Volume 27, 2019

UMass Extension

Healthy Fruit

Prepared by the University of Massachusetts Fruit Program

Healthy Fruit, Vol. 27, No. 11, June 18, 2019

Jon Clements, Author (unless otherwise noted) and Editor

CONTENTS

CURRENT DEGREE DAY ACCUMULATIONS

UMass Cold Spring Orchard, Belchertown, MA	17-June
Base 43 (NEWA, since March 1)	1001
Base 50 (NEWA, since March 1)	556

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
Obliquebanded leafroller 1st catch	796 to 978
Oriental fruit moth 1st flight subsides	826 to 1098
Peachtree borer 1st catch	781 to 1313
White apple leafhopper 1st brood adults 1st catch	679 to 1041

UPCOMING MEETINGS

June 20 (Thursday). SARE Grower Grant Twilight Meeting - June 20, 2019. 5:30-8:00. Red Fire Farm, 184 Meadow Rd., Montague MA. Red Fire Farm received a NE-SARE Grower Grant to look at some innovative weed management systems for organic strawberry production. Come see what was learned through this project. Meeting is free but bring $10 if you would like to purchase a simple supper. RSVP to umassfruit@umass.edu is required for planning purposes. More info at: https://ag.umass.edu/fruit/events/umasssare-organic-strawberry-twilight-meeting.

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

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

THE WAY I SEE IT

We are sad to note the untimely passing of Tyler Hardy of Brookdale Fruit Farm in Hollis New Hampshire. The fruit growing community has suffered a loss, and our condolences go out to the Hardy Family.

June drop, or whatever you want to call it, has kicked in. Let's hope it ends up being a very manageable and high quality crop of apples. If you need to do hand thinning, do it ASAP. Or, spray Ethephon, carbaryl, and Maxcel and they will ALL fall off! See Horticulture.

Wet weather means fungicide applications should be ongoing. Summer disease issues will kick in soon. In fact, according to NEWA many orchards have reached the 190 hours of accumulated wetting when sooty blotch and flyspeck becomes a concern. Fungicide sprays should start now and continue at no less than 14 to 21 day intervals, the 21 days only if it gets dry. (Fat chance that will happen I am thinking.) Let's not have a repeat of last year where a lot of fruit rots took their toll. See the updated summer disease fungicide table in Diseases for control and rotation options.

Oblique-banded leafroller adults have (barely) started flying. Will let you know as soon as we see sustained trap catch which will start the degree-day model for treatment (where necessary). First **potato leafhopper** showing up. Alarm! Alarm! Little buggers can cause serious stunting of new foliage which can stop growth of young trees. I'd be out there with some insecticide on young trees (ideally scout first for PLH). See NETFMG for insecticide options: http://netreefruit.org/apples/spray-table/9-summer-apple And this just in from the Jentsch Lab: Potato Leafhopper Management: Reducing Fireblight Risk & Maintaining Growth on Young Apple Trees. June 18th

Rumor/report of first **fire blight** strikes. Right on time. We'd like to know about it if you see any suspect fire blight.

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.

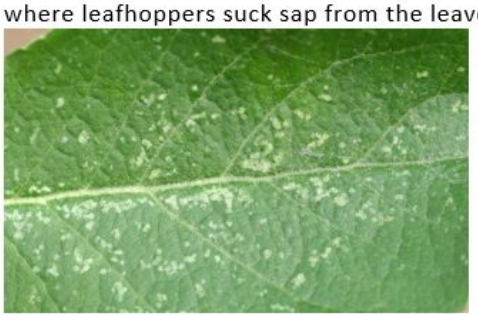
INSECTS

Jaime Pinero

Potato leafhoppers are active!

Potato leafhoppers have been found in some orchards. Refer to the New England Tree Fruit Management Guide (https://netreefruit.org/apples/spray-table/9-summer) for a number of optional materials against high populations of leafhoppers. The table below shows the most important characteristics of the potato leafhopper and of a relative, the white apple leafhopper.

	White apple leafhopper (*Typhlocube pomaria*)	Potato leafhopper (*Empoasca fabae*)
Description	Adults are creamy white, about 3 mm in length and hold their wings over their back when resting. Nymphs are whitish green and are usually found on the undersides of older leaves. *They move forward and backward.* 	Nymphs and adults are yellowish green to pale green. *Nymphs tend to move sideways* and quickly retreat to the opposite side of the leaf when disturbed. 
Life cycle	Second-generation eggs begin to hatch during late July and August. The nymphs feed during August and are fully grown by late August or September. Overwintering eggs are laid during September and early October.	Potato leafhoppers overwinter as adults in southern states and move northward mainly through the action of storm fronts. The potato leafhopper is most damaging from mid-June to mid-August.
Primary host	Apple trees seem to be the only host that white apple leafhopper overwinters on. During the growing season this insect may also infest peach, plum, cherry and hawthorn.	Apple, grapes, strawberry, potato, many other vegetable crops, beans, alfalfa and approximately 200 other species of plants.

Injury	Adults and nymphs feed on leaves and do not directly attack the fruit, although excrement on the fruit can reduce its quality. Leaves become speckled or mottled with white spots as green tissue is destroyed where leafhoppers suck sap from the leaves. 	The potato leafhopper feeds near the edges of leaves. The potato leafhopper's toxic saliva causes considerably damage in young orchards. If several feeding sites are present on a leaf, the leaf will cup downward. If several leaves on a shoot are affected, shoot growth may be greatly stunted. Feeding may spread fire blight. 
Summer monitoring	Examine 5 trees per block, 20 leaves per tree, and check the undersides of leaves for nymphs. An insecticide treatment is only necessary when a threshold of 2-5 nymphs per leaf is observed in a 100 leaf sample.	Fire blight susceptible varieties and young trees where this species has been a problem in the past should be protected when the first adults appear.

PICTURES TAKEN AT THE UMASS COLD SPRING ORCHARD (photo credit: Jon Clements)

Potato leafhopper at UMass Orchard, 18-June

Potato leafhopper "burn" (and yellowing and curling) of young apple foliage at UMass Orchard, 18-June

Is it time to spray against oblique-banded leafrollers (OBLR)?

In Belchertown, sustained catches (BIOFIX) of OBLR took place ca. June 13th 2019. Because OBLR females have been laying eggs, then (1) set this date as a BIOFIX and, (2) use degree-day model to determine when OBLR eggs are hatching and most susceptible to insecticides.

Using the NEWA Degree Day Calculator (http://newa.cornell.edu/index.php?page=degree-day-calculator), use June 13 as the accumulation start date. Choose Belchertown station 2 (in our case), and select 43 degrees for the "Degree Day Type". Below is the output of the NEWA DD Calculator:

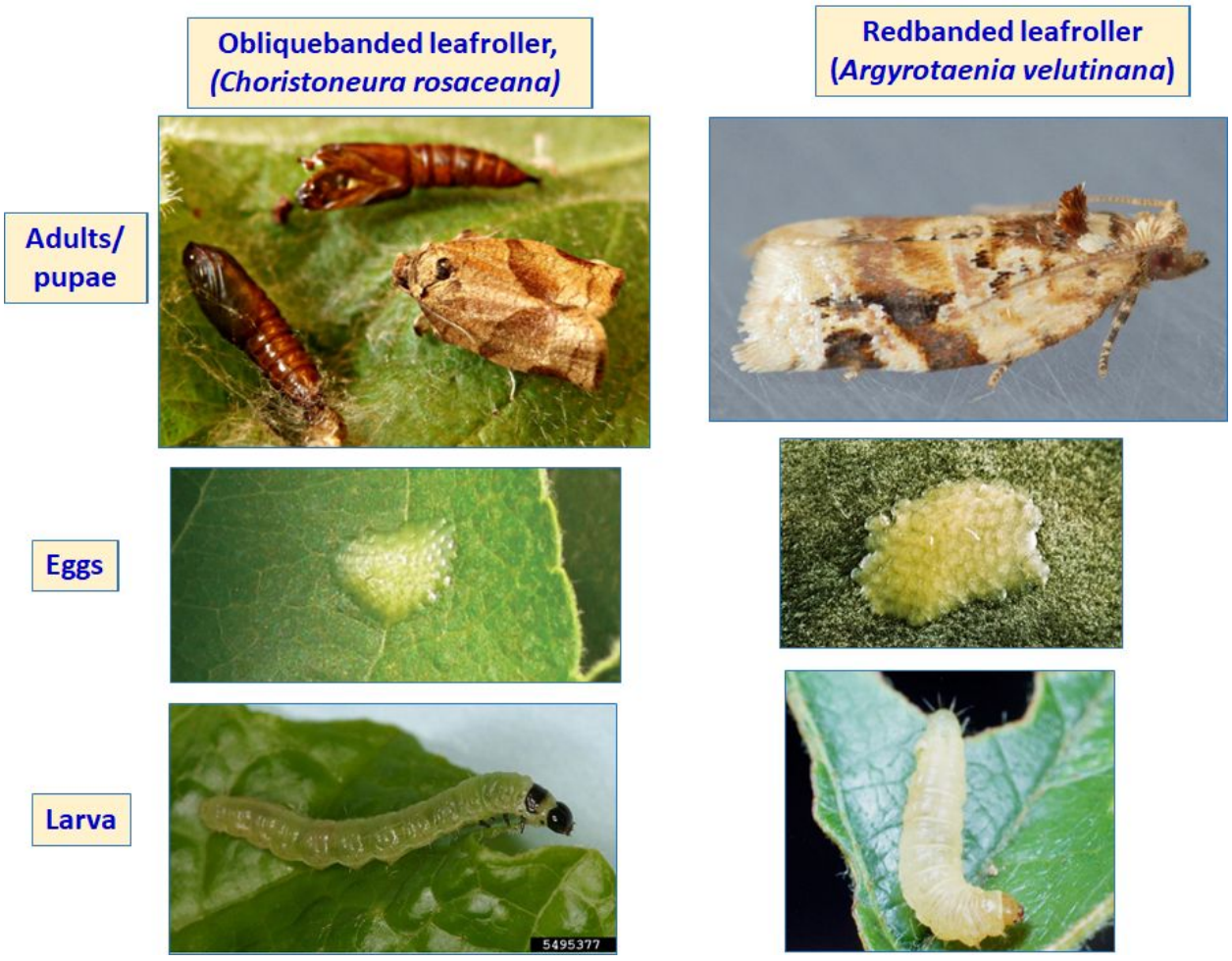
Degree Days (Base 43) for Belchertown-2								
	Past	Past	Current	5-Day Forecast		Forecast Details		
Date	Jun 16	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22	Jun 23
Daily Degree Days	23	27	24	27	26	19	22	26
Seasonal Accumulation	73	99	123	150	176	194	216	242

Apply insecticide starting at 360DD (base 43°F) after BIOFIX. May need 2-3 sprays 10-14 days apart.

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

Below is additional information on OBLR and on red-banded leafrollers (RBLF):

	Obliquebanded Leafroller	Redbanded Leafroller
Frequency of pest	Annually in problem orchards.	Rarely a problem in commercial orchards.
Pest description	Adults are ½ inch long. The forewings are light reddish-brown and are crossed by three oblique chocolate brown bands. The hind wings, not visible when the moth is at rest, are pale yellow.	Adults are tan, ½ inch (12.5mm) long moths with a V-shaped reddish-brown band running across the forewing. When the wings are folded there is a diamond-shaped marking on the back.
Life cycle	At this moment (mid-June) first generation (summer) adults are flying and females are 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. 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.	The RBLF overwinters as a pupa within folded leaves on the ground. At this moment (mid-June) the first-generation larvae are likely feeding on developing apples. Larval development will be completed in late June to mid-July, at which time the insect pupates. Adults begin to emerge 10-12 days after pupation. In Massachusetts, most fruit injury comes from the second generation, which lasts through August. The larval feeding on the fruit is seldom deep. By late September to early October, the larva falls to the ground and pupates in the leaf litter, where it spends the winter.
Damage	Larvae feed on fruit skin, often close to the apple stem or where two apples are in contact. OBLR roll up leaves and hide in these shelters.	At this moment (mid-June) larvae are feeding on developing apples. Larval development will be completed in late June to mid-July, at which time the insect pupates. First generation (summer) adults begin to emerge 10-12 days after pupation. In Massachusetts, most fruit injury comes from this second generation, which lasts through August. The larval feeding on the fruit is seldom deep.
Control	No control measures are recommended for adults. Sprays to control larvae are timed to coincide with the first hatch of eggs.	



DISEASES

Dan Cooley and Liz Garofalo

Last summer's southern weather pattern created a lot of rot problems in apples. In part, this was because specifically managing summer apple rots has not been necessary. If the warm wet weather, particularly the warm nights, return, then there's a good chance that black rot and bitter rot will be back. Plan to use effective fungicides if it does.

It can make a difference which rot you have. Bitter rot has small dots of pinkish spores in the rotted circle. Black rot has bands of lighter and darker rot, but no pink spots. In the pictures below, bitter rot is shown first (Keith Yoder, Virginia Tech) and black rot is below it (Dave Rosenberger, Cornell).


© D. Rosenberger
Cornell University

Fungicide Ratings for Summer Diseases of Apple

Daniel Cooley, Stockbridge School of Agriculture
University of Massachusetts Amherst

Trade Name	Rate/A	FRAC code	Ratings for Control: Sooty Blotch/ Flyspeck	Black/ White Rot	Bitter Rot
Captan, Captec	3 to 3.75 lb. of 80 WDG or equivalent	M4	G	S	F
Topsin M	1 lb. WSB or equiv.	M1	E	E	S
Flint Extra	2.9 fl. oz.	11	E	G	F
Sovran	6.4 oz.	11	E	G	F
Aprovia	7 fl. oz.	7	G	F	F
Sercadis	4.5 fl. oz.	7	F	F	NR
Luna Sensation	5.8 fl. oz.	11 + 7	E	G	G
Merivon	5.5 fl. oz.	11 + 7	E	G	E
Pristine	18.5 fl. oz.	11 + 7	E	G	G
Inspire Super	12 fl. oz.	3 + 9	E	NR	NR
Omega	13.8 fl. oz.	29	G	G	G
Indar	8 fl. oz.	3	F	NR	NR
Prophyte	4 pt. (plus another material)	NC	Technically not a fungicide. Adding 3 pt./A to Captan or Group 11 fungicides increases effectiveness		
There is a 77 day pre-harvest interval for the EBDC fungicides					
Dithane, Manzate, Penncozeb, Maneb, Polyram	See label for different programs and formulations	M3	E	G	E

The following fungicides are registered for use on apple BUT ARE NOT REGISTERED FOR SUMMER DISEASES

Fontelis, Luna Tranquility,Procure, Rally, Rhyme/Topguard, Rubigan, Scala, Syllit, Vanguard

Key to control ratings:
NR = not registered for disease; **S** = slight, **F** = fair, **G** = good, **E** = excellent

HORTICULTURE

No particular updates this week, but see below… :-)

What happens app. one week later when you spray Golden Delicious with Ethephon, Vydate, and Maxcel. Apples on ground are one inch plus and still raining down. *Achieved objective of no hand thinning and return bloom enhancement.* Don't do this at home! Waiting for similarly treated Suncrisp and Goldrush to come off...fingers crossed.

SMALL FRUIT UPDATE

Sonia Schloemann

2019-2020 New England Small Fruit Management Guide: available online at - http://ag.umass.edu/fruit/ne-small-fruit-management-guide. Print copies are also available $15 plus shipping by ordering from your state's Extension Office or by going to https://www.umassextensionbookstore.com/products/108.

SARE Grower Grant Twilight Meeting - June 20, 2019. 5:30-8:00. Red Fire Farm, 184 Meadow Rd., Montague MA. Red Fire Farm received a NE-SARE Grower Grant to look at some innovative weed management systems for organic strawberry production. Come see what was learned through this project. Meeting is free but bring $10 if you would like to purchase a simple supper. RSVP to umassfruit@umass.edu is required for planning purposes. More info at: https://ag.umass.edu/fruit/events/umasssare-organic-strawberry-twilight-meeting.

Spotted Wing Drosophila (SWD) - Trap captures for SWD around the region have continued over the last week, albeit in very small numbers. Still this is very significant as it is over 2 weeks earlier than last year. This means that earlier ripening fruit (Cherries, Strawberries) are vulnerable and later ripening fruit (Raspberries, Blueberries), will likely face higher pressure from this invasive pest than in past years. No new pesticides have been registered for controlling SWD since last year, so the management charts remain the same.
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. Yield and quality seem good. Some fields have leaf spot appearing on susceptible varieties. New plantings are in and growing well. A Spotted Wing Drosophila (SWD) larva (1) has been reported in one strawberry field in Southeastern MA. This is a wake-up call for growers to monitor their later varieties with traps to determine if a spray program is needed and by checking fruit for infestation using the salt flotation test. See the link above for the most current list of labeled pesticides (conventional and organic) for strawberries and other small fruit. Spittle Bug have been reported in some fields. They do little damage to the plants or fruit and are mainly an esthetic pest. No management

measures should be needed now. Just a little explaining to the PYO customers. Potato Leafhopper arrived last week. Damage isn't widespread yet but will be most apparent on newly planted fields. See the NE Small Fruit Management Guide for recommended materials and rates for managing all of these problems. **Brambles**: Floricane raspberry varieties are setting fruit with late varieties still blooming. We're still a week or more away from much ripening. 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. **Blueberries**: Fruit is sizing well. Bushes that had a lot of shoot strikes from Mummy Berry are looking better now as they grow new foliage. We're not out of the woods yet, though, because the fruit infection stage isn't visible yet. We should know in another week or so how bad the fruit infections are. There are some reports in NY of Cherry/Cranberry Fruitworm (CBFW/CFW) hatch. Scout fields for clusters where a single berry turns blue. This is the first sign of infestation. Later you will see frass and some webbing together of the fruit. See the NE Small Fruit Management Guide for recommended materials and rates for managing all of these problems. **Other Fruit**: Elderberries are in bloom.

Berry Growth Stages: A) Ripe strawberries, B) Strawberries under low tunnel, C) Blueberries sizing up, D) Elderberries blooming, E) Gooseberries sizing up, F) Rovada Red Currant starting to color.




Some shots from an excellent twilight meeting last week at Tougas Family Farm in Northboro, MA. Thanks André, Mo, Phyllis and crew.

HAWKEYE’S CORNER (notes from the field)

Liz Garofalo

Liz is on annual leave this week, therefore no notes from the field...

GUEST ARTICLE

No GUEST ARTICLE this week...

FACEBOOK ME

Tori Lee Jackson
6 hrs ·

Tori Lee Jackson Photography is in Richmond, Maine.
6 hrs · Like Page

It's hard to pick favorites in a field of thousands.

4 2 Comments 1 Share

Like Comment Share

Tobey Burgess Beautiful.
Like · Reply · 4h 1

Jon Clements Lupine, one of my favorites...
Like · Reply · 1m

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 June 25, 2019. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

Nourse Farms

FMC Agricultural Solutions

New England Vegetable & Berry Growers' Association

Massachusetts Fruit Growers' Association