



Healthy Fruit, Vol. 28, No. 13, June 16, 2020

Prepared by the University of Massachusetts Amherst Extension Fruit Team

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Current degree day accumulations

| | |
|---|---------|
| UMass Cold Spring Orchard, Belchertown, MA (Since January 1) | 15-June |
| Base 43 BE (NEWA, since January 1) | 1,006 |
| Base 50 BE (NEWA, since January 1) | 586 |

Upcoming pest events

Adapted from [Scaffolds Fruit Journal](#)

| Coming events | Degree days (Base 43 BE) |
|---------------|--------------------------|
| | |

| | |
|--|-----------|
| Black stem borer 1st flight peak | 635-901 |
| Codling moth 1st flight subsides | 866-1260 |
| Lesser appleworm 1st flight subsides | 1002-1538 |
| Lesser peachtree borer flight peak | 809-1734 |
| Obliquebanded leafroller 1st flight peak | 851-1214 |
| Oriental fruit moth 1st flight subsides | 823-1094 |
| Pear psylla 2nd brood hatch | 967-1185 |
| San Jose scale 1st generation crawlers present | 1033-1215 |
| Spotted tentiform LM 2nd flight starts | 980-1155 |

Upcoming meetings

UMass, MDAR, and Mass Cultivated Blueberry Growers Association- PYO for Massachusetts Blueberry Farms. Wednesday, June 17, 2020 - 6:00pm to 8:00pm

This webinar will provide an overview of state guidance on good practices for PYO blueberry operations during the 2020 season given the Covid-19 Pandemic. It is co-sponsored by the Massachusetts Cultivated Blueberry Growers Association, UMass Extension and the Mass Dept. of Ag Resources. We will go over the main points of guidance in the MDAR 2020-16 PYO Bulletin as it applies to Blueberry Farms, provide some examples of how some farms are set up and field questions from attendees.

Register in advance for this meeting:

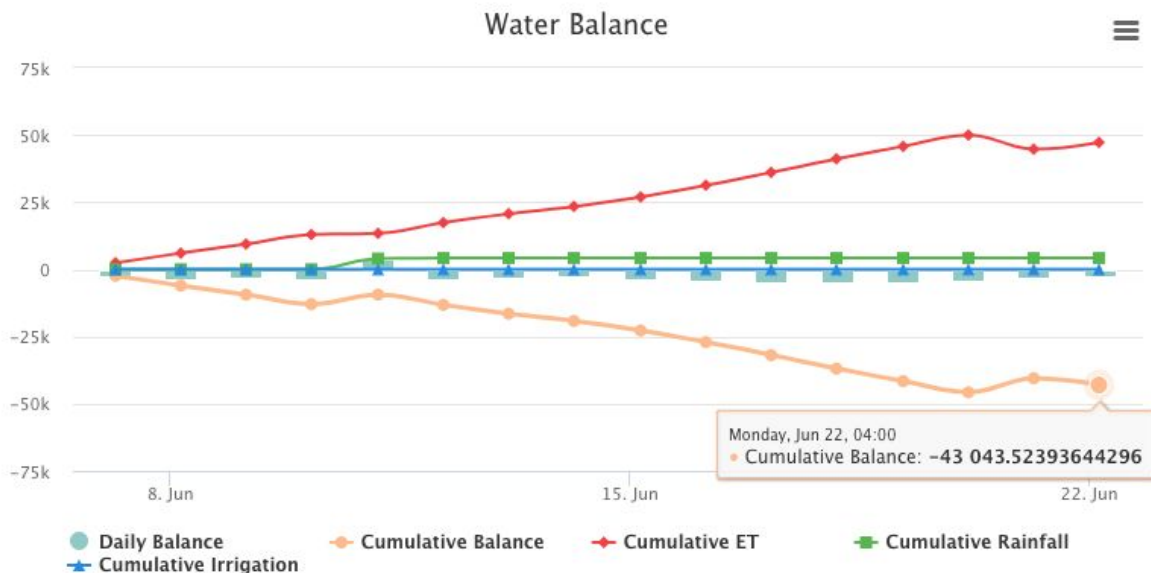
https://umass-amherst.zoom.us/meeting/register/tJllc-qprD4rHN29rBY6D-OBZf-z1_sHx-LI4

The way I see it...

Jon Clements

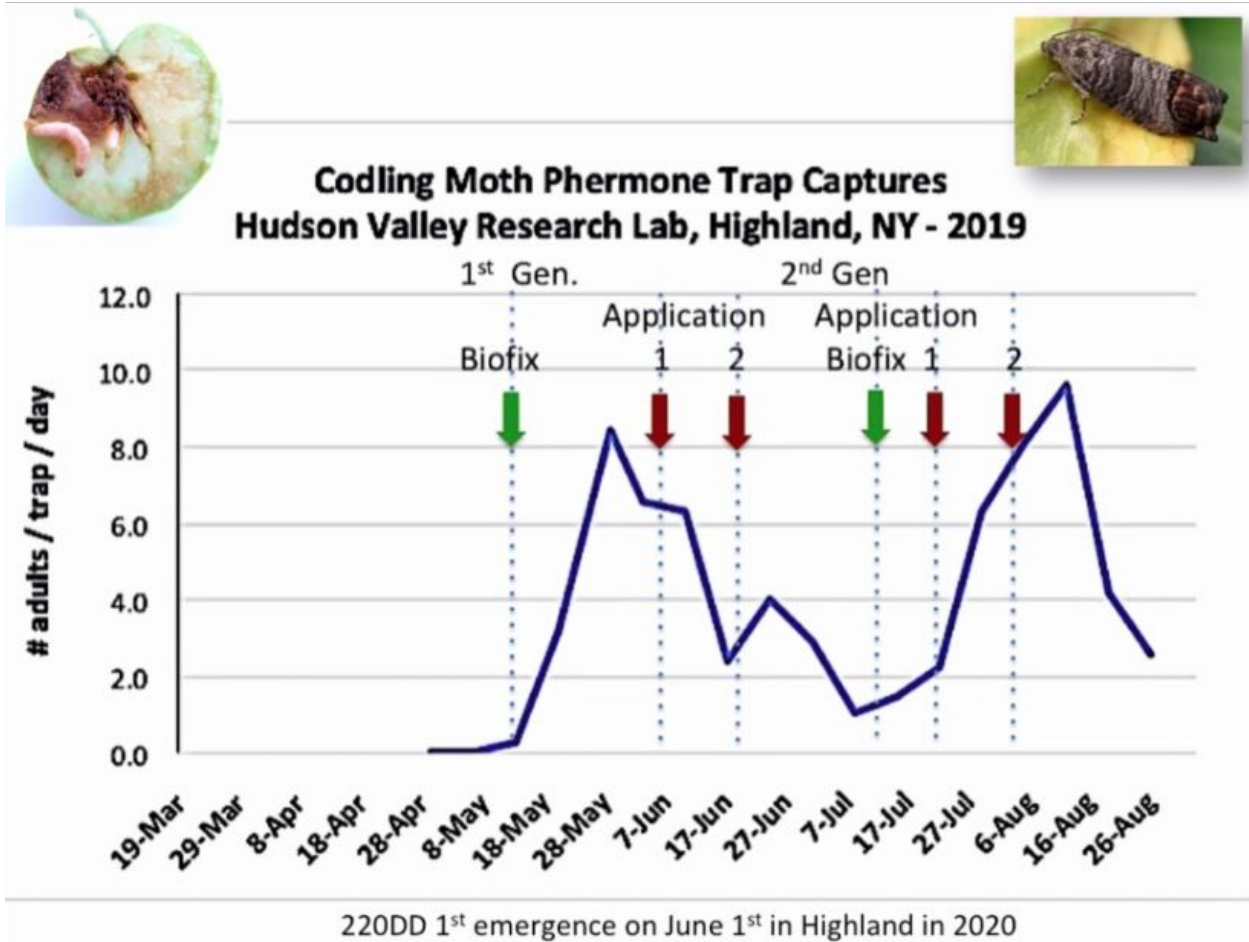
Sound bite edition for the [UMass IPM Fruit Loop Podcast](#)

- The way I see it is not too cool, but what're you going to do? Ramification of iffy pollination weather, maybe some frost/freeze damage, overzealous chemical thinner applications during a heat wave when fruit were most susceptible to thinners has resulted in a less than desirable crop in many locations. Honeycrisp really seems to have taken it on the chin this year. It's hard to make money on $\frac{2}{3}$ of a crop, but maybe this year will be a good year to have less apples? Be sure to call your crop insurance agent if you suspect a yield reduction on account of the weather. Oh well, there is always next year. Whoo-hoo, that was a long sound bite!
- Irrigate as necessary, be sure to not over-water, but I am thinking that is not going to happen until we start to get some rain again. According to the NEWA Crop Management Apple Irrigation Model in one week in Belchertown the cumulative water balance -- in this case deficit -- will be 43,000 gallons per acre. It would take about 2.5 inches of rain to erase this deficit. Not going to happen anytime soon...



Water Balance for UMass Orchard, Belchertown, MA from malusim.org (data retrieved from NEWA Apple Irrigation Model)

- I'm staying away from insects, but wait, can't help myself on this one only because it's a good depiction of when second codling moth spray should go on if necessary. Soon. Two back-to-back sprays of Altacor would be the go-to for this generation.



Codling moth snapshot courtesy Peter Jentsch, Cornell University Hudson Valley Lab

Insects

Jaime Piñero

Weekly report of insect pest captures in monitoring traps at CSO (Belchertown, MA)

[Period: 6.9 - 6.15](#)

| Insect | Average captures/trap | Notes |
|--------|-----------------------|-----------------------|
| RBLR | 0 | Pheromone-baited trap |
| OFM | 14 | Pheromone-baited trap |
| CM | 0 | Pheromone-baited trap |

| | | |
|-----------------------------|---|-----------------------|
| Spotted tentiform leafminer | 9 | Pheromone-baited trap |
| Obliquebanded leafroller | 1 | Pheromone-baited trap |

First captures of obliquebanded leafroller (OBLR) at the UMass Cold Spring Orchard.

In Belchertown, the first OBLR was caught in a pheromone-baited trap on June 15th. We will frequently examine the traps to set the BIOFIX (first sustained captures). Once the BIOFIX is set, we will use a degree-day model to determine when OBLR eggs are hatching. The newly emerged larvae is the stage that is most susceptible to insecticides.

Apply insecticide starting at 360DD (base 43°F) after BIOFIX.

At this moment (mid-June) first generation (summer) adults started to fly and females will soon start laying eggs. Newly hatched larvae will move to and feed on tender growing terminals, watersprouts, or developing fruit. As these larvae reach the third instar, they display an increasing propensity to damage fruit. This generation takes almost two months to complete development. The adult flight of the second generation occurs in August, and the subsequent larvae hatch in August and September. The second-generation larvae, which develop in late summer and fall, feed primarily on leaves although they may occasionally damage fruit.

Damage: OBLR larvae feed on fruit skin, often close to the apple stem or where two apples are in contact. OBLR larvae roll up leaves and hide in these shelters.

Note: OBLR has a propensity to develop resistance to some insecticides. A good long-term strategy for OBLR control is to rotate among several chemical classes. *Bt* (Dipel) is a good, inexpensive option, especially if the late afternoon temperatures climb above 70°F

Mites.

The European red mite is considered by many growers to be their most important and sometimes most difficult pest to control. In many cropping systems, like tree fruits, spider mites are secondary pests. They only become a management issue when pesticides are applied to control other pests. This is typically attributed to the non-target effects of many pesticides on spider mite natural enemies, especially predatory mites, which result in disruption of biological control.

Early mite populations in June can significantly reduce photosynthesis, resulting in lower fruit size and quality, requiring mite management.

Sampling. Sample leaves on a weekly basis, especially during hot summer months when numbers can increase and exceed thresholds very quickly. Although mites commonly occur in greater numbers on trees in sheltered areas and next to dusty roadways, always sample equally from all parts of blocks. Take separate samples for each orchard block or treatable area. Red Delicious, Empire and Gala tend to support the largest mite populations. Sample these cultivars, along with orchard blocks with a history of mite problems.

Beneficial mites can delay or prevent the need for a miticide application, so be sure to note their presence during monitoring.

Action thresholds:

JUNE: 1-2 motile (not eggs) mites per leaf or 30% of leaves with one or more mites.

JULY: 5 mites per leaf (examine middle aged leaves for motile mites).

AUGUST: 7.5 mites per leaf.

Effective miticides: The New England Tree Fruit Management Guide lists several products that provide excellent mite control. Some miticides (e.g., Zeal, Agri-Mek® SC) have both contact and translaminar properties, meaning that the active ingredient penetrates the leaf tissue and forms a reservoir of active ingredient within the leaf.

| IRAC | PRODUCT | RATE/ ACRE | REI- HOURS | PHI- DAYS | EFFICACY | COMMENTS |
|------|---------------|--------------------|---------------|--------------|----------|--|
| 6 | *Agri-Mek SC | 2.2 to 4.2 fl. oz. | 12 | 28 | High | Add horticultural oil (not dormant oil). |
| 10A | Apollo 4SC | 4 to 8 fl. oz. | 12 | 45 | High | Tank mixing with oil improves control. Primarily an ovicide. |
| 10A | Onager 1EC | 12 to 24 fl. oz. | 12 | 28 | High | One application per season. Primarily an ovicide. |
| 10A | Savey 50DF | 3 to 6 oz. | 12 | 28 | High | One application per season. Primarily an ovicide. |
| 10B | Zeal 72WS | 2 to 3 oz. | 12 | 14 | High | One application per season. |
| 25 | Nealta | 13.7 fl. oz. | 12 | 7 | High | Apply at the first sign of mites, and before the population increases. Do not make more than 1 application before using an effective miticide with a different mode of action. |
| 12B | *Vendex 50WP | 1 to 2 lb. | 48 | 14 | Low | |
| 20B | Kanemite 15SC | 31 fl. oz. | 12 | 14 | High | |
| 21A | Nexter 75WS | 4.4 to 5.2 oz. | 12 | 25 | High | |
| 21A | Portal 0.4EC | 2 pt. | 12 | 14 | High | |
| 23 | Envidor | 16 to 18 fl. oz. | 12 | 7 | High | |
| none | Acramite 50WS | .75 to 1 lb. | 12 | 7 | High | |

Always read the labels as some products (e.g., Agri-Mek® SC) need to be mixed with a penetrating non-ionic surfactant, such as horticultural spray oil used at 0.25% to be effective. For Agri-Mek SC, do not use binder or sticker type adjuvants because these type adjuvants may

reduce translaminar movement of the active ingredient into the plant which could result in reduced performance.

Several miticides are limited to 1 application per season to delay pesticide resistance developing.

The predatory mite *Amblyseius fallacis*: In sprayed orchards this predatory mite generally assumes prominence because it is more tolerant of organophosphate-based spray programs than are many of the other species in the family. Several studies have shown that it was the only predatory mite to remain common in sprayed orchards throughout the year.

Populations of predatory mites (e.g., *Amblyseius fallacis*) populations can be monitored at the same time growers are scouting for spider mites since they occupy the same habitat. Initial populations in the spring may be assessed by selecting 10 apple leaves from suckers beneath each of 10 randomly selected trees in a block. Examine the surface for *Amblyseius* moving across the leaf surface. They move faster than pest mites. Research conducted in Michigan has yielded tentative thresholds for predicting success of biological control by *Amblyseius*:

- A ratio of predators to prey of at least 1:10 presents a good probability of biological control
- Higher ratios increase the probability of success, in particular on cultivars such as 'Red Delicious' where the mites are known to reproduce more.
- Lower predator to prey ratios (e.g., 1:20) may result in successful control on apple varieties that are less conducive to spider mite reproduction than 'Red Delicious'.

Spotted Wing *Drosophila* update

From June 1 to June 10, SWD captures have been more consistent, yet numbers are low. Here is the distribution of captures across treatments:

- **Scentry lure:** 8 females in 4 traps (i.e., four locations)
- **Diluted concord grape juice:** 3 females in 4 traps
- **Trécé lure A:** 1 female in 4 traps
- **Trécé lure B:** 2 females in 4 traps
- **Alpha Scents lure:** 0 SWD.

Diseases

Liz Garofalo and Dan Cooley

Apple scab and more dry weather. Eventually this primary scab season *will* end. One of three things will happen. We will either 1) get some rain and the spores will be released, 2)

temperatures will exceed what *V. inaequalis* can withstand and spores will die, or 3) conditions will remain dry for so long that the spores will die. The weather forecast for Deerfield on Thursday/Friday/Saturday puts temperatures into the low 90's with little to no rain in sight. This is hot enough to drastically decrease spore fitness. **Bottom line**, we still aren't out of the woods, but there is an end in sight.

| Ascospore Observation Method and Spore Count | | | |
|--|-------------------|--------------------|-------------|
| Date | Petri Plate Assay | Funnel Trap | Total Count |
| 3/31/20 | 0 | 0 | 0 |
| 4/7/2020 | 0 | 21 | 21 |
| 4/14/2020 | 1 | 0 | 1 |
| 4/20/20 | 162 | 117 | 279 |
| 4/28/20 | 95 | 44 | 139 |
| 5/5/20 | 89 | 1421 | 1510 |
| 5/12/20 | 259 | 5275 | 5534 |
| 5/18/20 | 205 | Too many to count* | 205* |
| 5/26/20 | 162 | 1967 | 2129 |
| 6/1/20 | 1060 | 6294 | 7354 |
| 6/8/20 | 259 | 4222 | 4481 |
| 6/15/20 | 144 | 3571 | 3715 |

Apple Scab Results for Deerfield

Primary scab season is over. Ascospores were essentially all released on June 11.

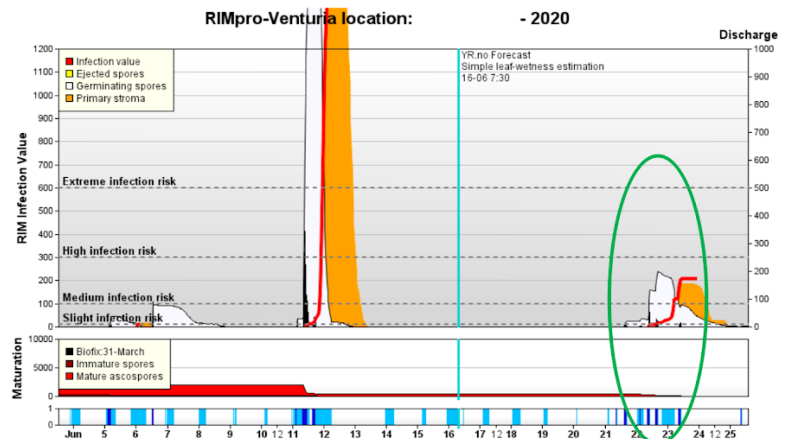
If you are unsure whether ascospores have been depleted in your orchard, enter your green tip date to recalculate ascospore maturity for your orchard.

Green Tip Date: 3/30/2020

[Ascospore Maturity Graphs](#)

| Infection Events Summary | | | | | | | | |
|--------------------------------|------|------|---------|----------------|------|----------------------|----------------------|----------------------|
| | Past | Past | Current | 5-Day Forecast | | | Forecast Details | |
| Date | 6/14 | 6/15 | 6/16 | 6/17 | 6/18 | 6/19 | 6/20 | 6/21 |
| Infection Events | No | No | No | No | No | No | No | No |
| Average Temp (F) for wet hours | 44 | 54 | 52 | 60 | 62 | 77 | 76 | 71 |
| Leaf Wetness (hours) | 7 | 6 | 9 | 1 | 7 | 2 | 2 | 5 |
| Hours ≥90% RH | 1 | 0 | 6 | 0 | 5 | 0 | 0 | 3 |
| Rain Amount | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Night 41% Day 28% | Night 44% Day 30% | Night 47% Day 40% |

Download Time: 6/16/2020 9:00

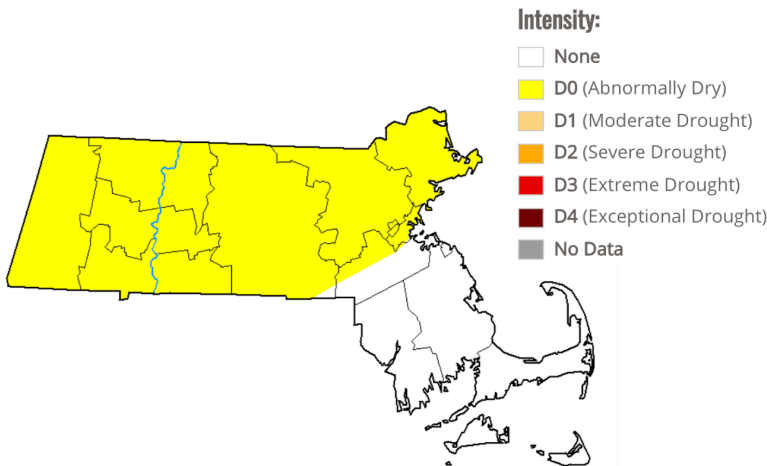


Left: NEWA's apple scab model estimates that primary scab season is over (red box). Right: RIMpro's apple scab model estimates at least one more infection period coming on June 22 (green oval) with a "medium" risk, and a two day combined RIM of 234.

Massachusetts

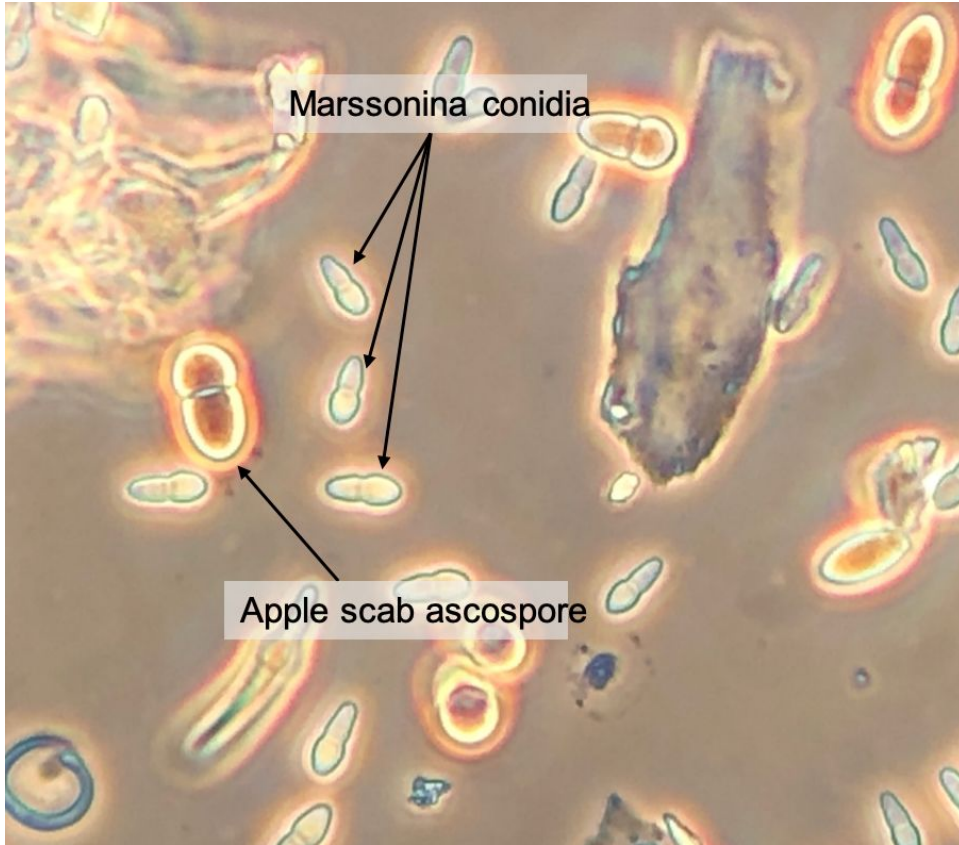
Map released: Thurs. June 11, 2020

Data valid: June 9, 2020 at 8 a.m. EDT



According to the National Drought Monitor, 73.38% of the state is currently experiencing "abnormally dry" conditions.

Marssonina leaf blotch can sneak in when we think it's an "easy" (i.e. dry, potentially lower fungicide use) scab year. While this disease has not taken our orchards by storm, care should be taken to keep it at bay to prevent further weakening of trees that may already be stressed as a result of "abnormally dry" weather conditions. Flint (FRAC 11) and Merivon (FRAC 7&11) have been shown to be effective against Marssonina, however, neither are labeled for management of this disease. Both of these materials are effective against **sooty blotch/flyspeck**, apple scab, **powdery mildew** (Flint only), and **black** and **white rot** and **bitter rot** (Merivon is "highly" effective here where Flint is "moderately" effective). Do with that information what you will while always keeping in mind the label is the law...



Actual apple scab ascospore density is higher than pictured above. See spore table for apple scab spore numbers. Marssonina spore density has not reached the same level as apple scab.

Horticulture

Some apple crop load snapshots. Courtesy of an unidentified orchard. I see from zero to five apples in the frame. Are we having fun yet? Enough said.





Small Fruit Update

[Sonia Schloemann](#)

Crop Conditions: Fields are still quite dry. Irrigation is the name of the game now.

Strawberries: Harvest is fully underway with PYO operations open under the new MDAR Guidelines. Farms have reported a big turnout of customers who are eager to be outdoors and picking fruit. Fruit quality is generally very good although some early varieties lost king blossoms to frost and secondary blossoms are producing smaller fruit. This will resolve as we get into later varieties. Some Day Neutrals (esp. 'Albion') are showing an odd symptom called [Phyllody](#). If you see this symptom, get in touch with us so we can help determine if it is the infectious or the non-infectious type of Phyllody.

Raspberries: Fruit is sizing and some early varieties are starting to show a hint of color. Irrigation will be important to hold and size that fruit until harvest. Primocanes are growing well.

Blueberries: Fruit is sizing and starting to show a pink or purple blush. Fruitset is pretty heavy so irrigation, again, is going to be very important to hold, size and ripen the fruit. Bird netting is going on as well as SWD netting for those using exclusion as a way of managing this pest.

Hawkeye's corner (notes from the field)

Liz Garofalo

Nothing new to report this week other than already discussed insects and diseases.

Guest article

Weed Control in Apple, Some Thoughts on Contact Herbicides

Win Cowgill, Professor Emeritus Rutgers University and Win Enterprises International, LLC

All recommendations in this article are based on federal labeling and New Jersey State labels. As many others in MA, NH, CT and NY will read this, check your state labels for registration. As Jon Clements says 'The label is the Law.'

Some General Comments on Tree Fruit Weed Control, focusing on apples:

- There is no substitute for a good pre-emergent weed control program consisting of both broadleaf and grass pre-emergent materials applied in a split application both spring and fall.
- All trees are susceptible to bark herbicide injury, especially young trees.
- 'Green Bark' is not just one one-year-old trees.
- All newly planted trees should be protected with a non-porous tree guard or white latex paint. I used to use repurposed milk cartons but you only get two years from them, you need protection through year five.
- I am liking more painted young tree trunks with full strength white latex paint. You protect against herbicide, rabbit and mice and you get southwest cold injury protection.
- I have one cost-effective grower solution using four inch black corrugated drainage tile, bought in 100 foot lengths or more, cut to length and slit on one side, slips right on the trunk.
- All herbicide spray water should be buffered and pH adjusted to 7.0 or lower.
- In a perfect world all perennial weeds are controlled one to 2 years prior to orchard establishment. Perennial weeds are best controlled in September prior to planting. If systemic herbicides are used in September in existing orchards the trees are highly susceptible to injury!
- Apply all herbicides with low pressures 20-25psi and use nozzles that produce large droplet sizes (air induction) to minimize herbicide drift.

- Do not use Glufosinate (Rely and generics). It should never be applied on apple or peach. See [last week's Healthy Fruit Horticulture](#).
- When using pre-emergent weed control in spring or fall, contact herbicides should be used if weeds are present, but note pre's always work better on bare soil.

Spring-summer Contact Herbicides

Perennial and annual emerged weeds are only controlled with the correct materials applied at the correct time.

Systemic contact herbicides

Glyphosate HRAC Group 9, Roundup and generics is not selective and will injure trees. Must be used before June 21 (summer Solstice) in the spring, after this it will cause injury to the tree via translocation through suckers. Repeat applications across the trunks (non protected) with an offset nozzle is known to cause cankers in the rootstock/trunk and tree decline.

2,4-D Weedar 64 and others is probably the most benign (injury to trunks/tree) systemic contact herbicide, it will only control broadleaf weeds, not grasses. Can be combined with other contact herbicides for more efficacy and a broader weed control spectrum of control of broadleaf weeds. Note - only spray in cool non humid weather the day of application and the next 2-3 days as well. Use the 150 rule: if the temperature + humidity total 150 do not use 2,4-D.

Select, Fusillade, Poast - are three similar but different chemistries that control emerged grasses systemically. The younger the grass seedling the more effective - in tree fruit must be used with a non-ionic surfactant.

Matrix and Sandea - post emergent control of nutsedge in spring, best split into two applications. Sandea is only labeled on apple. Also has some pre-emergent activity on other grasses and nutsedge, but when using for post-emergent control on nutsedge, it is too late for pre-emergent activity on some of the other grass species.

Clopyralid (Stinger/Spur*) - works as a systemic for Canada thistle and other select broadleaf weeds in mid-April when first emerging, but must be re-applied in 60 days for full season control. Should be applied with 2,4-D for best activity and should be applied to the sod middles as well to control the Canada thistle rhizomes growing in the turf. Clopyralid will also control

white clover in the turf to keep your insecticide applications to the orchard legal. Should be applied annually with 2,4-D to turf to eliminate broadleaf weeds that host viruses and control the clover, can be done spring or fall for this purpose. Clopyralid also has soil activity on the weeds it controls but does leach out, hence the need for second application at 60 days.

Fluroxypyr (Starane Ultra*) is a systemic herbicide that controls some hard to kill perennials as a burndown and has activity on apple root suckers.

*Both Stinger/Spur and Starane should be combined with 2,4-D. They have a narrow range of activity, see the label, what they work on they work well.

Contact herbicide

Paraquat (Gramoxone SL) - is a contact herbicide with burn-down activity only. Requires special training to apply legally. It is very toxic to humans by ingestion and full protective PPE must be used while mixing and applying. It is fairly benign to mature trunks, but would not apply to younger tree trunks without guards or painted trunks.

Sucker Control and other broadleaf weed burndown

Aim, Venue , Treevix - all enhance burndown of broadleaf weeds, added to 2,4-D, glyphosate, or gramoxone will enhance broadleaf weed control. I am out of time for full discussion, but all three have a place in orchard weed control, none of these should hit tree trunks 1-5 years old!

For a future issue I am working on a table to look at these all in one place with rates, PHI's, precautions, etc.....

Postemergence herbicide water solubility and soil adsorption characteristics (adapted from 2016 Rutgers Tree Fruit Production Guide)

| Herbicide | Solubility | Soil Adsorption |
|------------------------------------|---------------------------------------|-----------------|
| 2,4-D amine | Very High | Very Weak |
| Fusilade 2000 (fluazifop butyl) | Very Low | Very Strong |
| Gramoxone SL2.0 (paraquat) | Very High | Very Strong |
| Poast (sethoxydim) | Moderate to Very High ¹ | Moderate |
| Select (clethodum) | NA | Weak |
| Glyphosate products | Very High | Very Strong |
| Starane (fluroxypyr) | Moderate to High | Weak |
| Stinger (clopyralid) | Very High | Very Weak |

¹ pH dependant

Facebook Me

No particular Facebook Me posts of interest this week...well there are, but I care not to share here.

Useful links

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

[UMass Extension Fruit Team YouTube Channel](#)

[UMass IPM Fruit Loop Podcast](#)

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 June 23, 2020. 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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