Apple Scab Update

Just to see what it would look like, I edited the dry switch in the scab ascospore degree day maturity model to be more sensitive. The original dry switch was set to stop accumulating degree days for scab maturation on the 8th day if there was zero rain on that day and the preceding 7 days, and to resume counting degree days on the next day with > 0” rain.

The new unofficial, not field tested, "just to see" version is set to stop accumulating scab maturation degree days if there was less than cumulative 0.13 inch (1/8th inch) for the 7 days, and to resume counting degree days when the 7 day rain total exceeds 0.12”.

The choice of "< 0.13 inch rain over 7 days" as a dry switch is just a best guess. The scab ascospore release model calls for only half of the available mature ascospores to be released if the total rain on a day is <= 0.10 inch. In other words, 0.10 inch rain is considered insufficient to fully soak leaves to release all of the available mature ascospores. The revised ascospore maturity model dry switch is a guess at conditions that might result in overwintered apple leaves on the orchard floor being dry enough to halt further ascospore maturation. As it does not account for temperature, sunshine, wind, relative humidity, this is a rather simple guesstimate, but no less simple than the official dry switch that is also based on rain alone.

Another change was to account for the number of dry days before Green Tip. The original dry switch was set to start at Green Tip, but not to look backwards to the days before Green Tip. Looking at weather records, the week before Green Tip in Sanford, Monmouth, and Turner (and elsewhere in southern New England) was dry.

For context, the climatic average amount of rain for Maine sites in May is about 0.11" per day, from rainfall of about 0.33" about every third day. Thus, the amount of average spring rain per week is about 0.77". Of course, there is no "average" daily or weekly rain. However, this gives a sense of scale that less than 0.13 inch of rain over a 7 day period is rather dry. Also, keep in mind that SkyBit weather data currently used for Orchard Radar is more likely to overestimate rather than underestimate daily rain.

The combination of little or no rain and/or cool temperatures from late March to April 8 meant that even though Sanford, Turner, and Monmouth reached Green Tip on March 22-24, there were few cumulative scab degree days for the first 15-17 days after Green Tip until rain and warming temperatures arrived on April 8.
When applied to the recorded rain at the Orchard Radar sites, the effect of the revised dry switch on estimated spore maturity - and thus also on infection period severity and end date for primary scab spore releases - is significant but not huge.

For Sanford, the May 22 infection period becomes more significant, and the date for the final primary scab infection period moves from May 22 to May 29.

For Highmoor (Monmouth), Turner and Madison, the May 22-23 infection period becomes more potent and dominant as the most important infection period of the year. The May 29 infection period becomes more significant, and the date for final primary scab release gets pushed from May 29 to June 2.

The same applies for Levant, except that final primary scab ascospore release was already June 2, and stays that way but does increase in severity.

Additional tweaking of the dry switch would not change these results and would probably make the switch unrealistically over-sensitive. Beginning and after April 21, rains were frequent and substantial. Thus, based on current understanding of scab biology, after April 21 overwintered scabby leaves on the orchard floor were not too dry for to interrupt scab maturation.

You can see a table of estimated daily and seasonal cumulative scab infection period intensity with the revised dry switch in effect for each site at the following links. The other scab charts and tables for each Orchard Radar site will also reflect the revised dry switch effect.

Sanford  http://pronewengland.org/AllModels/MEmodel/me-Sanford-ScabRatingsTable.htm
Monmouth http://pronewengland.org/AllModels/MEmodel/me-Monmouth-ScabRatingsTable.htm
Turner  http://pronewengland.org/AllModels/MEmodel/me-Turner-ScabRatingsTable.htm
Madison http://pronewengland.org/AllModels/MEmodel/me-Madison-ScabRatingsTable.htm
Levant  http://pronewengland.org/AllModels/MEmodel/me-Levant-ScabRatingsTable.htm

The table at top of last night’s newsletter looks like this with estimates made using the more sensitive experimental dry switch:

**Estimates as of June 2, 2012**

<table>
<thead>
<tr>
<th>Site</th>
<th>Final primary scab infection period</th>
<th>Good date to start regular scab scouting: Date when 50% of primary scab infection potential has had time to appear as 1st generation lesions</th>
<th>Date when 100% of primary scab infection potential has had time to appear as 1st gen. lesions</th>
<th>Date when 50% of primary scab infection potential has had time to appear as 2nd gen. lesions</th>
<th>Safe to relax scab protection and switch to flyspeck fungicide schedule if still scab free by: Date when 100% of primary scab infection potential has had time to appear as 2nd gen. lesions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanford</td>
<td>May 29</td>
<td>May 23</td>
<td>June 11</td>
<td>June 2</td>
<td>Too early to estimate</td>
</tr>
<tr>
<td>Monmouth</td>
<td>June 2</td>
<td>June 4</td>
<td>June 15</td>
<td>June 16</td>
<td>Too early</td>
</tr>
<tr>
<td>Turner</td>
<td>June 2</td>
<td>June 3</td>
<td>June 15</td>
<td>June 15</td>
<td>Too early</td>
</tr>
<tr>
<td>Madison</td>
<td>June 2</td>
<td>June 4</td>
<td>June 16</td>
<td>June 16</td>
<td>Too early</td>
</tr>
<tr>
<td>Levant</td>
<td>June 2</td>
<td>June 4</td>
<td>June 15</td>
<td>June 16</td>
<td>Too early</td>
</tr>
</tbody>
</table>
Apple Thinning Weather

The window for chemical thinning for most apple cultivars is over for most locations south of Augusta, but here are the current estimates for the effect of weather on sensitivity of apples to chemical thinners for the Madison-Skowhegan area.

3-day weather influence on apple sensitivity to postbloom thinner

Green columns show thinning sensitivity rating for apples up to 12mm diameter on unstressed trees for the 3 day window after application of thinner on morning of date listed. For evening application, use rating for the following day. Ratings reflect the influence of daytime cloud cover and night temperatures for 72 hours following a morning application, not just for that day. You do not need 3 days in a row with high ratings for good thinning. Each day's rating is for a 3 day period. High bars on days following an application date indicate continued conditions that promote sensitivity to thinner on days 4+ after the application. The primary influence of weather on thinning potential is during the first 3 days after application.

Horizontal lines mark transition levels between sensitivity categories. "Good thinning" for trees with average sensitivity from other factors is associated with ratings in the "Increased Sensitivity" range.

Vertical blue dashed line marks estimated McIntosh fruit diameter exceeding 12mm, causing decline in sensitivity below rated value.
Vertical purple dashed line marks estimated McIntosh fruit diameter exceeding 15mm, causing decline in sensitivity substantially below rated value, and rapid decline in efficacy of NAA and Accel.
Vertical black dashed line marks estimated McIntosh fruit diameter exceeding 18mm, bringing an end to the thinning window for carbaryl. Ratings for dates beyond the McIntosh 18mm date are for later cultivars that still have fruit smaller than 18mm diameter.
Vertical orange line marks date when fruit have reduced sensitivity after 2 or more days of temperatures > 75F. This may occur on same day and overlap one of the other vertical bars.

Closing Words

“When a job is once begun,
Do not leave it ‘til it’s done.
Be the labor great or small
Do it well, or not at all.”
~ Karl W. Koehler
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If you are a person with a disability and will need an accommodations to participate in this program, please call Highmoor Farm at 933-2100 to discuss your needs. Receiving requests for accommodations at least 7 days before the program provides a reasonable amount of time to meet the request, however all requests will be accepted.