



Maine Tree Fruit Newsletter

Friday, May 27, 2022
 Vol 29:14

Apple growth stages

The table shows estimated King Fruit diameters for McIntosh trees that reached 95% Petal Fall on Sunday May 22. At Highmoor Farm, Honeycrisp reached 95% Petal Fall 1-3 days later than McIntosh, and the King Fruit diameters are slightly behind McIntosh, but only by about 0.5 to 1.5mm .

The 5-6mm, 10-14mm, and 17-20mm dates are shown because those define thinning windows recommended by Cornell Cooperative Extension.

The 7+mm diameter marks when fruit swelling is sufficient for Plum Curculio to begin making egg-laying cuts in apples. Tables for Springvale ME and Levant ME are attached as separate files.

Weather data for Monmouth ME. Forecast values begin May 26, 2022

Date Today's date highlighted. Bloom start/end dates in brown.	Observed & Predicted McIntosh bud stages
Sun, May 22	95% Petal Fall
Mon, May 23	100% Petal Fall
Tue, May 24	
Wed, May 25	
Thu, May 26	
Fri, May 27	
Sat, May 28	near 5mm King fruit
Sun, May 29	
Mon, May 30	7+mm KF (PC target)
Tue, May 31	
Wed, Jun 1	
Thu, Jun 2	
Fri, Jun 3	
Sat, Jun 4	
Sun, Jun 5	
Mon, Jun 6	near 12mm KF
Tue, Jun 7	
Wed, Jun 8	
Thu, Jun 9	
Fri, Jun 10	14+mm KF
Sat, Jun 11	
Sun, Jun 12	
Mon, Jun 13	
Tue, Jun 14	near 17mm KF
Wed, Jun 15	
Thu, Jun 16	
Fri, Jun 17	
Sat, Jun 18	
Sun, Jun 19	20+mm KF

Fire Blight

It was much too cool on Monday – Thursday for fire blight heat units to accumulate. But the warm temperatures beginning on Friday May 27 are creating enough heat units to make for the need to evaluate how many blossoms are still in the orchard and susceptible to blossom infections. The heat is creating infection risk on Sunday and Monday, May 29-30. For Highmoor Farm and orchards south and farther advanced, there is probably little risk for most cultivars.

In Monmouth, there were still many flowers on some Golden Delicious trees and more than a few Cortland flowers on Thursday, May 26. But by Sunday, May 29 there should be few if any open flowers remaining. Extremely late blooming cider varieties are a different case, and in orchards that did not reach 95% Petal Fall until Thursday or later, there could enough straggler bloom to require streptomycin protection.

Open blossom dates for common cultivars. "Date" is from 8am to 8am the following day, not midnight to midnight.	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.	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. 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.	Dates Blossom Blight (& Shoot Blight) would be obvious if infection occurred
Thu, May 26	70% (3%), 0.0", 6 hrs.	No blossom infection	
Late Cultivar Petal Fall on Fri, May 27	75% (58%), 0.02", 6 hrs.	No blossom infection	
Cider cultivars and straggler bloom on Cortland, Gala, Honeycrisp, etc. after Sat, May 28	93% (22%), 1.20", 16 hrs.	No blossom infection	
Sun, May 29	127% (44%), 0.0", 0 hrs.	INFECTION RISK	June 13, (June 24)
Mon, May 30	198% (74%), 0.16", 10 hrs.	INFECTION RISK	June 15, (June 25)
Tue, May 31	94% (0%), 0.11", 20 hrs.	No blossom infection	
Wed, June 1	63% (0%), 0.14", 10 hrs.	No blossom infection	
Thu, June 2	96% (33%), 0.21", 19 hrs.	No blossom infection	

If there were blossom infections on May 14-16, symptoms should begin showing up soon as dead fruit clusters. If you find more than a few infection clusters, please report them to glen.koehler@maine.edu. The Connecticut Ag. Experiment Station is offering free fire blight streptomycin resistance testing. The test requires fresh samples.

I = No active fire blight within 1 mile of the orchard in last two years. Requires 500 – 799 heat units for HIGH rating, 800 – 999 for EXTREME!, and 1000+ for EXCEPTIONAL!

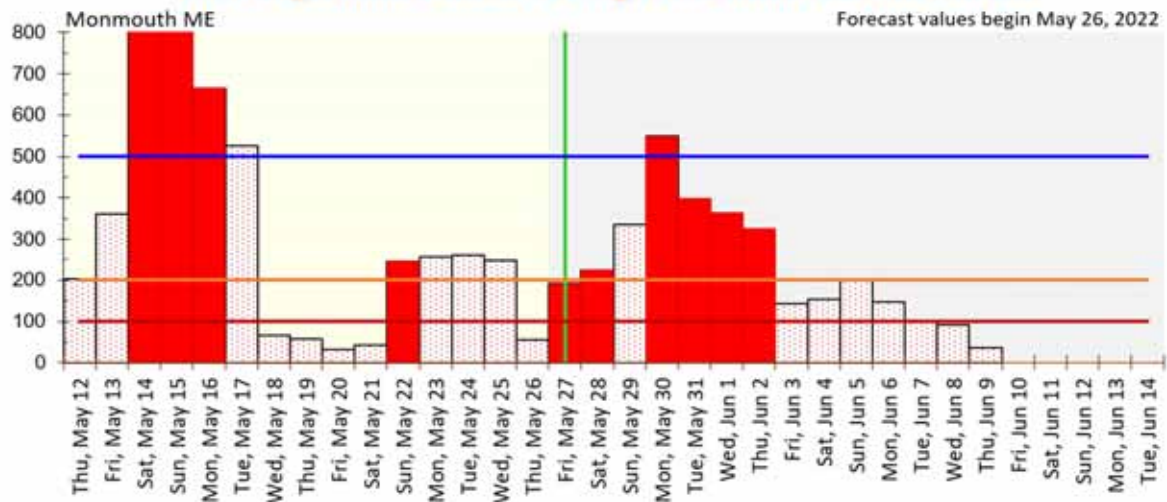
II = Fire blight was present within 1 mile of the orchard within last 2 years, but not currently active in the area this year. Requires 200 – 349 heat units for HIGH rating, 350 – 499 for EXTREME!, and 500+ for EXCEPTIONAL!

III = Active fire blight cankers within 1 mile of the orchard this year. Requires 100 – 199 heat units for HIGH rating, 200 – 299 for EXTREME!, and 300+ for EXCEPTIONAL!

If blossom infection occurred May 14, then blossom blight would be noticeable by June 2, and shoot blight by June 17.

Open blossom dates for common apple cultivars. "Date" is from 8am to 8am the next day, not midnight to midnight.	Cumulative Heat Units (single day units) Inches Rain, & Leaf Wet Hours 8am to 8am next day	I - No active FB within one mile of the orchard in last two years	II - FB active within one mile of orchard in last two years, but not this year	III - Fire blight currently active within one mile of orchard.	Date blossom blight (and shoot blight) symptoms would be obvious if infection occurred
Thu, May 26	55 HU (15) 0.0", 6 hrs	Low (lack of heat)	Low (lack of heat)	Caution (if wetting)	
Late Cultivar Petal Fall on Fri, May 27	192 HU (151) 0.02", 6 hrs	Caution	Caution	HIGH	June 11, (June 23)
Cider cultivars and straggler bloom on Cortland, Gala, Honeycrisp, etc. after Sat, May 28	225 HU (39) 1.20", 16 hrs	Caution	HIGH	EXTREME!	June 12, (June 23)
Sun, May 29	334 HU (129) 0.0", 0 hrs	Caution (if wetting)	High (if wetting)	Exceptional! (if wetting)	June 13, (June 24)
Mon, May 30	548 HU (229) 0.16", 10 hrs	HIGH	EXCEPTIONAL!	EXCEPTIONAL!	June 13, (June 24)
Tue, May 31	398 HU (0) 0.11", 20 hrs	Caution	EXTREME!	EXCEPTIONAL!	June 15, (June 25)
Wed, June 1	364 HU (5) 0.14", 10 hrs	Caution	EXTREME!	EXCEPTIONAL!	June 15, (June 26)
Thu, June 2	326 HU (91) 0.21", 19 hrs	Caution	HIGH	EXCEPTIONAL!	June 16, (June 26)

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.

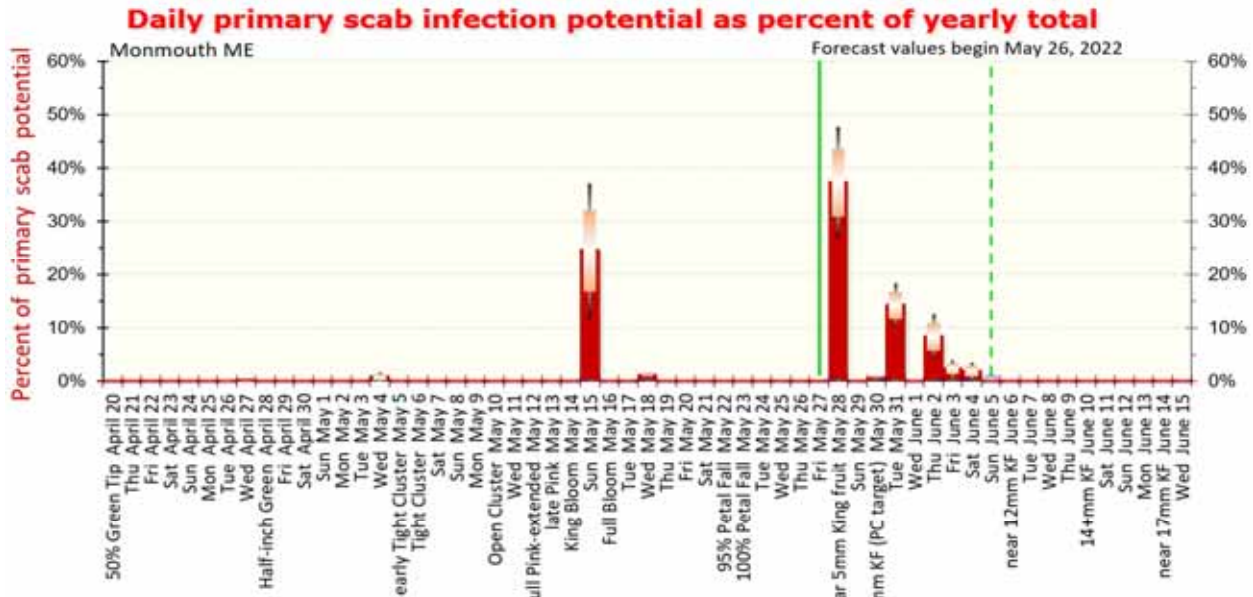
Orange horizontal line = Category II sites (FB within 1 mile last year, but not active within 1 mile this year). High threshold is 200, Extreme threshold is 350. Exceptional threshold is 500.

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.

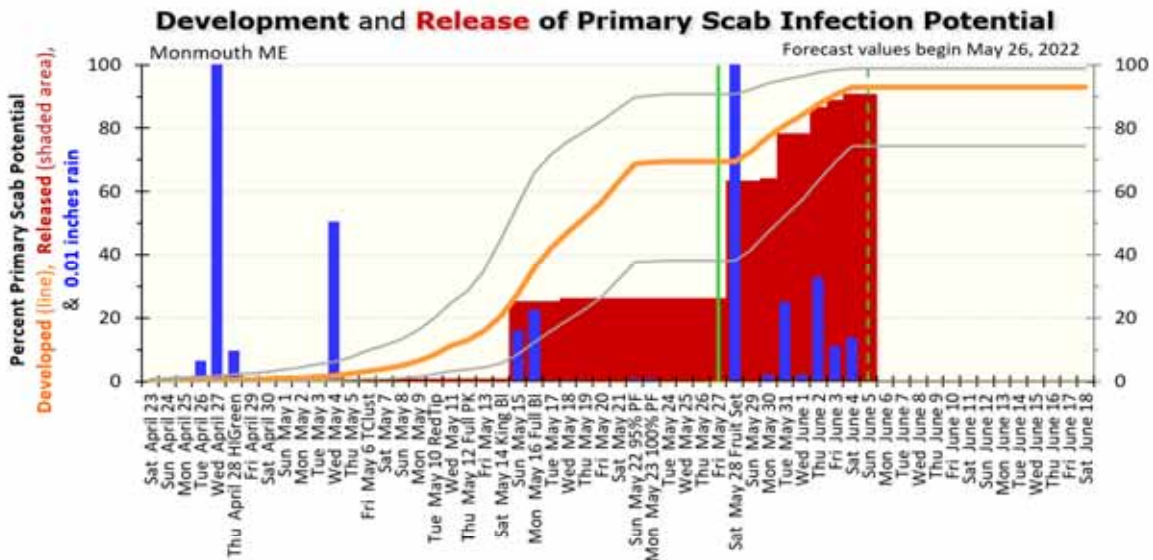
Heat units and thresholds are from Cougar Blight 2010 model by Tim Smith, Wash. State Univ.. See Cougar Blight table for daily values.

Apple Scab

In the Monmouth area, rain over the next week is forecast to bring 70% of the year's primary scab infection potential. Preventing primary scab infections is the key to avoid secondary scab infections and fruit scab. The sparse rain is causing delay in scab ascospore maturation and release.



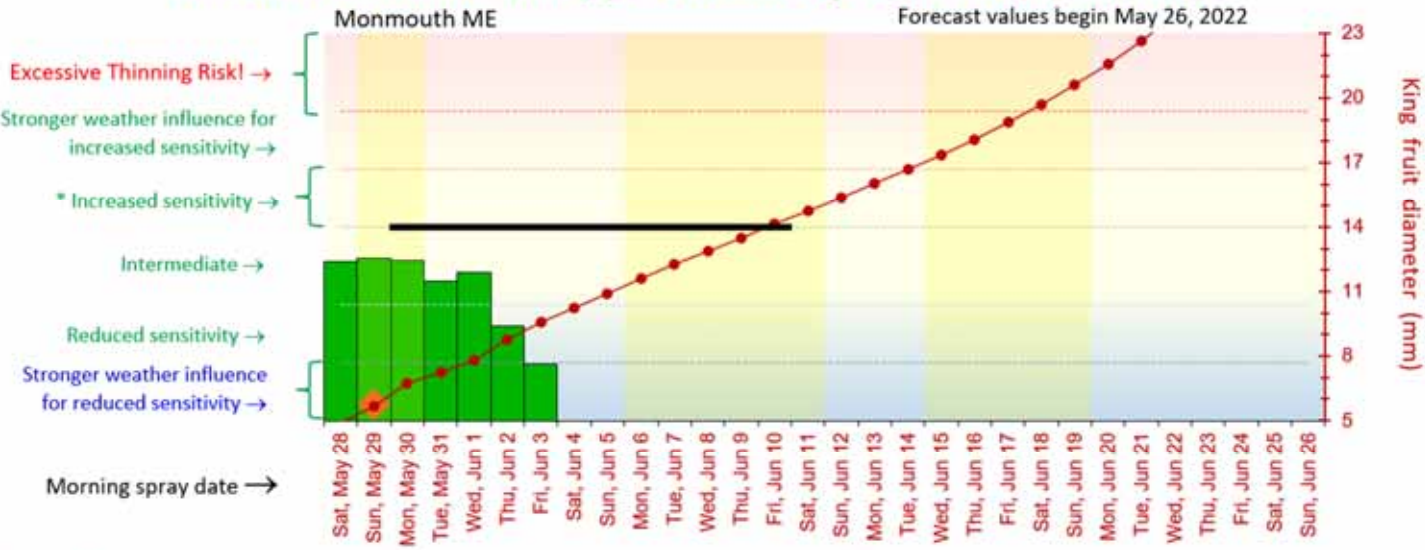
Top of wide red bar shows best estimate of primary scab ascospore infection potential. White-to-light red shaded narrow boxes overlaid on red bars show range expected to contain the true value most of the time (68% confidence interval). Thin vertical black bars show 90% confidence interval. Vertical green line = today's date. Vertical dotted green line = end of forecast. Vertical orange dotted line = date of final significant primary scab infection period (estimated 99+% cumulative spore release, and 95% chance of at least 95% cumulative spore release). Infection potential rating is for scab ascospores (i.e. primary scab) only. Uncontrolled infections can produce secondary scab spores that magnify infection risk beyond what is indicated by this chart, starting 9-17 days after the infection period.



Blue columns show 100ths of inch rain for each date. Rising thick orange line = cumulative primary scab infection potential developed by that date. Rising thin gray lines = 90% confidence interval for estimate of cumulative infection potential developed, but not necessarily released, by each date. Solid red area under orange line shows estimated cumulative percent primary scab infection potential released by end of that date. The red area is below the orange line unless a warm soaking daytime rain allows full expression of infection potential. Vertical line = today's date and beginning of forecast values. Vertical dashed green line = end of forecast range. 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

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 for the 4 day window after a morning thinner application. For evening application, use rating for the following day.

Horizontal 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 shows estimated King Fruit diameter for an early sizing cultivar on each day.

Vertical yellow columns mark the **EARLY** (5-6mm), **MID** (12-14mm), and **LATE** (17-20mm) postbloom thinning windows. Sensitivity peaks at 10-14mm fruit diameter. 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 line — shows dates with King Fruit diameter at 7 to 14mm. A "rule of thumb" is to look for day(s) at 7 to 14mm fruit diameter with an Intermediate to Increased sensitivity rating as best opportunities to apply chemical thinners.

◆ marks date when fruit have reduced sensitivity after 2 or more days of temperatures > 75F.

Thinning decisions should be based on observed diameters, cultivar, current and desired crop load, and conditions in your orchard. Prior nibble thinning at Bloom and Petal Fall is often recommended. To evaluate effect of previous thinner applications, check about 7 days later (3-4 days for the thinner to begin changing growth rate, and 4 days to accumulate a growth response). The UMass fruit growth model provides a way to interpret thinning response.

Insect & Mite Pests

EAS counts were low, and Codling moth flight had not yet started at Highmoor Farm on Thursday, May 26.

Block(s)	European Apple Sawfly Avg./Trap Threshold is 5 – 7.	Codling moth Avg. per trap Threshold is 5+ /trap
99, 14, 94, 03	1.5	0
85, 07HC	0.3	0
07Hill	1.5	0
75, 02	0.5	0

The first two weeks after Petal Fall are a key window for insect and mite control. Early detection of an emerging European red mite population allows control of the first generation nymphs before they can reproduce and multiply into a second generation. Some early season miticides (Agri-Mek, Apollo, Savey, Onager) work best when applied shortly after Petal Fall and before foliage begins to harden off. You can determine if ERM control is needed by checking 30 leaves for the presence of ERM nymphs. If you only find 0 or 1 infested leaf, you can stop sampling. The ERM are below threshold. If you find 17 or more leaves out of 30 with ERM present, then control is needed. If you find 2-16 infested leaves out of 30, for an accurate assessment the sample size should be increased to 100 leaves. If $<30 / 100$ have ERM present, treatment is not needed. If $\geq 30 / 100$ leaves have ERM present, then treatment is needed.

Adequate Codling moth control is often achieved through insecticide applications against Plum Curculio and then later against Apple maggot. But where targeted Codling moth control is needed, timing is critical for best effect. There are three timings depending on the type of control. Residual ovicides (Intrepid, Rimon, Enkounter) are most effective when residue is present before CM egg laying begins at 75-100 DDF after Petal Fall. At Highmoor Farm in Monmouth, that is Saturday to Monday May 28-30.

Horticultural oil can be used as a topical ovicide applied after codling moth eggs are laid but before they hatch. The optimum timing for that is 200 DD50F after Petal Fall, which is forecast to be June 10. But remember that oil should not be applied within 7-10 days before or after a captan application.

Insecticide to control codling moth larvae as they hatch and move into fruit is best timed at 250DD after Petal Fall. The Monmouth date for that is forecast as June 14.

The threshold for Leafminer sap-feeding mines is an average of 0.25 mines per leaf, i.e. more than 10 light colored areas where the leaf cuticle is separated from the underlying tissue. These mines appear near the base of the leaf around the petiole on the bottom side.. For white apple leafhopper the threshold is 1 per leaf

PFAS

The Maine Farmland Trust has a fund to pay commercial farmers for the cost of testing well water for PFAS level. The selection criteria and application form are at <https://www.maineFarmlandtrust.org/farm-viability/pfas-emergency-relief-fund/>

A Maine law slated to go into effect August 8 could affect regulation of pesticide active ingredients that meet the Maine definition for being a PFAS. The law is to undergo review for interpretation before it goes into effect.

Obsolete Pesticide Disposal

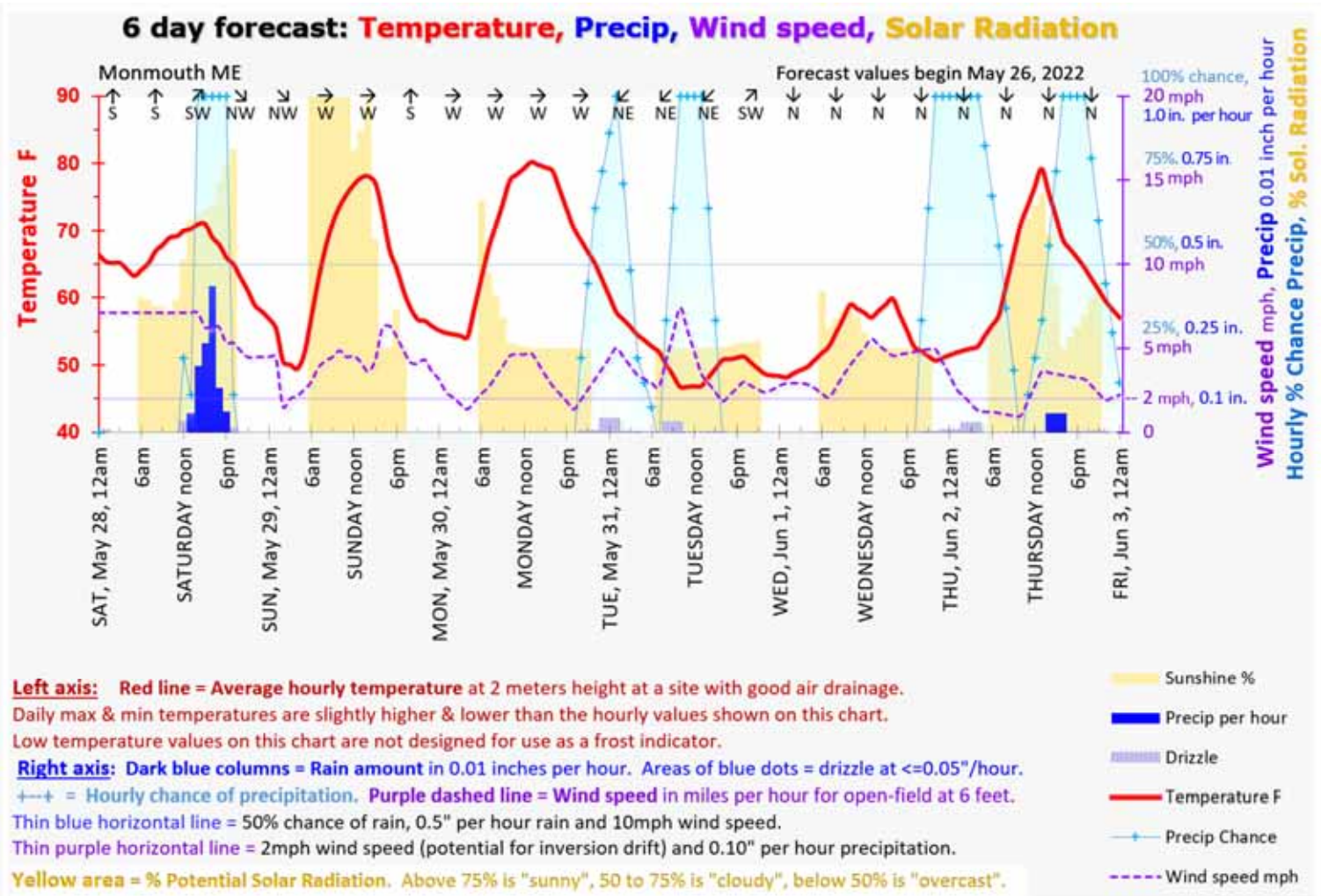
The Board of Pesticides Control in collaboration with the Maine Department of Environmental Protection is offering a series of no-cost obsolete pesticide collection events. The collections will take place during the week of October 17, 2022. To participate in the event, you must preregister. More information and registration forms may be found at https://www.maine.gov/dacf/php/pesticides/public/obsolete_pesticide_collection.shtml

Weed Control

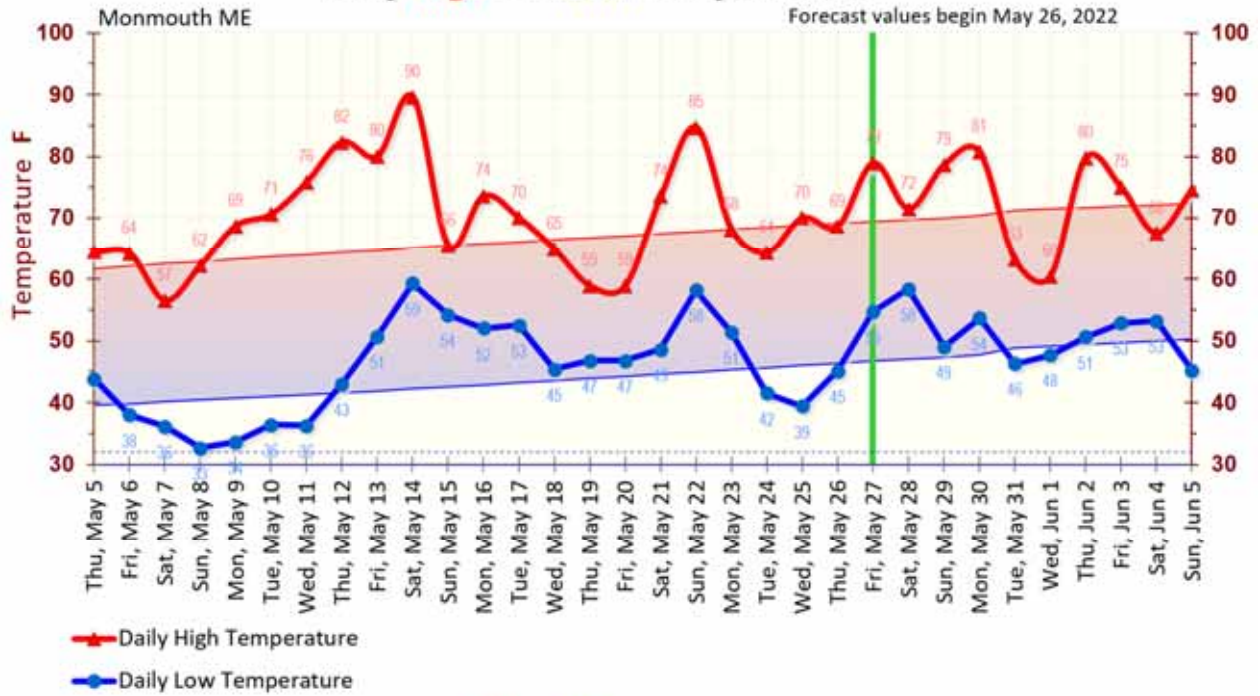
Apple trees are naturally stressed at this time of year as energy has been spent developing foliage, flowers and young fruit. Weed growth in the tree row provides direct competition for water and nutrients. Dry soil prevents root absorption of mineral nutrients.

Vegetation in the alley rows between trees also remove water from the soil. Mowing and removal of broadleaf weeds provides several advantages. Tarnished plant bug, mullein bug, stink bugs, and twospotted spider mite use broadleaf plants as hosts. Flowering broadleaf plants like mustard and dandelion attract bees and beneficial predator and parasite species. But their presence in the orchard exposes them to harm during daytime summer insecticide applications. Both grasses and broadleaf vegetation removes water and nutrients from soil. They also increase humidity in the orchard which increases the heat index for workers on hot days. The presence of tall vegetation also makes it harder to move around, increases the risk of picking up ticks, and provides cover for voles to establish feeding runs.

Weather Forecast



Daily High and Low Temperatures



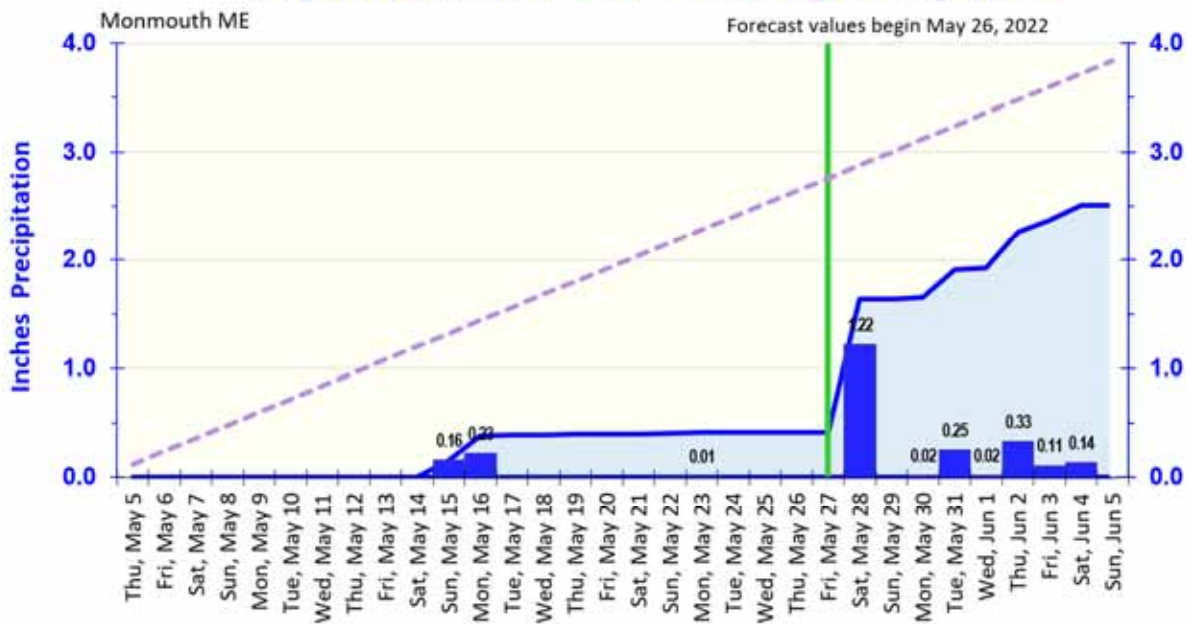
Horizontal colored band = Climatic average high and low temperature range for these dates.

Vertical green line = Today's date and beginning of forecast values.

Temperature values are for 6 feet above the ground at a site with good air drainage.

Low temperature values on this chart are not designed for use as ground level frost indicator.

Daily & Cumulative & Climatic Average Precipitation



Blue columns = Daily observed and forecast amount of precipitation.

Blue line and shaded area = Observed cumulative precipitation.

Straight dashed purple line = Climatic average cumulative precipitation over the same 32-days.

Vertical green line = Today's date and beginning of forecast values.

Closing Words

"In the end, everything will be ok. If it's not ok, it's not yet the end."

~ Fernando Sabino

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