



Maine Tree Fruit Newsletter

Thursday, June 2, 2022

Vol 29:15

Apple growth stages

The table shows fruit development for McIntosh and other relatively early blooming cultivars that reached 95% Petal Fall on Sunday May 22.

For later blooming cultivars like Golden Delicious, 95% Petal Fall was about 5 days later on May 27. So fruit diameter dates for those cultivars would also be delayed by about 5 days.

The 25mm diameter date came from a comment by a thinning researcher last week that while 20mm marks the end for effective chemical thinning, if needed, hand thinning done before 25mm can prevent overcropping this year from causing lack of fruit buds and a biennial bearing pattern for next year.

Fire Blight

Let's hope there is nothing to say about blossom blight or shoot blight this year. If there were infections on May 14-17, the symptoms would start showing up any day now.

The photos below shows early fire blight collapse on an intentionally inoculated shoot and a blossom cluster at the UMass Cold Spring Orchard a few days ago.

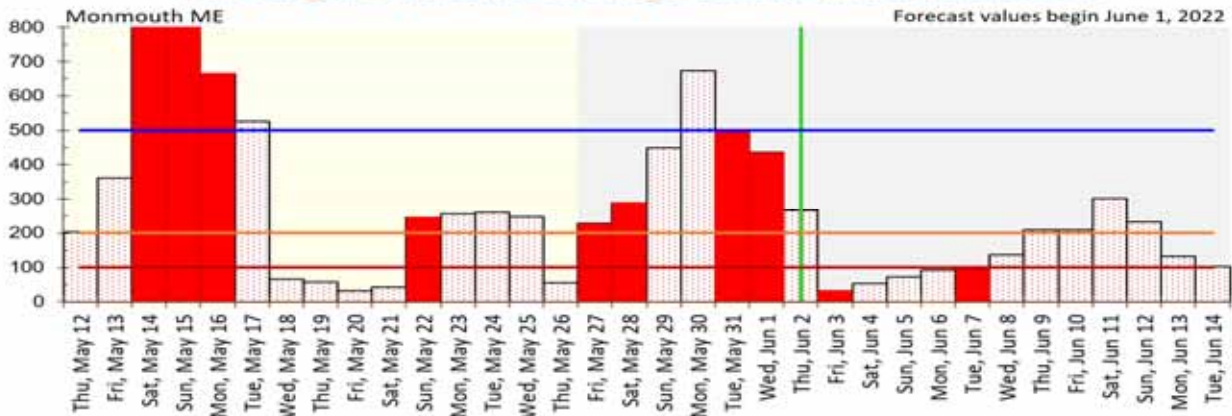
There were several moderately severe blossom blight infection periods since last Saturday, but they would only matter where there were still open flowers. Watch our for late flowering on newly planted trees. Fire blight pressure has been somewhat higher than forecast last week, but in general the observed vs forecast severity ratings have been similar.



Photos: Jon Clements

<p>Open blossom dates for common cultivars. "Date" is from 8am to 8am the following day, not midnight to midnight.</p>	<p>Cumulative Fire blight bacteria potential (FBP). 100% = minimum threshold level for infection. Note some fire blight researchers use caution when values exceed 70% of threshold. Cumulative % FBP, (single day value), Inches Rain, Leaf Wet Hours Values are for 8am to 8am.</p>	<p>In absence of rain, 3 or more hours of leaf wetness is counted as possible dew conditions for adequate wetting, which may overstate risk on such days. See Cougar Blight model for additional comments.</p> <p>Eastern Fire blight Model Rating Infection Requirements: 100% FBP (>198 degree hours > 65F), & > 0" rain, or > 0.1 inch rain on previous day. SEVERE RISK = 200% FBP and wetting.</p>	<p>Dates Blossom Blight (& Shoot Blight) would be obvious if infection occurred</p>
<p>Late Cultivar Petal Fall on Fri, May 27</p>	<p>78% (61%), 0.02", 12 hrs.</p>	<p>No blossom infection</p>	
<p>Cider cultivars and straggler bloom on Cortland, Gala, Honeycrisp, etc. after Sat, May 28</p>	<p>103% (29%), 0.36", 17 hrs.</p>	<p>INFECTION RISK</p>	<p>June 13, (June 24)</p>
<p>Sun, May 29</p>	<p>153% (60%), 0.0", 4 hrs.</p>	<p>INFECTION RISK</p>	<p>June 15, (June 25)</p>
<p>Mon, May 30</p>	<p>224% (74%), 0.0", 5 hrs.</p>	<p>SEVERE Infection Potential (Dew Risk)</p>	<p>June 16, (June 26)</p>
<p>Tue, May 31</p>	<p>163% (0%), 0.02", 14 hrs.</p>	<p>INFECTION RISK</p>	<p>June 16, (June 27)</p>
<p>Wed, June 1</p>	<p>134% (0%), 0.31", 8 hrs.</p>	<p>INFECTION RISK</p>	<p>June 17, (June 27)</p>
<p>Thu, June 2</p>	<p>134% (0%), 0.0", 10 hrs.</p>	<p>INFECTION RISK</p>	<p>June 17, (June 27)</p>
<p>Fri, June 3</p>	<p>50% (0%), 0.27", 24 hrs.</p>	<p>No blossom infection</p>	
<p>Sat, June 4</p>	<p>65% (15%), 0.01", 2 hrs.</p>	<p>No blossom infection</p>	
<p>Sun, June 5</p>	<p>31% (16%), 0.0", 6 hrs.</p>	<p>No blossom infection</p>	
<p>Mon, June 6</p>	<p>48% (17%), 0.0", 5 hrs.</p>	<p>No blossom infection</p>	
<p>Tue, June 7</p>	<p>32% (0%), 0.56", 22 hrs.</p>	<p>No blossom infection</p>	
<p>Wed, June 8</p>	<p>66% (34%), 0.0", 1 hrs.</p>	<p>No blossom infection</p>	

Fire blight heat units vs. High infection risk thresholds



Values do not appear until McIntosh King Bloom date is within forecast range.

Vertical green line marks date of latest update.

Solid Red columns show fire blight heat units on days with rain, and is an estimate of the favorability of weather for fire blight blossom infection on that day. Red dotted white columns show fire blight heat units on days without rain. These columns indicate potential severity of fire blight blossom infection if accompanied by rain or heavy dew.

Gray background indicates dates with reduced risk because most cultivars should have lost open blossoms. However, young trees and late blooming cultivars may still have open blossoms and susceptibility to fire blight blossom infections on those dates.

Colored horizontal lines = High infection risk (if flowers present) heat unit thresholds for type I, II and III site risk categories.

Blue horizontal line = Category I sites (No FB within one mile last year or this year). High threshold is 500, Extreme threshold is 800.

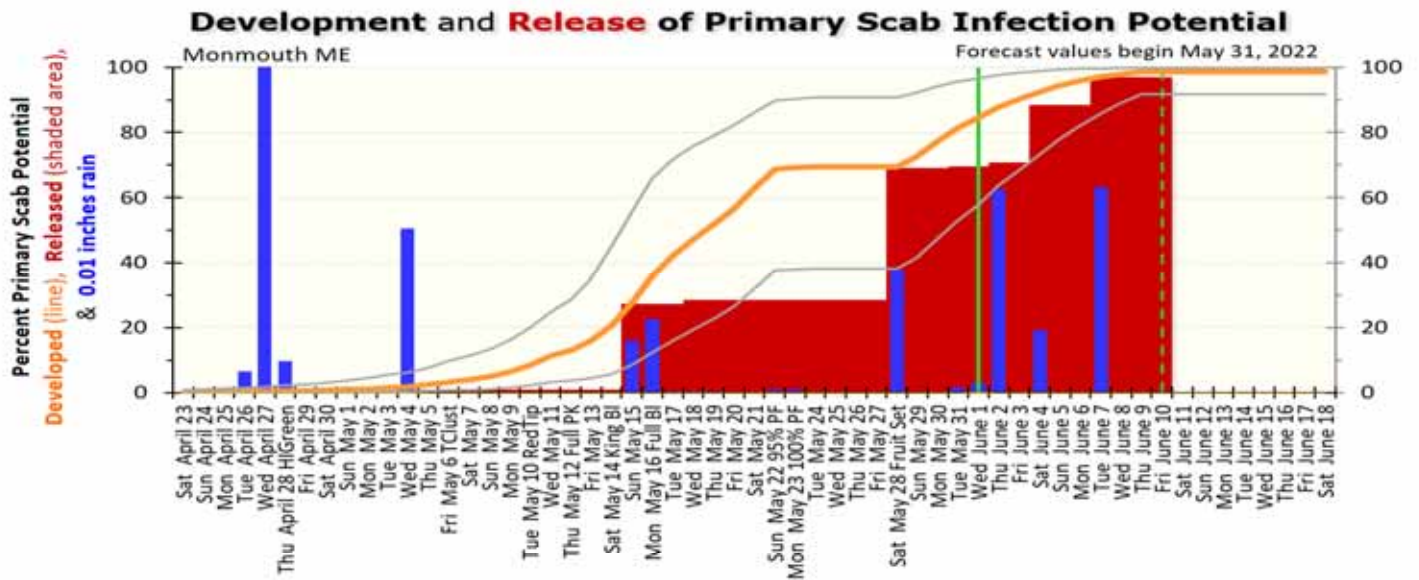
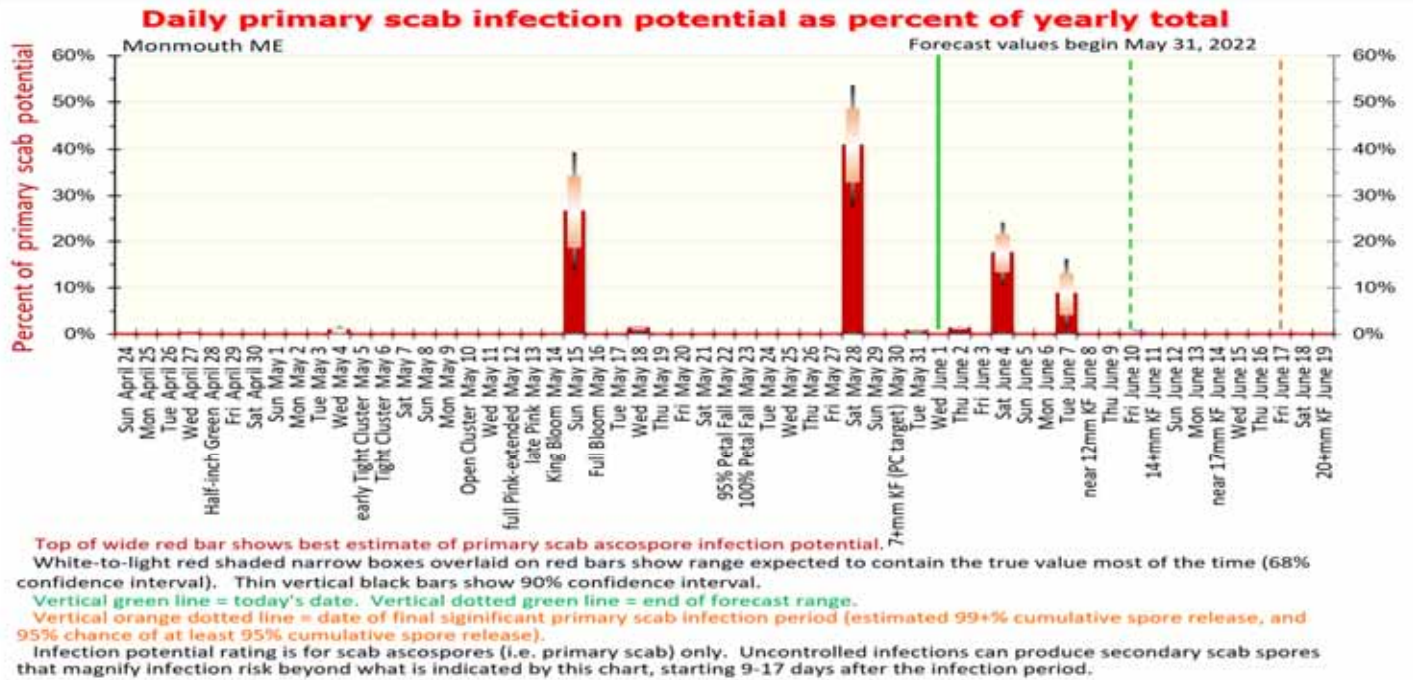
Orange horizontal line = Category II sites (FB within 1 mile last year, but not active within 1 mile this year). High threshold is 200, Extreme threshold is 350. Exceptional threshold is 500.

Red horizontal line = Category III sites (Active FB within 1 mile this year). High threshold is 100, Extreme threshold is 200. Exceptional threshold is 300.

Heat units and thresholds are from Cougar Blight 2010 model by Tim Smith, Wash. State Univ.. See Cougar Blight table for daily values.

Apple Scab

In the Monmouth area, rain over the next week is forecast to bring the final significant portion of this year's primary scab infection potential. Lesions from the earliest infection periods have had time to appear on unprotected foliage. But it won't be until June 10-12 for >50% of the year's 1st generation scab potential to show up on leaves. Remember that the 77-day preharvest interval for mancozeb fungicides means that an application on June 4 does not allow for harvest until August 20 at the earliest.



Note: This is a relative, not absolute, measure of scab infection severity. In high scab blocks even a small portion of the year's scab potential can cause significant infection! This chart represents risk from primary spore releases only. If primary scab is not controlled, secondary spores can greatly magnify infection potential for later infection periods.

Thinning Outlook

Apples

Highmoor Farm apple trees are showing signs of excessive fruit set in most varieties, but the forecast indicates cool weather extending through next week. Low rates of chemical thinning can be expected to be ineffective during this period. A higher rate of NAA or 6-BA will be needed for good thinning and should be combined with carbaryl. For orchards that had a bloom or petal fall thinner and have low set, less aggressive rates should be sufficient. In my opinion, it may be best to go ahead with a thinner this week, if you have not done so already since fruits could rapidly reach the stage when thinners will no longer work.

Carbaryl is also known as Sevin.

NAA is also known as Fruitone, Pomaxa and Refine.

6-BA is also known as Maxcel, Riteway and Excelis.

Biennial bearing in Honeycrisp appears to be severe this season. Orchards at Highmoor Farm are generally in an 'off' year, but are intermixed with trees in an 'on' year. It's hard to know what to do for thinning, but trees with a light crop can be difficult to thin anyway. Carbaryl, NAA, and BA work during early fruit set, but become ineffective when fruit reach a diameter of 15 mm (0.7 inches). After this, ethephon may be effective for thinning, but has not worked consistently and is considered a "last chance" thinner.

For variety-specific recommendations and rates for each chemical, refer to the Tree Fruit Guide chapter on chemical thinning:

<https://netreefruit.org/apples/plant-growth-regulators/apple-fruit-thinning>

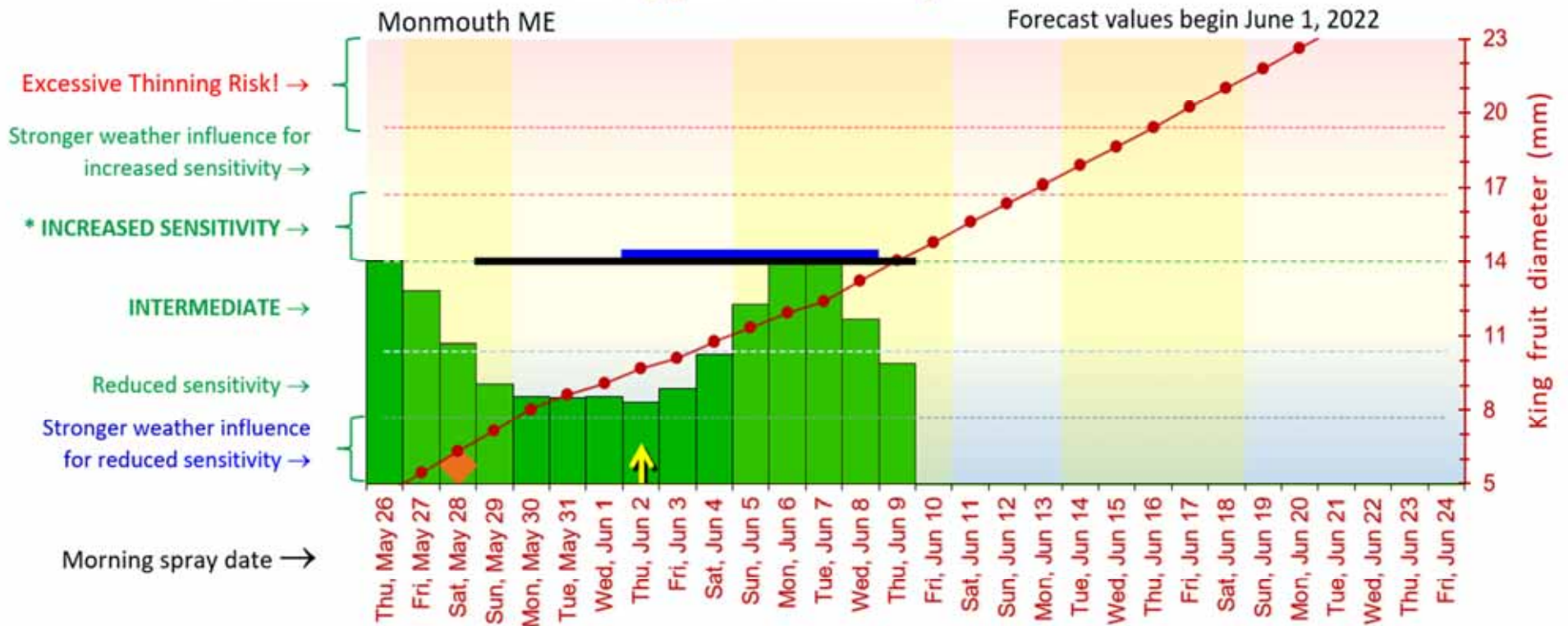
Pears

Pears can be thinned with NAD, NAA or BA. For rates or each, refer to the product label and the Tree Fruit Guide section on thinning pears: <https://netreefruit.org/pears/fruit-thinning-branching-and-stop-drop>

Peaches

Fruit set in some orchards is too low for any need to thin fruit. For the lucky ones with good to excessive fruit set, hand thinning will be needed and can be done anytime. Sooner is better for early ripening varieties which will benefit from the extra time to size up. For organic orchards, thinning before the pit-hardening stage may reduce brown rot if the thinned fruit are fully decayed by fruit ripening.

Weather Influence on Apple Sensitivity to Chemical Thinners



Left axis: Green columns show thinning sensitivity rating for apples on unstressed trees. Rating accounts for temperature and cloud cover for the 4 day window after a morning thinner application. For evening application, use rating for the following day.

Horizontal dashed lines mark transitions between sensitivity categories.

***Optimum thinning sensitivity is expected from applications on day with rating in the "Increased Sensitivity" range.**

Right axis: Rising red line with circles shows estimated King Fruit (KF) diameter for an early sizing cultivar on each day.

Yellow columns mark the **EARLY** (5-6mm), **MID** (12-14mm), and **LATE** (17-20mm) postbloom thinning windows. Sensitivity peaks at 10-13 mm.

By 17mm, carbaryl, NAA and Maxcel have reduced effect. Weather to create carbohydrate stress is required for effective chemical thinning regardless of fruit diameter. The horizontal black — & blue — lines mark dates with KF diameter at 7-14 & 10-13mm. A general guideline is that 7-14mm fruit diameter (and esp. 10-13mm) with INTERMEDIATE to INCREASED SENSITIVITY conditions is the best timing to apply chemical thinners.

◆ marks date when fruit have reduced sensitivity after two or more days of temperatures >75F. ↑ marks today's date.

Thinning decisions should be based on observed diameters, cultivar, current and desired crop load, and conditions in your orchard.

Estimated Apple Sensitivity to Chemical Thinners

Other factors may outweigh the weather effects use for these estimates. Other influences include: fruit diameter, fruit exposure to temperatures >=75 F, pollination, this year's cropload, last year's cropload, warm February-early April temperatures, frost or prolonged cool and cloudy weather during bloom, previous fall weather, or drought last summer.

Ratings below are for the influence of weather on fruit sensitivity to chemical thinning agents. Ratings assume fruit are less than 15mm diameter. Dates in bottom rows are beyond 20mm diameter for most cultivars, and are intended only for late cultivars.

Look at your fruit! The rating for each day accounts for conditions on that day AND the three following days, i.e. each rating is for a 4-day period. The rated value for a day indicates the influence of daytime clouds and night temperatures in the 96 hours following application on efficacy of a thinner applied on that day. For evening applications, use the rating for the next calendar day.

Estimated McIntosh King fruit diameter dates:
 10mm - June 2, Thu. 15mm - June 10, Fri. 20mm - June 16, Thu.
 25mm deadline to hand thin for return bloom - June 22, Wed.

Date after which fruit have exposure to 2 days of daily high temperature of at least 75 F: Saturday, May 28

Very warm night temperatures (average > 69F = 19 heat units in table) can lead to "EXCESSIVE THINNING RISK", especially if combined with cloudy weather, or if combined with use of NAA.

- Warm nights + Cloudy days ----> **Increased** sensitivity, maximum thinning.
- Warm nights + Sunny days ----> **Intermediate** sensitivity, moderate thinning.
- Cool nights + Cloudy days ----> **Reduced** sensitivity
- Cool nights + Sunny days ----> **Reduced** sensitivity, minimum thinning.

THINNER APPLICATION DATE <small>Estimates assume morning application. For afternoon application use rating for next day.</small>	Average % CLOUD SHADING on application day and the next three days. <small>< 20% = "sunny blue sky" > 40% = "cloudy" Cloudy weather on four days after application increases thinning.</small>	Average NIGHT HEAT UNITS <small>= degrees above 50 F for 7pm-7am during four nights after application. Example: If average night time temperature is 55F, then value = 5. Values above 10 during four nights after application increases sensitivity to thinning.</small>	SUMMARY <small>Influence of weather on sensitivity of fruit to thinning agents for 4 days following a morning application Ratings assume that fruit are within diameter range of susceptibility for thinning.</small>	Date for visible thinning response: <small>Thinned fruit growth rate <50% of persisting fruit</small>
McIntosh 95% Petal Fall Sun, May 22	28%	8	Stronger influence for reduced sensitivity	June 1, Wed.
McIntosh 100% Petal Fall, Mon, May 23	sunny 0%	0	Stronger influence for reduced sensitivity	June 2, Thu.
Tue, May 24	sunny 4%	1	Reduced sensitivity	June 3, Fri.
Wed, May 25	sunny 5%	2	Intermediate	June 4, Sat.
Thu, May 26	44%	10	Increased sensitivity	June 5, Sun.
Late cultivar Petal fall, Fri, May 27	22%	12	Intermediate	June 6, Mon.
McIntosh Fruit Set, Sat, May 28	49%	6	Intermediate	June 7, Tue.
Sun, May 29	sunny 1%	8	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 8, Wed.

THINNER APPLICATION DATE Estimates assume morning application. For afternoon application use rating for next day.	Average % CLOUD SHADING on application day and the next three days. < 20% = "sunny blue sky" > 40% = "cloudy" Cloudy weather on four days after application increases thinning.	Average NIGHT HEAT UNITS = degrees above 50 F for 7pm--7am during four nights after application. Example: If average night time temperature is 55F, then value = 5. Values above 10 during four nights after application increases sensitivity to thinning.	SUMMARY Influence of weather on sensitivity of fruit to thinning agents for 4 days following a morning application Ratings assume that fruit are within diameter range of susceptibility for thinning.	Date for visible thinning response: Thinned fruit growth rate <50% of persisting fruit
Mon, May 30	sunny 20%	7	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 10, Fri.
Tue, May 31	sunny 21%	2	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 10, Fri.
Wed, June 1	sunny 16%	3	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 11, Sat.
Thu, June 2	41%	2	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 12, Sun.
Fri, June 3	62%	3	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 12, Sun.
Sat, June 4	31%	1	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 13, Mon.
Sun, June 5	22%	2	Intermediate-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 14, Tue.
Mon, June 6	43%	4	Increased sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 15, Wed.
Tue, June 7	75%	10	Increased sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 15, Wed.
Wed, June 8	44%	7	Intermediate-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 16, Thu.
Thu, June 9	39%	9	Reduced sensitivity-- sensitivity may be less because of fruit exposure to 2+ days with high temps. >75F	June 18, Sat.

Plum curculio PC

PC are ready to cut swelling fruit to lay eggs when temperature and humidity conditions allow them to operate at full speed. The cool temperatures might slow them down until warm evening weather returns around June 8, but they might settle for a cloudy day and get busy without waiting for ideal weather conditions. When they get going, PC can do a lot of damage in a short time. So having protection in place before they get busy is the way to go. They sparse rain allows residue to remain effective for a longer time, but after 12-14 days, insecticidal efficacy is largely gone even without rain.

A full dose application on or after June 8 may last until PC immigration is over. Note that if not killed, but merely annoyed by Surround, PC will continue to lay eggs on untreated fruitlets until early July.

Two thinning experts disagreed this week about whether using the full insecticidal rate of Sevin (carbaryl) to get both thinner and PC control activity. One does not like that idea because he thought there was risk of rewetting of the carbaryl that does not go into solution and remains on the fruit cuticle as residue. The concern is that the residue could become soluble with a following rain, absorb into the fruit, and act as an additional thinner influence.

The other thinning expert said that was not worth the worry because carbaryl is a mild and “safe” thinner to begin with and the rewetting concern was not justified. Using carbaryl at the insecticidal rate provides about 7 days control of PC, Codling moth, and White/Rose/Potato leafhoppers. Plus some suppression of less frequent pests: Green fruitworm, Oriental fruitworm, Lesser appleworm, Tarnished plant bug, stink bugs, and Rosey/Woolly apple aphids. Most of those less common pests are no shows in most Maine apple orchards in most years. But occasionally one or more of them does need control. PC and Codling moth require suppression in the vast majority of Maine apple orchards every year.

Codling moth CM

CM flight at Highmoor Farm in Monmouth is estimated to have begun May 25. But as they only fly in the evening hours at temperatures above 58F, mating flights to begin egg formation might have been delayed by a few days. If you find you have need to specifically manage for CM because of damage observed in last year’s harvest, please let me know (207-485-0918, glen.koehler@maine.edu) There are multiple options for codling moth control. Timing plays a role in making those options work.

1st generation, estimated first sustained trap catch biofix date: May 25, Wednesday.
Codling moth development as of Thursday, June 2:
1st gen. generation adult emergence at 15% and 1st gen. generation egg hatch at 0%.

Insecticide targetted against plum curculio and apple maggot may also prevent codling moth damage.
If targetted codling moth control is needed, key management dates are shown below.

Optimum date to apply RIMON or ESTEEM ovicidal Insect Growth Regulator (IGR) is shortly before CM egg laying begins (100 CM degree days after start of 1st gen. flight) so that eggs are laid onto residue: June 4. Saturday.
For INTREPID IGR, the optimum first application timing can be a bit later (150-200 DD) because it has both ovicidal & larvical activity: June 9 to June 13.

For conventional larvicides (Altacor, Assail, Delegate, Exirel, Verdepryn, Imidan, pyrethroids, etc.), Bt, Grandevo, or granulovirus (Cyd-X, Madex etc.) the best timing for first application against 1st generation CM is at 3% CM egg hatch (250 DD): June 16, Thursday.

Best date for follow-up application depends on type of material applied and weather since previous application. See Codling Moth tables for follow-up spray dates to maintain protection through 1st generation CM egg hatch.

1st generation 20% CM egg hatch (360 DD): June 24.

= Target date where a single larvicide application is used to reduce low pressure 1st generation CM, OR as a first larvicide application after an initial ovicide application at 100-200 DD.

**Peak (30% to 70%) 1st generation CM egg hatch is from June 26 to July 7.
1st generation 95% egg hatch is around: July 18.**

Roundheaded Apple Tree Borer

Hobbyist and organic apple grower's worst enemy is the Roundheaded Apple Tree Borer. Adults are now flying and will begin egg laying soon. Canopy insecticide coverage for PC, CM and other pests keeps RATB from being a noticeable pest in commercial orchards, but for trees not receiving effective insecticide sprays, RATB routinely attacks apple trees with trunk diameter less than 4 inches, diameter and routinely kills a significant portion of young apple trees with trunk diameter less than 2 - 3 inches. Canopy sprays between mid-June and mid-August work to kill or repel the female RATB before they lay eggs. White latex paint seems to reduce attack, and makes borer infestations that do occur more visible. Screening can work but must be done carefully to block rather than protect the RATB, and not to be left on to later stangle the growing trunk.

Apple maggot flies will begin flying around July 10, so it's not too early to get traps ready.

Virtual Champlain Valley Fruit Set Meeting

Mike Basedow is hosting a virtual fruit set meeting for the Champlain Valley this afternoon Thursday June 2, at 3-4PM. He will be visiting orchards throughout the area in the morning, and will be reporting on what he sees. We will also be joined by Dr. Robinson to hear his recommendations for fruit thinning at the 10-12mm window.

Registration is not required. Simply click on the following link at 3PM today:

<https://cornell.zoom.us/j/99009293851?pwd=OTdLbWN4OXF0cUItNGIKSjkrNFRtUT09>

Meeting ID: 990 0929 3851

Passcode: 615448

Virtual Orchard Meetup: Labor and Technology

Mario Miranda Sazo (CCE LOF), Kristy Grigg-McGuffin (OMAFRA), Bernardita Sallato (WSU), and Anna Wallis (MSU), Daniel Weber (PSU)

Please join us for a second season of Virtual Orchard Meetups in June-July 2022. In 2021, we launched the Honeycrisp Virtual Meetups, a series of four webinars connecting industry members across North America, which included over 20 specialists and 1000 participants. Based on the overwhelmingly positive feedback, we will be offering a second season in 2022.

This year's theme will be Orchard Efficiency: Labor and Technology. Webinars will showcase growers and other specialists leading the development of these aspects of the industry. We will hear about their experiences managing the current challenges and participating in novel solutions.

Webinars will be conducted live on Thursdays at 7:00pm (EST), on June 2, 16, 30, and July 14. The format will be an open discussion and in a very inclusive virtual format. Each webinar will last 90 minutes. The program is free of charge.

Register at https://msu.zoom.us/webinar/register/WN_lbvRIOYcR52A_Nfw03Z_qQ

- * June 2 Labor – Grower Experiences
- * June 16 Labor – Specialist Panel
- * June 30 Technology – Grower Experiences
- * July 14 Technology – Specialist Panel

More info at https://rvpadmin.cce.cornell.edu/pdf/event_new/pdf96.pdf

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