Volume 27, 2019

UMass Extension

Healthy Fruit

Prepared by the University of Massachusetts Fruit Program

Healthy Fruit, Vol. 27, No. 12, June 25, 2019

Jon Clements, Author (unless otherwise noted) and Editor

CONTENTS

CURRENT DEGREE DAY ACCUMULATIONS

UMass Cold Spring Orchard, Belchertown, MA	24-June
Base 43 (NEWA, since March 1)	1168
Base 50 (NEWA, since March 1)	675

UPCOMING PEST EVENTS

Coming events	Degree days (Base 43)
Black stem borer 1st flight subsides	832 to 1214
Cherry fruit fly 1st catch	755 to 1289
Dogwood borer 1st catch	751 to 1215
Lesser appleworm 1st flight subsides	1002 to 1538
Lesser peachtree borer fligth peak	879 to 1759
Obliquebanded leafroller 1st flight peak	846 to 1214
Obliquebanded leafroller summer larvae hatch	1038 to 1460
Oriental fruit moth 1st flight subsides	826 to 1098
Pear psylla 2nd brood hatch	967 to 1185
Peachtree borer 1st catch	781 to 1313
San Jose scale 1st flight subsides	864 to 1238
San Jose scale 1st generation crawlers present	1033 to 1215
White apple leafhopper 1st brood adults 1st peak	1162 to 1414

UPCOMING MEETINGS

July 10 (Wednesday). Massachusetts Fruit Growers' Association Summer Meeting. Sholan Farms, 1125 Pleasant Street, Leominster, MA. Details and registration here...

July 21-24, 2019. International Fruit Tree Association Summer Study Tour, Ontario, Canada. Details and registration here...

THE WAY I SEE IT

What have I been up to in the last week? Covering for various staff members on annual leave. Some personal time Monday. Healthy Fruit Tuesday. Tuesday evening, nice Essex County Fruit Grower's Association meeting at Cider Hill Farm, including nice tour of the Cook family's massive farm -- strawberry, blueberry, greenhouse tomato, apple, hand-thinning peaches, cider apples, and cider tasting with strawberry shortcake. Yum! Wednesday overnight in southwest Maine and visits to Libby and Son U-Picks blueberries, peaches, and apples. And Kelly Orchard, some nice mature Honeycrisp on M.26 rootstock that have been pruned by wholesale removing big branches, no heading cuts. Very nice! Stop at Mann Orchard in Methuen on way home to look at newly planted bench graft apple orchard, nice! Thursday escapes me, but we confirmed a fire blight strike (just one!) and nectria canker in a MA orchard. Friday afternoon sad attending Tyler Hardy wake in Nashua, NH, big crowd extending their sympathies and our condolences to Hardy family and friends. Monday worked on pruning cider grafts, trying to figure out what to do with leaders one foot apart! And that's about the way I see it this week, apple maggot fly may be making an appearance soon, weekly (app.) fungicide applications as long as it stays wet, cherries are ripening (SWD alert, although birds are getting them at UMass Orchard, my solution to biological control of SWD!), calcium and return bloom sprays should be ongoing. A new issue of Fruit Notes is coming out this week, if you do not already subscribe, you really ought to. You can subscribe here: http://ag.umass.edu/fruit/publications/fruit-notes

FYI, Healthy Fruit will not be published next week, we will go on an every-other-week schedule beginning on July 9. And that reminds me, it's taken a bit to get it together this year, but the MFGA summer meeting is on July 10 at Sholan Farm. Joanne Dinardo, MFGA president, and her farm staff promise a good time. The complete show is still TBA, but we will have two pesticide recertification credits for you and a nice BBQ lunch. Hope you can plan on making it, you can register (ASAP) here: http://massfruitgrowers.org/2019/2019summermeeting.html

Essex County Fruit Growers at Cider Hill Farm, Amesbury, MA. 18-June, 2019

NEW ENGLAND TREE FRUIT MANAGEMENT GUIDE

The New England Extension tree fruit specialists -- which include myself, Dan Cooley, Jaime Pinero, and Elizabeth Garofalo at UMass. Mary Concklin at UConn, Heather Faubert at URI, Terry Bradshaw at UVM, George Hamilton and Anna Wallingford at UNH, and Glen Koehler and Renae Moran at UMaine -- have officially launched, and updated for 2019 -- an online edition of the **New England Tree Fruit Management Guide**. Note that is it easy to print any of the sections, if you want to have 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 here: http://netreefruit.org. Finally, if you really, really want a printed version, order here: https://www.umassextensionbookstore.com/products/29.

INSECTS

Jaime Pinero

Monitoring OFM and other moths for biofix, peak flights, and seasonal moth densities

We know that pheromone traps can be used to determine adult emergence. This information can be combined with growing degree days to predict egg hatch, larval development, and optimal timing for control. Timing of treatment may depend on the type of insecticide. The information presented below applies to the second and subsequent moth flights - APPLE ONLY.

Trapping to assess moth thresholds.

A trap threshold is the number of moths captured in a trap indicating a population size at which economic damage will likely ensue if control methods are not implemented. For some moth pests, biofix information can also be used to determine when to spray based on pest densities.

Oriental Fruit Moth: Usually, if first-generation control was successful, then second-generation populations can be expected to be low.

Very low density OFM populations: If pheromone trap catches never exceed 3 moths per trap per week between 800 to 1,600 DD base 43 after biofix, then such very low-density orchards may not require an insecticide application.

Low-density OFM populations: 3 to 7 moths captured per trap per week between 800 and 1,500 DD base 43 (after biofix) will trigger a single insecticide application at 1,400 DD.

Moderate- to high-density OFM populations: Orchard blocks with damaged fruit and/or higher pheromone trap catches, may need two insecticide applications 14 days apart starting at 1,100 DD base 43.

Codling moth: If > 5 CM adults are caught per trap per week using standard lures, there can be problems in fruit from future generations. High trap counts are a warning to prepare for an application in 5-7 days. If trap counts continue to exceed threshold throughout the season, maintain insecticide coverage on a 2-week interval.

Oblique-banded leafrollers: No trap thresholds have been established for OBLR.

Trapping to establish a biofix for targeting moth eggs using cumulative Degree Days

Spray timing for Lepidopteran pests is directed at newly hatched larvae, since most insecticides are not effective at controlling adults. Keep in mind that there is a lag period for egg hatch after the moths fly.

The 'biofix' date is established when pheromone traps sustain a catch of two or more moths. For this, it is necessary to check monitoring traps often (at least three times per week). Begin to accumulate degree days at biofix. Once the biofix is determined, traps can be inspected once per week.

Oriental Fruit Moth: In Belchertown, the Biofix for OFM was set on 6 May 2019. On that date, we started accumulating DD (base 43°F). The start of the second flight of OFM is likely to be underway. According to PennState University, insecticides can be applied targeting the second-generation larvae when 1,450 – 1,500 DD have accumulated SINCE biofix.

Current DD accumulation in Belchertown (output of the NEWA DD Calculator) for OFM: the 1,450 – 1,500 DD threshold WON'T BE reached this week! It is too soon to apply a control spray against the second generation of OFM.

Degree Days (Base 43) for Belchertown-2								
	Past	Past	Current	5-Day Forecast			Forecast Details	
Date	Jun 22	Jun 23	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
Daily Degree Days	22	25	28	24	31	33	34	31
Seasonal Accumulation	862	888	916	940	970	1003	1037	1067

Codling moth: Insecticide sprays targeting the second-generation CM should be applied at 1260 DD (base 50°F) after biofix and 2 weeks later. However, 3 sprays may be needed if the first generation was not well controlled and trap counts continue to exceed threshold (> 5 CM per trap per week). Under low to moderate population pressure, 1-2 sprays will be necessary to control the second generation.

Oblique-banded leafrollers: In Belchertown, sustained catches of OBLR took place ca. 13 June 2019. This is the biofix. Next, we use the degree-day model to determine when OBLR eggs are hatching and most susceptible to insecticides.

Apply protective sprays with the first spray timed to coincide with the first hatch of larvae at approximately 360 DD base 43°F after biofix.

Current DD accumulation in Belchertown (output of the NEWA DD Calculator): the 360 DD threshold WILL be reached this week!

Degree Days (Base 43) for Belchertown-2								
	Past	Past	Current	5-Day Forecast			Forecast Details	
Date	Jun 22	Jun 23	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28	Jun 29
Daily Degree Days	22	25	28	25	31	32	34	31
Seasonal Accumulation	219	244	272	297	328	359	393	423

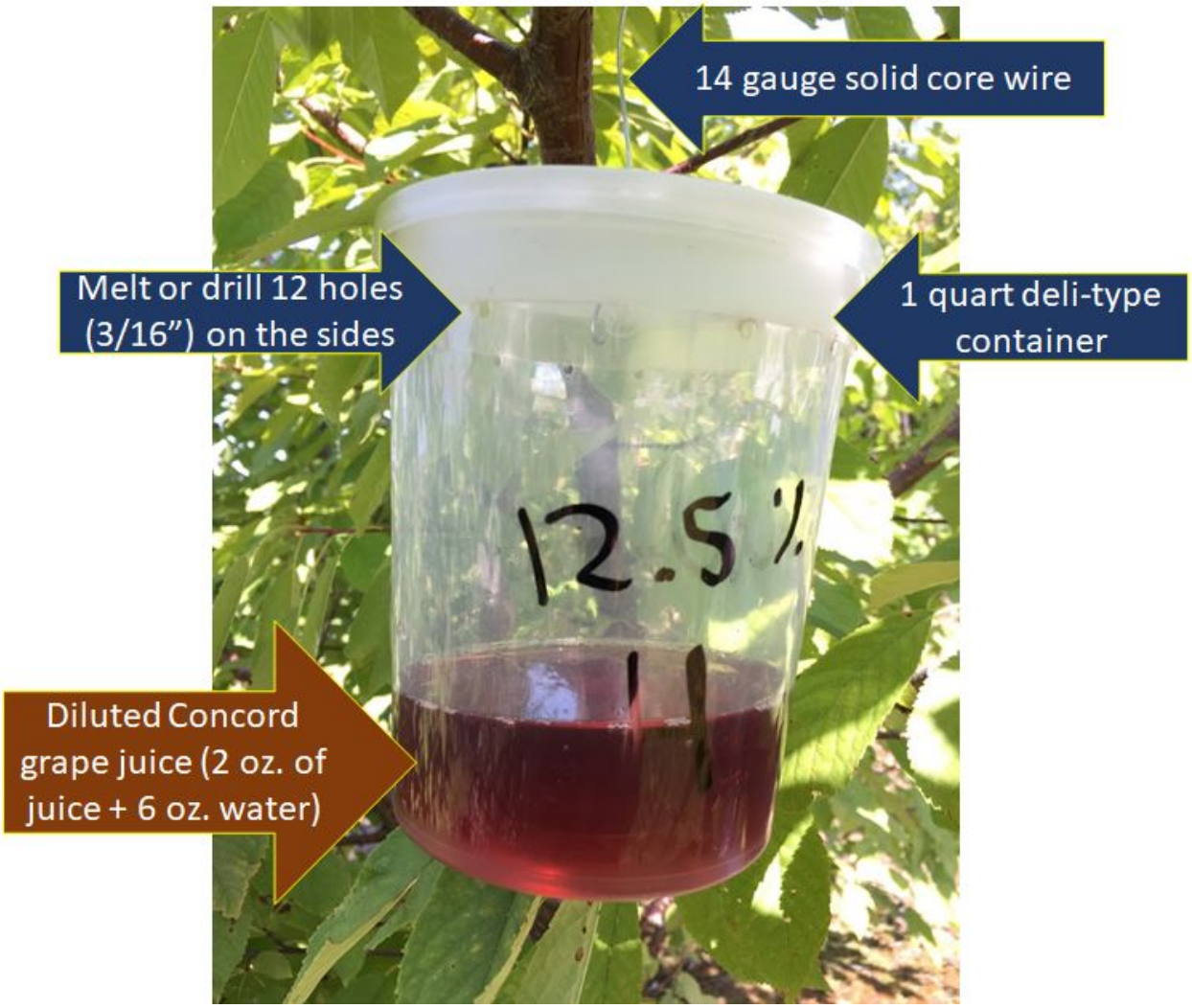
Follow-up with a second spray 10-14 days later in orchards that have had a past history of severe OBLR fruit damage or if populations of overwintering larvae were high.

How to make an effective trap for Spotted Wing Drosophila

The most important step in managing SWD is to determine whether they are present in certain areas and when they become active. Because SWD reproduces so quickly under optimum conditions, the first catch information is vital to activate pest management programs to prevent rapid population increases and potential infestations on a farm.

How to make traps for SWD. This is a straightforward process. Make 12-15 small holes on the sides of a deli-type plastic container (see picture below). Holes need to be small enough to allow small insects including SWD to get inside the trap, while excluding arger insects. Soda bottles may work as well. Insert a piece of wire through the lid, and fold the two ends of the wire to secure the trap.

Bait the trap with either, a commercial lure (e.g., Scentry SWD lure, Alpha Scents SWD lure) using 6 oz. of soapy water as drowning solution, **or** try using Concord grape juice diluted at a rate of 1 part of juice (e.g., 2 oz.) and 3 parts of water (e.g., 6 oz.). Diluted grape juice is very inexpensive and is proving to be very effective at attracting female SWD.



Where to deploy and how often to service traps. Traps for SWD are best placed in the shade and in the fruit zone. For strawberries this is on the ground, whereas for bush fruit or tree fruit, the trap needs to be hung up within the plant canopy. Try to set up the trap on the north side of the plant. Make sure holes are exposed and not blocked by vegetation.

Traps should be serviced once a week. At every inspection date, bring a trap already baited with fresh diluted juice (or soapy water, if using commercial lures) and just replace the 1 week-old trap with the newly baited trap. If this is not possible, then strain the flies out of the bait, pour the old bait into a container, rinse the trap with water, and bait the trap with fresh bait. Be sure to write the field and date on the trap or bag so that fly numbers can be matched with trap location.

How to process insects captured. Working by a kitchen / bathroom sink, dump the contents of the trap that was removed from the field into a strainer and rinse off with tap water. Working in a well-lit area, dump the contents of the strainer onto a small dish. Use a fine paintbrush to scoop

up and discard any insects that are obviously not drosophila, due to size or color. For insects that are the right size and color for drosophila, examine under 30x magnifier to look for spots on the wings (males), or dark teeth on ovipositor (females). Seeing the female's serrated ovipositor with a hand lens is possible, but being able to look at flies under a microscope will greatly aid in ability to accurately count female flies.

Research is underway to determine whether diluted Concord grape juice can be used in traps for 'attract-and-kill' of SWD.

DISEASES

Dan Cooley and Liz Garofalo

Sooty blotch/flyspeck (SBSF) For the remainder of the season, a protective cover schedule for SBSF should be maintained. Open canopies and keep weeds mowed to increase air flow, reducing pressure and disease buildup. Refer to the New England Tree Fruit Management Guide for material options.

NEWA Apple Disease Models

Select a disease: Sooty Blotch/Flyspeck

State: Massachusetts

Weather station: Belchertown-2

Date of Interest: 6/24/2019

Calculate

Map | Results | More info

Sooty Blotch and Flyspeck Risk Predictions for Belchertown-2

Petal fall date for McIntosh: 5/20/2019 Click if petal fall has not occurred

Petal fall date above is estimated based on degree day accumulations or user input.
Enter the actual date for blocks of interest and the model will calculate the accumulated leaf wetness hours since 10 days after petal fall more accurately.

Most recent fungicide application date: 6/12/2019

If petal fall has passed, enter the date of your most recent fungicide application.
If no fungicide applications have been made, do not enter a date.

In the Risk Summary table, note the accumulated leaf wetness hours since petal fall (Leaf Wetness Hours) and the Risk Level. Leaf wetness hours, rain events, and the last fungicide application date are taken into consideration in assessing risk level. To estimate risk in the near future, look at the probability of rain.

Consult the Risk Level IPM Guidelines below the **Risk Summary** table.

Sooty Blotch and Flyspeck Risk Summary - Northeastern US Model

	Past	Past	Current	5-Day Forecast				Forecast Details
Date	6/22	6/23	6/24	6/25	6/26	6/27	6/28	6/29
Days since petal fall	33	34	35	36	37	38	39	40
Accumulated Leaf Wetness Hours - ALWH	193	193	197	221	231	233	235	237
Risk Level	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	Moderate
Rain Events and Fungicide Depletion Estimate								
Days since last fungicide application	10	11	12	13	14	15	16	17
Rain since last fungicide application	1.29	1.29	1.30	1.71	1.71	1.71	1.71	1.71
Daily rain amount **(inches)**	0.00	0.00	0.01	0.40	0.00	0.00	0.00	0.00
Rain probability (%) Night|Day			- | 38	80 | 37	25 | 28	25 | 12	13 | 36	45 | 29

NA - data not available.

Download Time: 6/24/2019 11:00

Risk Level IPM Guidelines for Sooty Blotch and Flyspeck:

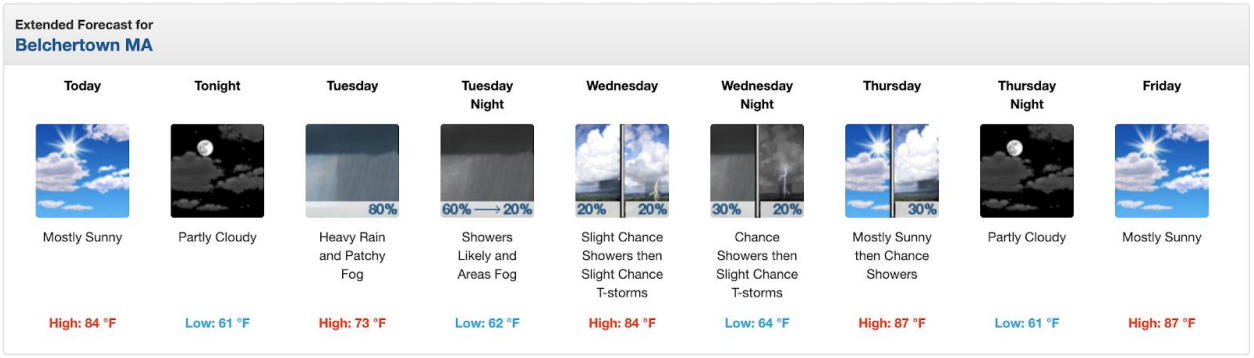
- **NO RISK** - *No action needed.*
- **LOW RISK** - *If first cover application has not been made, make first cover fungicide application for apple scab. Otherwise, no action needed.*
- **MODERATE RISK** - *Check the 5-day forecast; a cover application should be made if two or more days with precipitation are predicted. See Fungicides below.*
- **HIGH RISK** - *A cover application for Sooty Blotch and Flyspeck should be made. See Fungicides below.*

Fungicides

This disease forecasting model was co-authored and developed in collaboration with Dr. Kerik Cox in the Department of Plant Pathology and Plant-Microbe Biology at Cornell University in Geneva, New York. Please contact Dr. Cox with any questions regarding the scientific content and recommendations delivered in model outputs.

Disclaimer: ***These are theoretical predictions and forecasts.*** *The theoretical models predicting pest development or disease risk use the weather data collected (or forecasted) from the weather station location. These results should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps.*

NEWA SBFS forecast (data downloaded 6/24/19, remember pest risk estimations change with the forecast) and risk estimation for UMass Cold Spring Research Orchard (CSO) in Belchertown, MA. Note the last spray date has been entered into the appropriate field, which changes the nature of the risk forecast, reducing it when sufficient fungicide is present.



Extended forecast for UMass Orchard, plenty of rain and temperatures conducive to SBSF development.

HORTICULTURE

Jon Clements

Return bloom spray recipe for cooking-challenged…recipe consultant, Win Cowgill. Two recipes, one for early ripening varieties where NAA is used for final sprays, and one for later ripening varieties where Ethephon/Ethrel can be used exclusively. Ethephon/Ethrel is a more potent return bloom enhancer, however, do not apply if temperature over 85 degrees, substitute NAA. Every grower should be doing this, just combine with cover sprays or separate sprays as necessary. 4 to 5 sprays can go on. Avoid Ethephon/Ethrel after mid-July for early ripening varieties, including Honeycrisp. Fuji could be applied until late July to early August.

RECIPE 1. Ethephon or Ethrel or Motivate at 0.5 pint per 100 gallons dilute tree row volume beginning NOW. Repeat at weekly intervals (7-10 days) 2 to 3 times for early ripening varieties, 3 to 5 times for later ripening apple varieties. Do not apply if hot (greater than 85 degrees), substitute NAA per below.

RECIPE 2. NAA (Fruitone-L or Pomaxa or refine) at 2 oz per 100 gallons dilute tree row volume after initial **Ethephon or Ethrel or Motivate** applications (two) as above on earlier ripening varieties.

You can do any combination of the two above, just do it! Only "gotcha's" are no Ethephon/Ethrel when it is hot, and don't use it too late on early ripening apple varieties! Just do it!

Honeycrisp just begging for return bloom sprays of Ethephon/Ethrel and/or NAA!

SMALL FRUIT UPDATE

Sonia Schloemann

Spotted Wing Drosophila (SWD) - Trap captures for SWD around the region are increasing. Larvae have been found in Strawberries in several locations. Management charts from last year are still accurate for this year.

See them at:
Small Fruit: http://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/2018_swd_insecticides_for_small_fruit.pdf
Stone Fruit: http://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/2018_swd_insecticides_for_stone_fruit.pdf

Other recommendations include 1) create an open canopy that allows good sunlight penetration and air circulation, 2) monitor with traps, 3) pick frequently and thoroughly, 4) spray recommended materials on a 7± day basis in fruit that is ripening through harvest (see links for recommended adjuvants and additives), 5) perform a salt flotation test twice a week in harvested fruit to check for infestation.

CROP CONDITIONS: **Strawberries**: Harvest continues. As mentioned above, several fields have reported finding SWD larvae in fruit. Later ripening varieties will continue to be under pressure. Spraying in PYO fields will be very undesirable and probably not necessary given the overall low population of SWD, but trying to keep fields picked clean will be important. Prompt renovation after picking is done will also be very important for knocking down SWD populations that might be building up in unpicked fruit. We're still seeing leaf spot in many fields. This can be cleaned up by the renovation process. More on that in a few weeks. Strawberry Sap Beetle is showing up. This pest is difficult to manage because it will hide out in the cavity it chews into berries, so no spray material will work. The best remedy is frequent thorough harvesting (same as SWD). New plantings are in and growing well. Weed management in these fields is the main activity now. Potato Leafhopper arrived last week. Damage isn't widespread yet but will be most apparent on newly planted fields. **Brambles**: Early floricane raspberry varieties ('Prelude') are coloring up and may be ready for harvest this weekend. Botrytis Gray Mold can still be a problem now, especially if the weather stays wet. Potato Leafhopper (PLN) is here. Check the link to see what hopper burn looks like on raspberries. Raspberry Cane Maggot (RCM, not Raspberry Cane Borer, RCB), is an unusual pest that seems to be increasing in some areas. It's not likely to require any spray applications, but it's good to know what to look for. RCM can infest either floricane and primocane fruiting types Primocane varieties are growing well but check for PLN (see above). **Blueberries**: Fruit is sizing well. Lecaneum Scale (LS) crawlers have been found in CT. You can monitor for these using double sided sticky tape on stems where adults are present. There are several materials labeled for controlling crawlers. Insect Growth Regulators (IGRs, FRAC 7c), are a good choice at this time of year. LS are more problematic in bushes with a lot of older wood, so good pruning practices go a long way in keeping this pest at bay. Anthracnose and Alternaria Fruit Rot may appear more than usual this year. See leaf symptoms of Alternaria below. See the NE Small Fruit Guide for recommended materials and rates.

Alternaria Fruit Rot leaf symptoms - Oregon State Univ.

HAWKEYE'S CORNER (notes from the field)

Liz Garofalo

Moth jerks and biocontrols run wild…

For most location gypsy moth quickly became a no-show this year, thank goodness! In the places where it did stick around, Dipel (or other *Bt* materials and the wild biocontrols) did there job! Below you see caterpillars in various states of destrcution.

Gypsy moth caterpillar in its final death throes as biocontrols do their magic (erm, actually, science, not magic, but you get the point!).

Dead gypsy moth caterpillar providing a habitat for biocontrols to further propagate and infect new victims…

The surest way to distinguish between an oriental fruit moth larvae and a codling moth larvae is to inspect the caterpillar under magnification for a comb like formation on its last abdominal segment. While I have not paused to examine this particular insect's backside, I'll go out on a limb and say that this is a codling moth larvae, given the frass exuding from the calyx end of the fruitlet shown below.

Given that this is most likely codling moth larvae in the fruit, it's time to make sure your traps are up and pheromone up to date in order to check on second generation flight.

Caught in the act! Codling moth larvae feeds in developing apple fruitlet.

GUEST ARTICLE

No GUEST ARTICLE this week...

FACEBOOK ME

Arthur Kelly
17 hrs ·

Kelly Orchards
17 hrs ·

Like Page

Blushingstar peaches

You and Christian Smith

Like Comment Share

Write a comment...

USEFUL LINKS

27th Annual March Message (2019) to Tree Fruit Growers (Google Doc)

UMass Fruit Advisor: http://umassfruit.com

Scaffolds Fruit Journal: http://www.nysaes.cornell.edu/ent/scafolds/

Network for Environment and Weather Applications (NEWA): http://newa.cornell.edu

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Acimovic Lab at Hudson Valley

Peter Jentsch's Blog

The next Healthy Fruit will be published on or about July 9, 2019. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

Thank you sponsors…

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