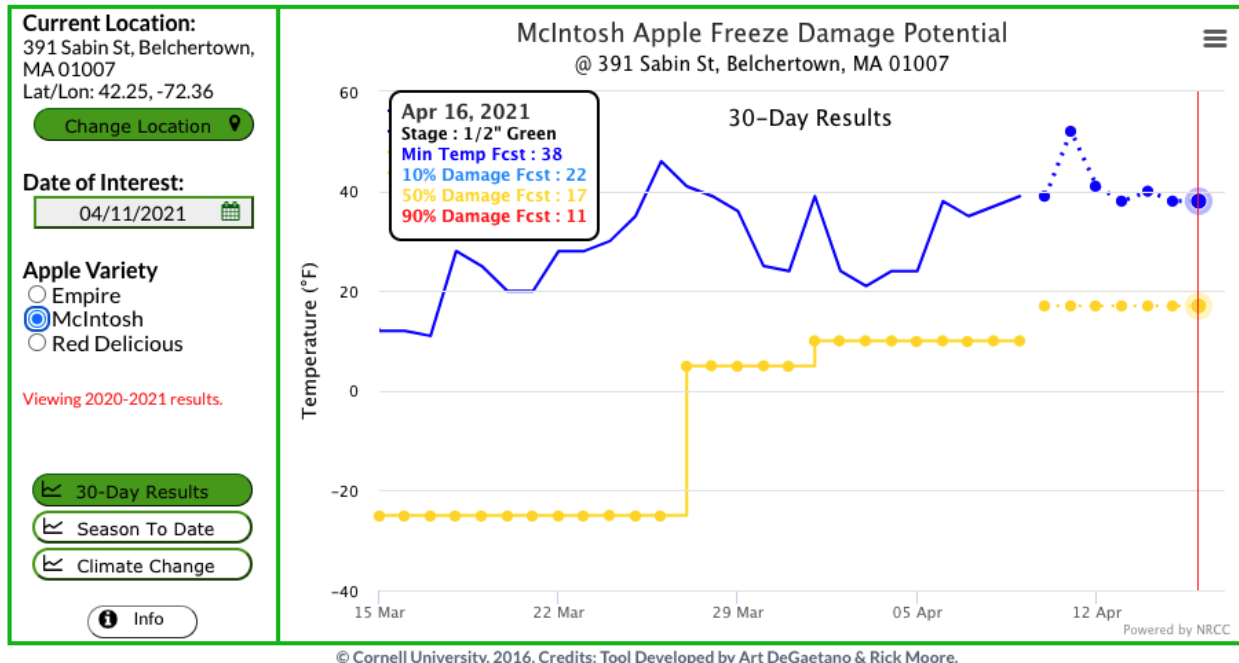
Horticulture

Jon Clements

Pre-bloom foliar nutrient “cocktail” for apples consists of nitrogen, zinc, and boron applied late tight cluster to pink. The generic recommendation is: 3 lb. urea per 100 gallons, solubor at 1 lb. per 100 gallons, and zinc at label rates. Many commercial formulations of nitrogen, boron, and zinc are out there. This cocktail strengthens buds during a time of cooler weather when nutrient uptake and photosynthesis are more limited. It is recommended for all apple varieties through the pink bud stage. For more details, see [UMass Fact Sheet F-126 Prebloom Nutrient Applications for Apple Trees](#).

Planting tall-spindle apple trees? Pay attention to and adjust soil pH prior to planting, should be around 6.5. A soil test should indicate adequate phosphorus, if low or deficient apply P fertilizer and work into the root zone. Should tree roots be soaked in water prior to planting? Probably not necessary unless extremely dry roots, but if it makes you feel better, soak for no longer than 24 hours. Make sure the graft union ends up well above ground level, 3-4 inches. I like to say “roots go in the ground, that is it.” Be wary of tree sinkage as the planting soil settles. Support and irrigate ASAP. Fertilize with calcium nitrate (4 oz. per tree) as soon as buds break. Oh, and never, ever head tall-spindle apple trees, but do remove (with a stub cut) branching that is too large, too few, or anything that will take away from leader growth. If feathers are kept, tied down to horizontal or just below.

Early bud development is worrisome as the risk for frost or freeze damage to buds is greater. It's a luck of the draw, hopefully no very cold Canada/Hudson Bay high pressure over the next few weeks. Keep an eye on it, I like (or maybe not like?) to check into Climate Smart Farming [CSF Apple Stage/Freeze Damage Probability](#). Right now, as of April 11, things look good in Belchertown, CSF says (see below) we are at McIntosh 1/2 inch green (maybe we are a little farther along than that?) and the forecast through April 16 says we will still be at 1/2 inch green (hmmm?, check back daily) with a minimum temperature forecast of 38 F. with corresponding bud kill temperatures of 25/10% damage, 21/50% damage, and 18 for 90% damage. Looking good for us with a prolonged period of cooler weather with clouds and showers that will slow down bud development. Keeping fingers crossed as we get into late April and early May. Keep in mind, if damage is forecast during the bloom period, an application of Promalin at 1-2 pints per acre within 24 hours of the frost/freeze event can help minimize the damage, see the [Promalin label](#) for more application details.



An early season pre-emergent herbicide application is the backbone of a season-long weed-free zone under our rows. A succinct write-up by Michael Basedow, CCE-ENYCHP in their Tree Fruit E-Alert ~ April 10, 2021 is quoted below, why re-invent the wheel?

Orchards benefit greatly from spring weed control, as weeds compete heavily with the trees for water and nutrients during the critical weed free period from May through July.

A good start to your weed management program would be to prevent weed seedling germination with a pre-emergent herbicide. To get the most out of pre-emergent materials, they should be applied early enough in the spring before many weed seedlings have had the chance to germinate. If there are already some weeds out, a burn-down material should be used alongside the pre- to knock back the existing vegetation.

There are a number of pre- and post- emergent herbicide products available. Some commonly used pre-emergent products labeled for use in apple include Alion (cannot be used until 3 years post planting), Matrix (1 year post planting), Prowl, Sinbar, Simazine (1 year post planting), Solicam (1 year post planting), Surflan, and Sandea (1 year post planting). Some post-emergent burn-down materials include Gramoxone, Rely (1 year post planting), Aim, and Venue (do not allow contact green, un-calloused bark).

Options are more limited for newly planted orchards, but Prowl, Surflan, and low rates of Sinbar can be used for pre-emergent control in the year of planting, and Gramoxone and Aim are labeled for use in the year of planting for post emergent burndown. Many materials have tree age restrictions, soil type restrictions, etc. For all of these materials,


follow label instructions carefully to minimize the risk of injury to your trees. Every effort should be made to keep the spray materials from contacting the trees.

The products you choose should depend on the weed species mix in your orchard. To help identify weeds in your orchards, I recommend picking up a copy of [Weeds of the Northeast](#). Once you know your problem weeds, you can utilize the [herbicide selection tool](#) to help choose products that will provide the most control/suppression of your weed species mix. (Keep in mind this table hasn't been updated in a few years, so we highly recommend triple checking the labels of products you are planning to use.) Remember that most pre-emergent products will have little effect on well-established perennial species, so adequate, season-long suppression of perennials will likely require multiple management tactics, including the use of well-timed systemic materials when the weeds will be most susceptible to them.


Guest article




No Guest article this week...

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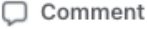

 **Róbert Tobak** ▶ Fruitconsult BV Randwijk
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Ice damage without protection
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


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 **Ivan Cortella**
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Useful links

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

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UMass Fruit Loop IPM Podcast

Scaffolds Fruit Journal: <http://www.nysaes.cornell.edu/ent/scaffolds/>

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 20, 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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