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Contents

[Current degree day accumulations](#)

[Upcoming pest events](#)

[Orchard radar apple insect key dates](#)

[Upcoming Meetings](#)

[The way I see it](#)

[Insects](#)

[Diseases](#)

[Horticulture](#)

[Guest article](#): Integrated Preharvest Fungicide Programs for Brown Rot

[Useful links](#)

Current degree day accumulations

Location: UMass Cold Spring Orchard, Belchertown, MA

	8-July, 2013
Base 43	1736
Base 50	1200

Upcoming pest events

Coming events	Degree days (Base 43)
Apple maggot 1st catch	1243-1663
Apple maggot 1st oviposition punctures	1605-2157
Redbanded leafroller 2nd flight	1751-2000

peak	1554-2002
Dogwood borer flight peak	1460-1844
Lesser appleworm 2nd flight begins	1418-2002
Spotted tentiform leafminer 2nd flight peak	1377-1791
STLM 2nd tissue feeders present	1378-2035
Oblique-banded leafroller summer larvae hatch	1038-1460
Codling moth 2nd flight begins	1582-2256
Oriental fruit moth 2nd flight peak	1471-1989
San Jose scale 2nd flight begins	1620-1966

Orchard radar apple insect key dates

Here are insect key insect dates from [Orchard Radar, Belchertown, MA](#).

Dogwood borer first egg hatch roughly: June 26. Peak hatch roughly: July 27.

Codling moth (CM) Codling moth development as of July 9: 2nd generation adult emergence at 2% and 1st generation egg hatch at 99%. If targeted codling moth control is needed, key management dates are: 2nd generation 7% CM egg hatch: July 23, Tuesday = target date for first spray where multiple sprays needed to control 2nd generation CM.

Lesser appleworm (LAW) 2nd flight begins around: July 8, Monday.

Oriental fruit moth (OFM) 2nd generation - first treatment date, if needed: July 4, Thursday. 2nd generation - second treatment date, if needed: July 14, Sunday.

Redbanded leafroller (RBLR) 2nd RBLR flight begins around June 29, Saturday. Peak catch and approximate and approximate start of egg hatch: July 9.

Spotted tentiform leafminer (STLM) 2nd flight begins around: June 17, Monday. Rough guess of when 2nd generation sap-feeding mines begin showing: July 3, Wednesday. Optimum sample date for 2nd generation STLM sapfeeding mines is July 9, Tuesday. Second optimized sample date for 2nd generation STLM sapfeeding mines, if needed: July 15, Monday. Third optimized sample date for 2nd generation STLM sapfeeding mines, if needed: July 26, Friday.

White apple leafhopper (WAL): 2nd generation WAL found on apple foliage: August 3, Saturday.

European Red Mite (ERM) Optimum monitoring period for 3rd ERM generation is: Tuesday, June 25 (nymphs hatched) to Monday, July 1 (egg laying starts for 4th generation).

Upcoming meetings

<http://extension.umass.edu/fruitadvisor/upcoming-events>

WEDNESDAY, July 10, 2013: Summer Meeting of the Mass. Fruit Growers' Association in cooperation with the University of Massachusetts Fruit Program, Honey Pot Hill Orchards, 138 Sudbury Rd., Stow, MA. 10 AM to 2:30 PM. For meeting flyer and registration info, click here:

<http://massfruitgrowers.org/2013/2013summermeeting.html>.

The way I see it

Disease pressure is primarily on my mind. Secondary scab has become prevalent with very high disease pressure. I would think most apple growers are on a 7-10-day fungicide program for trying to keep scab off fruit and for summer diseases. Choose fungicides appropriately for both diseases -- Captan mixed with Topsin-M or any number of other fungicides labeled for both scab and summer diseases are appropriate. Try to rotate fungicide classes where possible, but consider always including Captan. See the [Guest Article](#) below for fungicide options for brown rot in ripening peaches.

If you get [hail](#), and have crop insurance, be sure to contact your crop insurance agent immediately.

If you still want to come to the 2013 Summer Meeting of the Massachusetts Fruit Growers' Assoc. on Wednesday, July 10 at Honey Pot Hill Orchards (Andrew Martin and family) in Stow, MA, you can probably still sign up on the Mass. Fruit Growers' Assoc. website: <http://massfruitgrowers.org/>. Or just show up and pay (check made out to Jon Clements Retirement) and we will probably be able to feed you.

Insects

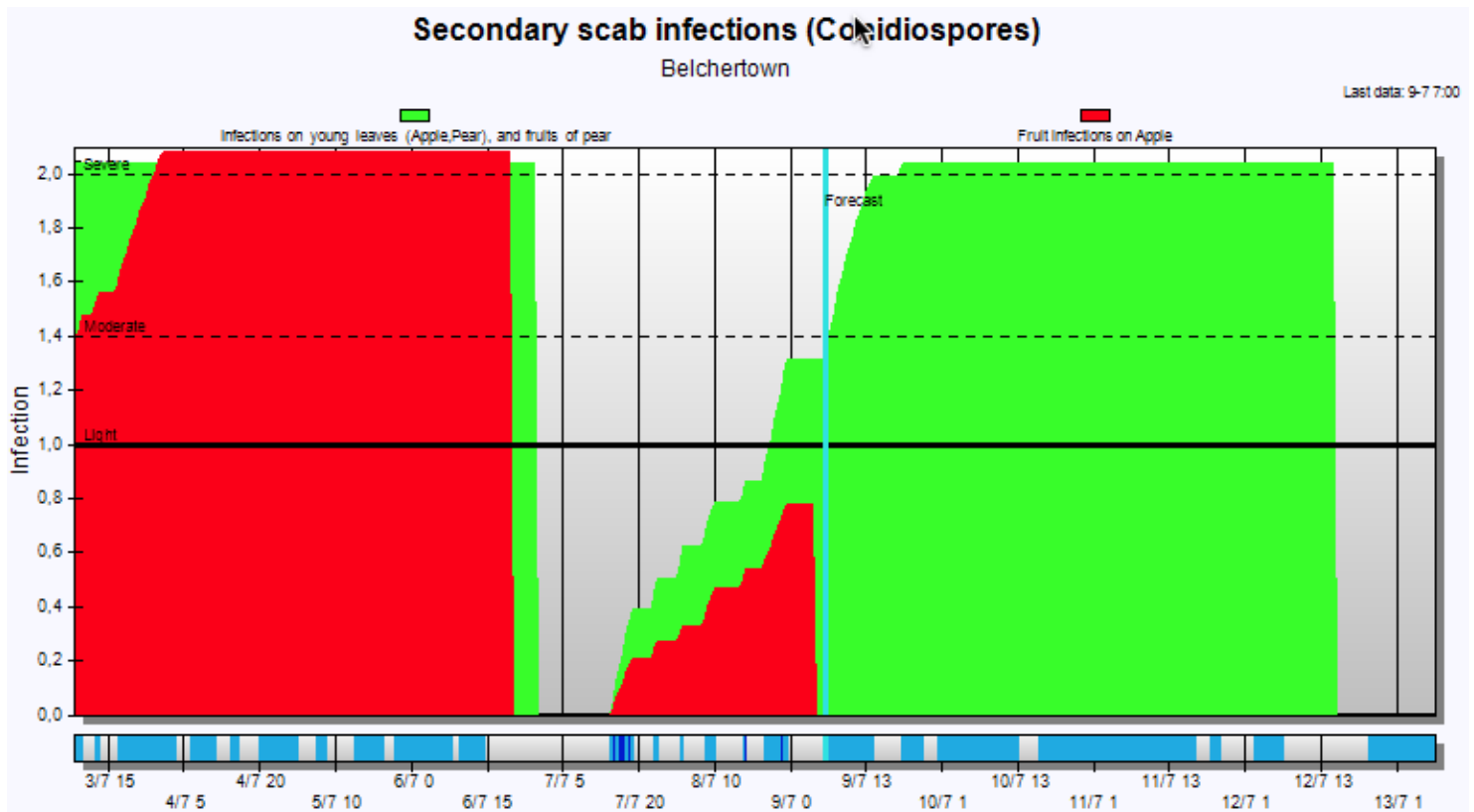
Insect activity situation is pretty much summed up above with [Orchard Radar](#). I would be on the lookout, and considering action on:

- **Apple maggot** should start becoming active, you know if you typically have a problem and treat with Imidan or other as necessary
- **Dogwood borer** trunk-directed Lorsban spray on dwarf trees with exposed burr knots
- **Oriental fruit moth** use Delegate where control is still necessary
- **European red mite** scout, numbers have been low with all this wet weather, and treat as necessary, many options, consult the [2013 New England Tree Fruit Management Guide](#)
- **Potato leafhopper** mostly absent, but keep scouting new plantings, many treatment options but Admire Pro very effective
- **Stink bugs** should become more noticeable and active, more of an issue on stone fruit, treat as necessary
- and **Japanese beetle** are hatching, most troublesome on young trees and Honeycrisp and peaches, treat as necessary with most any insecticide, repeat applications will probably be necessary; if hot, avoid pyrethroids, they don't last or work as well in hot weather

I hope everyone (including your all your staff) is on the lookout for **Brown Marmorated Stink Bug (BMSB)** this year. The UMass Fruit Program has just rolled out a new page on BMSB on the UMass Fruit Advisor, <http://extension.umass.edu/fruitadvisor/brown-marmorated-stink-bug>. I would appreciate knowing about any potential sightings/findings. (Picture would be helpful.)

Diseases

Secondary apple scab pressure is extremely high and I suspect most people are starting to see some secondary scab. Look at this chart of disease pressure -- which suggests SEVERE secondary scab infections on foliage and fruit -- from our RIMpro Web model:



For all fungicide spray options for scab and summer diseases, consult the [2013 New England Tree Fruit Management Guide](#). We suggest including Captan in all applications and at close to a full rate if secondary scab is of major concern.

Horticulture

Calcium should be included in all apple cover sprays and/or supplemental sprays now. Many courses of calcium are available, see [Foliar Calcium Sprays for Apples](#) for specifics.

Guest article: Integrated Preharvest Fungicide Programs for Brown Rot

by Norm Lalancette, reprinted from [Rutgers Plant & Pest Advisory](#), July 8, 2013

There was a time when selection of a fungicide for brown rot control was based solely on efficacy and cost of the product. However, the brown rot pathogen, *Monilinia fructicola*, has become resistant to DMI fungicides and to some extent QoI fungicides in many stone fruit growing regions in the eastern United States. This occurrence has underscored the need for a greater degree of integration of different fungicide chemistries as a resistance management strategy.

In developing fungicide programs for brown rot, one must recognize that the pathogen produces inoculum (spores) that is easily transported by wind or blowing rain. Although each cultivar may be planted in its own block, or row in the case of many farm markets, this inoculum will readily move between blocks or rows. Thus, the pathogen can be exposed to many successive preharvest fungicide sprays, even though each block or row is receiving only a few sprays.

For example, if 10 cultivars are going to be harvested in succession and each receives two-to-three preharvest sprays, then strains of the pathogen could be exposed to as many as 20 to 30 consecutive fungicide applications that season alone. Think of the New Jersey peach harvest season from July through September as one large epidemic.

Available fungicides. Three new fungicides (chemistry) were added this year to the 2013 New Jersey Commercial Tree Fruit Production Guide: Fontelis (SDHI), Merivon (QoI + SDHI), and Inspire Super (DMI + AP). These materials join the current arsenal of DMI, QoI, and SDHI fungicides that are available as either single or dual active ingredient products. The question is “How do we integrate all of these materials into programs that provide both excellent disease control and minimal risk of resistance development?”

In terms of brown rot control, there exists three main chemistries to integrate: DMI, QoI, and SDHI. The overall strategy is to rotate usage of these three chemistries throughout the entire harvest season so that each chemistry is approximately one-third of the total number of preharvest sprays. Possible programs consist of two types: single-active programs and combination dual and single active programs.

Single active programs. The simplest single active preharvest program consists of alternating products of the three types of chemistries. For example, the first preharvest application could be a QoI (Abound, Gem), the second application a DMI (Indar, Orbit, Orius, etc...), and the third application an SDHI (Fontelis). This same program would be repeated throughout the season for each successive cultivar harvest so that each fungicide chemistry was applied one-third of the total number of sprays.

As an example, a Gem / Indar / Fontelis program was applied at 17, 8, and 1-day preharvest, respectively, in our research test block during the 2012 growing season. This program provided 96% control of brown rot under heavy disease pressure (70% fruit rotted on non-treated controls). Given the choice of two QoIs and a variety of DMIs, many other programs are possible. Note that the final spray in the above program was applied prior to the first picking so as to provide protection during any infection events occurring between pickings.

Combination single and dual active programs. Many newer fungicides are dual-active products; that is, they have two active ingredients, each of a different chemistry. Currently, three types of dual active fungicides are available for brown rot control: DMI + QoI (Quadris Top); DMI + AP (Inspire Super); and QoI + SDHI (Merivon, Pristine).

To fulfill the three-chemistry strategy, one would be tempted to simply alternate the dual active material with a fungicide have a different single-active chemistry. For example, Pristine (QoI + SDHI) could be alternated with a DMI, such as Orbit (PropiMax, Bumper), for all preharvest sprays throughout the season. At first this program seems reasonable, and may work very well, but the DMI is being deployed alone 50% of the time (half the sprays).

Another perhaps better approach is to apply two applications of the dual active compound to every one application of the single active compound. Using the example above, the program would be Pristine / Orbit / Pristine for the three preharvest sprays. This reduces the single-active DMI to one-third of the sprays, the same exposure level as in the single-active programs. In this program the dual-active does have twice as much exposure, but this is acceptable given the two active ingredients are mixed. However, for this program to provide resistance management, both active ingredients in the dual-active must be active against *M. fructicola*.

Combination dual active programs. Examination of the available fungicides reveals that two combination dual active programs are possible: Inspire Super (DMI + AP) alternating with either Merivon or Pristine (QoI + SDHI). At first, these programs look interesting since they contain four chemistries. However, as stated in the previous section, both active ingredients in a dual active compound should be active against brown rot.

In the case of Inspire Super, the majority of control probably emanates from the DMI component, difenoconazole, not from the AP component, cyprodinil. The fungicide Vanguard, which contains cyprodinil as its active ingredient, does provide good blossom blight control but is not considered to be as active against the fruit rot phase; note Vanguard is only labeled for blossom blight control in the eastern U.S. Consequently, with respect to developing brown rot programs, Inspire Super should probably be viewed simply as a DMI fungicide rather than as a dual-active product.

Rates. If the label for an at-risk fungicide (single or dual active ingredients) lists a rate range, then application of a middle-rate is suggested as the starting point. This rate can be adjusted accordingly as one

gains experience with the product and program, or to compensate for favorable conditions, inoculum levels, etc... Unless results of field trials indicate otherwise, use the low end of the rate range with caution.

Protectant fungicides. Several protectant fungicides (PHI), namely sulfur (0 d), ziram (14 d), captan (0 d), and thiram (7 d) have low enough PHIs to allow one or more sprays during the preharvest period. However, these materials are generally not recommended for brown rot control during this period due to their low degree of efficacy.

For example, Captan 80WDG was applied during the 2012 preharvest period at 5 lb/A. Applications were made at 17, 8, and 1 day preharvest to the peach cultivar 'Suncrest'. Under heavy disease pressure (70% rot on controls), captan at this maximum label rate only provided 59% control of brown rot.

Program selection. A variety of integrated programs can be created using the above "rules" which are primarily designed to reduce selection for resistance. These programs will not necessarily be equal in their efficacy to control brown rot, nor is this necessary. Determining which program to apply is dependent on the needs of the orchard (e.g. inoculum level), the environment (weather conditions), and the cost of the program.

By examining fungicide efficacy tables, each program can be given a rating for control of brown rot. In most cases, a combination of fungicides have good to excellent ratings should suffice. The overall cost of each program can also be determined from current prices. One then selects the least expensive program that provides the degree of control needed. Finally, as always, read labels thoroughly prior to fungicide usage.

Useful links

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

UMass Fruit Notes: <http://umassfruitnotes.com>

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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UMass Vegetable & Fruit IPM Network (on Facebook, <http://www.facebook.com/umassipmteam>)

2013 New England Tree Fruit Management Guide (<http://fruit.umext.umass.edu/2013netfmg/>)

The next Healthy Fruit will be published on Tuesday, July 23 (in TWO weeks) or thereabouts, 2013. As always feel free to get in touch with any member of the UMass Fruit Team (<http://extension.umass.edu/fruitadvisor/team-members>) if you have questions or comments.