McIntosh King Bloom at Highmoor Farm may arrive a couple of days later than May 18, but I “forced” the bud stage model to show bloom on May 18. This was for several reasons: Zestar and other early blooming cultivars reached King Bloom on Wednesday, May 17; McIntosh at Highmoor seem to be running a little ahead of the model; a high temperature of 87°F forecast for Thursday, May 18 is likely to cause even more rapid development than the heat-driven model calculates, i.e. really hot days tend to make bud development jump ahead really fast. The final and underlying reason was to over- rather than under-estimate fire blight risk.
Fire Blight

Fire blight potential is high this week. Risk is highest in the Sanford area, but there is risk for early blooming cultivars in the Monmouth area. Risk is lower for locations north of Monmouth and for coastal areas where seasonal progression is behind Monmouth.

In what seems to be an annual event, we are getting a blast of heat in bloom. It makes a big difference when that heat arrives relative to bloom stage. The highest risk of fire blight blossom infection occurs when heat occurs in the Full Bloom to Petal Fall period. That is the situation this year for apple trees in the Sanford area. The daily high temperature in Sanford for Thursday is 91°F! That creates a large accumulation of heat units for bacterial growth.

There are five requirements for a fire blight blossom infection: open bloom, susceptible cultivar, a resident population of fire blight bacteria, heat unit accumulation over the previous 3-4 days over the threshold, and enough wetting to carry bacteria into the floral nectaries.

In Monmouth, heat unit accumulation is high enough to exceed the threshold for “exceptional” risk category. Heat unit accumulation in the Sanford area are almost twice as much as in Monmouth. The high heat unit days in both locations are Thursday, May 18 through Monday, May 22. (May 17 was also over the heat threshold in Sanford, but with no wetting that should not matter.) Note that for fire blight weather, a day runs from 8am to 8am, not midnight to midnight. Thus, May 17 is from 8am May 17 to 8am on May 18. There are reasons for doing this that don’t need discussion right now so we can stay focused on infection risk.

The timing for heat units is also a worst case scenario for the Sanford area. Fire blight blossom infections in late bloom are the most severe because insects have had plenty of time to carry the fire blight bacteria into a large number of blossoms before the heat units occurred. This allows the bacteria to reproduce quickly and build up enough numbers to overcome apple blossom defense against infection.

Risk is lower in Monmouth because not only are there fewer heat units (though still plenty), but those heat units are occurring at the start of the bloom period. In Monmouth, flowers will have just opened and not have been previously inoculated with bacteria to start a colony to take full advantage of the heat units.

The heat units are the bad news. The good news is that there is no rain in the forecast on the days with high cumulative heat units. No wetting means no infection. A caveat is that it does not take much wetting to launch a fire blight blossom infection. Even without rain, a heavy dew may be enough to make that happen. More good news is that not only is there no rain in the forecast for the high heat days, there are not any leaf wet hours on Thursday-Saturday. There are no hours with relative humidity over 90% at either site on Thursday—Saturday. In other words, those look to be dry days with no rain, no leaf wetness and a low chance of dew.
The bottom line is that the risk prior to 8am Sunday May 21 is low due to missing wetness. However, the high heat units in Sanford makes it extremely important to watch the forecast for any rain or dew potential on those days.

So far, so good. What about Sunday and Monday May 21-22? Most apple trees in the Sanford area will have few viable blossoms left. But it’s never simple with fire blight. There are always Cortland, Gala, Golden Delicious, Honeycrisp, Paula Red and other cultivars with enough late straggler or secondary bloom to create infection potential. In Monmouth, apples will be just past Full Bloom, so there will be an abundant supply of susceptible flowers.

Both locations will still have enough heat units accumulated to coincide with potential dew hours on early Monday morning, May 22. Even though there is no rain in the forecast for Monday morning, that dew potential makes be nervous because it coincides with high cumulative heat units. My read on the situation is that Monday morning poses the highest risk of this situation. Even if you have never seen fire blight in your orchard, it looks like a wise investment to apply strep during the day on Sunday May 21. Even though Monmouth will have many more flowers, the risk is probably higher in the Sanford area because of the much higher heat units and still enough remaining flowers to be worrisome.

If your orchard has had fire blight, you won’t need any more argument about whether it’s worth spraying to prevent.

Both locations have rain forecast starting around 5-6pm. That’s bad news, because that would provide plenty of wetting. The Cougarblight and Eastern Fire Blight models differ primarily in how they accumulate heat units. In this case, for Sanford they disagree about how much infection potential there is in Sanford from a Monday evening rain. Cougarblight does not rate it as much risk unless you have active fire blight in the orchard. The Eastern model calls it a high heat unit and high risk event. Between the two models, I trust Cougarblight more. But I don’t recommend taking chances with fire blight.

The two models disagree in the same way about Monmouth, but at lower heat than Sanford, but also more flowers. The Monmouth Cougarblight says there are not enough heat units to worry about, the Eastern model shows just enough heat for infection.

All of these statements can and will evolve as the forecast evolves. So watch the weather carefully. The Cougarblight and Eastern fire blight models for Sanford and Monmouth are online at https://extension.umaine.edu/ipm/ag-radar-apple-sites/me-monmouth-apple/#FIREBLIGHT for Monmouth, and https://extension.umaine.edu/ipm/ag-radar-apple-sites/me-sanford-apple/#FIREBLIGHT for Sanford.
I recently rebuilt those models, so you may notice some changes, but the basic logic is the same as before. Days with the “if wetting” qualifier are technically days without infection risk because of not enough wetting. The updated presentation shows the potential for what could happen IF the heat units on that day were combined with wetting. The huge amount of heat units in the Sanford area made it unpalatable to say there was no risk of infection when that would change in a huge way with even a little bit of rain.

For best protection, you want to spray streptomycin as shortly before a potential infection period as possible to maximize the number of susceptible flowers protected by the application, and to minimize the number of flowers that open after the application and thus do not benefit from the application. After an infection period starts, you have only 12-24 hours to apply streptomycin with good effect. A protective application is preferable to attempting postinfection control.

If you are going to spray fungicide ahead of the Monday evening rain for protection against apple scab, do not make the application on Monday morning unless you also have streptomycin in the tankmix. But even better, don’t spray on Monday morning. The amount of water from a spray application is by itself probably not enough to launch a fire blight infection. But adding that little bit of water to flowers at or near the dewpoint could possible provide just enough extra push to cause blossom infection.

**Apple Scab**

An ascospore release test on leaves collected from underneath unsprayed apple trees in Manchester ME (near Highmoor Farm in Monmouth) on Thursday, May 4 and kept dry until the test on Friday May 5 found 2.0 released ascospores per 100X magnification microscope field. The leaves only had about 48 hours after the previous wetting and before the test for new ascospores to mature and become ready for release. McIntosh trees at Highmoor Farm were at Tight Cluster at time of collection.

The spore count from the May 5 test was much higher than for the test conducted six days earlier on April 29, and the leaves used in the April 29 test had more time (three dry days) to mature spores before the test.

I expected another big increase in spore release for a test on Monday May 15. But it didn’t happen. I don’t know why except that maybe the leaves are starting to decompose. The number does not matter than much because regardless of the test, with apple trees in bloom we know that this is the time of peak scab ascospore releases.

The reason for doing the ascospore release tests at this time is to provide a baseline number to compare against for tests at the end of primary scab season when we are trying to determine when primary scab ascospore releases are effectively done for the year. The scab degree day model gives us one way to estimate that, but it’s good to compare that with observations from leaves that have been kept in natural conditions.
You might think that the spore release tests are the physical proof, the “real deal: vs. abstract model estimates. But it’s not that simple. Scab spore release tests done with newly collected leaves do not account for a huge factor – leaf decay. Out in nature, the leaves are being broken down. I tried to avoid that bias by using the same set of leaves from week to week, which has worked in the past, but not this year. I’ll start with newly collected leaves for the next test so that we have something to compare against for end of primary scab season tests over the next couple of weeks.

**Insect Pests**

The only major insect pest needing attention in the near term is European apple sawfly (EAS) at Petal Fall if you have a high enough population or orchard history. Otherwise, insecticide application for plum curculio will prevent significant EAS damage.

Plum curculio come into the orchard during bloom but are not going to cut fruit until it reaches 6-8mm diameter at Fruit Set.

Tarnished plant bug (TPB) activity at Highmoor Farm was moderate through Tight Cluster. The rain since then was not favorable for TPB activity.

**Bits and Pieces**

Farmers, and any affiliated individuals or entities participating in most programs administered by the FSA, the NRCS, and the Risk Management Agency are required to send a “Highly Erodible Land Conservation and Wetland Conservation Compliance Form AD-1026” by June 1, 2017.

Not sending in the form jeopardizes eligibility for USDA program benefits such as:
- FSA loans and disaster assistance payments;
- NRCS and FSA conservation program benefits; and
- Federal crop insurance premium subsidies.

For more information see https://extension.umaine.edu/agriculture/blog/2017/05/03/conservation-compliance-ad-1026-deadline-nears/.
"I arise in the morning torn between a desire to improve the world and a desire to enjoy the world. This makes it hard to plan the day."

~ E.B. White

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