1865 THE UNIVERSITY OF MAINE
Cooperative Extension
Pest Management Office

Maine Tree Fruit Newsletter

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Apple maggot

As usual, apple maggot trap captures vary greatly between locations, and even between individual traps in the same orchard. Trap captures this week continue to be high in some locations (> average of 3 per trap per week), near threshold (average of 1 per trap per week), and low (<0.5 per trap per week) at others.

Apple maggot activity, as measured by trap captures, is estimated to be at about 60% of the season total as of August 20 at Highmoor Farm in Monmouth. This value may underestimate the portion of AM egglaying that has been completed, as the value is based on total seasonal trap captures. AM egglaying may continue to be caught on traps after the date of peak egglaying. As a result, over 60% of egglaying activity may be complete by the date that 60% of the total expected trap captures has accumulated. Regardless, it is prudent to assume that the threat from AM egglaying continues until the end of August where trap captures of greater than 1 AM per trap per week indicate that enough AM are present to cause economic damage.

Flyspeck and Sooty blotch

The rain on Saturday August 18 has reset the expected dates for earliest safe date for a final fungicide application to prevent visible flyspeck or sooty blotch. These are educated guesses rather than a formal predictive model. The estimates are based on expected end date for fungicide to protect against germination of new flyspeck colonies. From that date forward, the model accumulates temperature adjusted leaf wetness hours. When that total number of hours reaches the total number that research suggests is required for flyspeck colonies to become visible, that is the date shown as a possible appearance date for flyspeck.

The estimates assume that there were no prolonged wetting periods without fungicide protection earlier during the summer during which new flyspeck colony growth began and developed. Subsequent fungicide application may be able to cause development to cease for those colonies, but after fungicide wears off, those colonies may resume development from the point at which their development was interrupted.

The estimates also assume that on the application date, fungicide was applied at full dose with good coverage.

Earliest safe final application dates for fungicide protection to prevent visible flyspeck and sooty blotch before harvest.

Dates assume protection against flyspeck development was adequate during June and July. Dates for Monmouth (Sanford in parentheses), are based on observed weather, the 10-day forecast, and climatic averages beyond 10 days.

Preharvest intervals are:
captan and Pristine – 0 days, Topsin – 1 day, Flint – 14 days, Sovran – 30 days.

For protection against visible Flyspeck through final harvest date of:	Earliest safe final application date for **captan**	Earliest safe final application date for **Flint, Sovran, Topsin.**	Earliest safe final application date for **Pristine**
Sept. 20	August 8 (13)	August 5 (12)	August 4 (9)
Oct. 10	August 16 (15)	August 10 (15)	August 9 (13)
Oct. 31	August 22 (22)	August 15 (18)	August 15 (15)

Codling Moth

Codling moth continue to show up in monitoring traps at varying levels. Unfortunately, we do not have a reliable threshold to relate trap captures to damage level. (A recent study found that trap captures accounted for less than 3% of variation in damage levels between blocks.) Many factors can affect pheromone trap captures and confuse the relationship between the number of male moths caught in traps and the number of female moths laying fertilized eggs. A pheromone trap can draw male moths from a large area of up to 10-17 acres because the males are extremely sensitive to the attractant. Placing codling moth traps on the outside border captures moths that otherwise would reside outside the orchard. The efficiency of codling moth pheromone traps can vary with temperature, rain, the number of female codling moth in the area producing competitive pheromone plumes, age of the lure, condition of the sticky trap bottom, placement of the trap within the tree etc.

The primary use of pheromone traps for codling moth is to detect the beginning of moth flight. That date is used as a biofix for beginning degree day accumulation that has been validated as accurately estimating the date of 1st generation egg hatch. Degree day correlation with 2nd generation codling moth egg hatch is less precise, but still serves as useful guidance.

Notwithstanding the lack of correlation between pheromone trap captures and female codling moth population density, some Extension recommendations still mention a threshold of 5 codling moth per trap per week based on the number of male moths caught in pheromone traps as a predictor for population level, and thus potential damage, and thus need for treatment.

(Note: all of the comments above apply to pheromone traps for obliquebanded leafroller, with the difference that the lack of correlation between trap capture and damage potential is acknowledged and as a result, there are no trap-based thresholds for obliquebanded leafroller. As with codling moth, the traps are used to detect a biofix for beginning degree day accumulation).

Codling moth is rarely the focus of insecticide applications in commercial Maine orchards and elsewhere in the Northeast because insecticide used against plum curculio typically helps suppress 1st generation codling moth adults and young larvae, and insecticide used to prevent apple maggot damage is reasonably well timed for control of second-generation codling moth. Thus, insecticide programs targeting plum curculio and apple maggot coincidentally prevent codling moth damage.

If pheromone trap catches were used a guide to need for codling moth control, treatment would only be called for if protection by an insecticide effective against codling moth eggs or larvae was not present.

All of this ambiguity about codling moth monitoring and control does not mean that codling moth is an insignificant pest. Far from it. Codling moth damage is routinely found as one of the most common types insect damage on unsprayed apples in Maine, and seem to present statewide. The point of this discussion is to put codling moth trap captures in their proper perspective (i.e. not worth much if anything), and to provide the guidance we do have for insecticide application for codling moth control.

Pest damage history in a block is the best guide to determining need for control. Checking apples for damage by 1st generation larvae is an indicator for potential damage by 2nd generation. Where damage occurs, 2nd generation damage is often more extensive than by 1st generation. Codling moth damage appears externally as brown sawdust like frass in the calyx end of apples that becomes apparent in late July. Presence of a large larva that has chewed into the core is indicative of codling moth.

Photos: Glenn Morin

If codling moth damage if found, it is useful to review the insecticide program to if coverage with materials effective against codling moth was present during the egg hatch period. Once hatched, codling moth larvae only need about 1 day to find an apple to penetrate. The dates shown in the tables below can be useful in reviewing this year's spray program, and to plan for next year.

The optimum timing for the first of two conventional insecticide applications to control 1st generation codling moth larvae at start of egg hatch, which is expected to occur at 250 degree days base 50F after the start of adult flight for that generation. A follow-up application 10-14 days later (depending on the insecticide used and amount of rain following application) can provide protection through most of the egg hatch period. Where codling moth pressure is intense, a third application may be needed to control a larger portion of the egg hatch period, or if the earlier applications are removed early by heavy rain. If the insecticide also controls adults or eggs, then residual control through the duration of the egg hatch period may not be necessary.

The optimum timing for the first of two conventional insecticide applications to control 2nd generation codling moth larvae is at 7% of 2nd generation egg hatch, which is expected to occur at 360 degree days base 50F after the start of adult flight for that generation. A follow-up application 10-14 days later is required to provide protection through most of the egg hatch period.

The following tables show the 2018 timings for codling moth life stage events. While each year is different, 2018 has been close to the average in terms of Petal Fall date and degree day accumulation.

Codling moth – 1st generation insecticide timing. DD= Degree days base 50F, max. 88F.

Location	Estimated start of 1st gen. flight	250 DD after 1st gen. flight: 3% egg hatch. Best date for first of multiple applications with conventional larvicide.	400-580 DD after 1st gen. flight: Peak egg hatch (30-70%).	800 DD after 1st gen. flight: 95% egg hatch.
Sanford	May 23	June 13	June 23 – July 3	July 12
Monmouth	May 27	June 19	June 30 – July 9	July 22
South Bridgton	May 25	June 19	June 30 – July 9	July 23
Newport	May 28	June 20	June 30 – July 8	July 21
Presque Isle	June 6	June 39	July 7 – 17	July 27

Codling moth – 2nd generation insecticide timing. DD= Degree days base 50F, max. 88F.

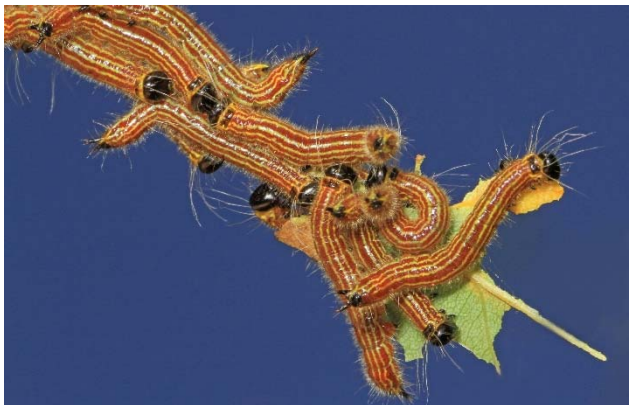
Location	Estimated start of 2nd gen. flight	360 DD after 2nd gen. flight: 7% egg hatch. Best date for first of multiple applications with conventional larvicide.	560-800 DD after 2nd gen. flight: Peak egg hatch (30-70%)*
Sanford	July 23	August 8	August 17 – 30
Monmouth	July 26	August 13	August 25 – September 9
South Bridgton	July 25	August 14	August 27 – September 12
Newport	July 26	August 11	August 23 – September 7
Presque Isle	August 6	August 28	?

* 2nd generation egg hatch may be curtailed with declining temperatures in September. Values are based on data from locations with a full second generation hatch, which probably does not apply for many Maine locations.

Yellownecked and Redhumped Caterpillar

August is bringing the usual reports of yellownecked and redhumped caterpillars defoliating branches on unsprayed apple trees. Groups of larvae can be removed by pruning. It is almost too late and unnecessary to spray as the larvae will soon cease feeding and seek a location to overwinter. Large larvae are susceptible to conventional insecticides but will be difficult to control with Bt.

The key to control is look for newly hatched larvae in July and remove them before foliar feeding occurs. Losing some foliage is not that harmful to apple trees unless the defoliation is severe. Young trees are more vulnerable to defoliation as the percentage loss is greater.



Yellownecked caterpillars. Photo: Judy Gallagher. https://creativecommons.org/licenses/by/2.0/

Redhumped caterpillars. Photo: Bruce Watt ©

McIntosh Harvest Dates

Location	Expected date range for McIntosh to transition from Starch Index 4.0 to 6.0 (start and end of maturity for long term storage)	Date to apply ReTain to delay 1at harvest	Date to apply ReTain to delay maturity for 2nd, 3rd or 4th pick
Sanford	September 12 - 21	August 15 - 22	August 29 – Sept. 5
Monmouth	September 18 - 26	August 21 - 28	September 4 - 11
Cumberland Ctr.	September 18 - 26	August 21 - 28	September 4 - 11
Fairfield	September 18 - 26	August 21 - 28	September 4 - 11
Newport	September 19 - 28	August 22 - 29	September 5 - 12
Presque Isle	September 18 – October 7	August 30 – September 6	September 13 - 20

Starch tests for apples will begin on August 27.

The harvest maturity indicator chart for pears is online under "Maturity Indicators" https://extension.umaine.edu/fruit/harvest-and-storage-of-tree-fruits/

Pears are generally ready to pick for storage when their firmness drops to about 17 lbs. They will not be ripe at this stage, but will ripen normally after one month of cold storage. Cold temperatures begin the ripening process in pears. Hot weather delays ripening.

ReTain for Harvest Delay

To delay the harvest the first pick by up to 7-10 days, apply ReTain three to four weeks prior to beginning of expected harvest date for untreated fruit.

To prevent fruit drop and ripening of later picked apples (2nd, 3rd picks), apply ReTain one to two weeks prior to beginning of expected harvest date for untreated fruit. This later timing typically will not delay the start of harvest, but will slow down the ripening of the remainder of the fruit. ReTain may be useful to delay ripening for pick-your-own apples where customers are not expecting an early harvest or where warmer than normal temperatures inhibit red coloring. Where crop load is heavy, ripening can be delayed and color may be slow to develop.

ReTain can also be applied in a split application to control the ripening throughout the harvest period.

Gala and Honeycrisp are more sensitive to ReTain and can have a delay in ripening.

As it states on the label, do not tank mix ReTain with sunburn protectants, and avoid its application within 3 days of applying a sunburn protectant.

To keep Macs on the tree into October, a split application of ReTain with NAA (PoMaxa, Fruitone or Fruit Fix) will work more than either material alone. For the split application, apply a tank mix of ReTain at half rate with 10 ppm NAA at 3 weeks before normal first pick followed by another tank mix of the same one week before normal first pick. ReTain applications should be applied using a large volume of water such as 100 gallons per acre and a surfactant such as Silwet.

Fruitone and PoMaxa have a 2-day preharvest interval (PHI); and ReTain has a 7-day PHI. Preharvest intervals for spray materials are listed in the Pest Management Guide, but the 2015 edition has an error for the PoMaxa PHI, so consult the label. ReTain is also labeled for plums and peaches.

Conditions that Reduce ReTain Effectiveness:

Drought
Sunburn
Mite infestations
Severe disease or scab
Rain within 8 hours of application
Ethrel applied to neighboring trees

More details on using ReTain can be found on the product label. To get the most out of ReTain, follow these additional recommended application procedures.

1. Apply during slow drying conditions, early in the morning or late in the afternoon.

2. Apply ReTain at a rate of one pouch per acre, which contains 333 grams of product. ReTain comes in a water-soluble pouch, and all must be used once the pouch is opened. For Gala and Honeycrisp, use a reduced rate of slightly more than the half-rate.

3. Use a surfactant. For optimum response, include one of the following: Silwet L-77, Sylgard 309, RNA Si 100 or BreakThru at 6.5 to 13 fluid ounces per 100 gallons (0.05% to 0.1% v/v of final volume). Use the low rate of surfactant if temperatures near 86°F are predicted. Avoid vigorous agitation since excess foaming could result.

4. Use sufficient water to get thorough coverage, but not runoff. For most trees this would be 100 gallons per acre or 2X - 3X.

5. The pH of the water should be in the range of 6 to 8.

6. Incompatibilities:

Do not apply calcium chloride 4 days before or after Retain application that includes Silwet or Sylgard. Do not apply Retain with products that prevent sunburn. Application with other chemicals is also not recommended.

Closing Words

"It was impossible to get a conversation going, everybody was talking too much."

"I tell the kids, somebody's gotta win, somebody's gotta lose. Just don't fight about it. Just try to get better."

"Little things are big."

~ Yogi Berra

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