Apple Scab

The point:
Primary apple scab infection season is not over yet, and will not be over for at least another week even in Sanford. The next rain in Sanford (and next couple of rains for Maine locations north of Sanford) poses risk of scab infection, so apple foliage should be have protectant fungicide coverage before the next rain.

Background:
The scab ascospore maturity model uses the McIntosh Green Tip date as the assumed starting point for maturation of spores with accumulating degree days. Once mature, spores are ready for release with next soaking daytime rain. The model has wide error bars during the middle of the growing season, but is a useful tool for estimating end of primary scab spore releases and thus, infection periods.

But there is some question about the reliability of the association of McIntosh Green Tip as a rock solid reliable starting point to initiate the degree day model. There is possibility for error on both the low and high side.

Error on the high side is suspected after an open, dry winter. Scab development in leaves exposed to prolonged dry weather prior to bud break may be held back by the lack of available moisture. The record-setting early bud break date this year started the clock ticking on the scab ascospore maturity model, but the winter conditions prior to bud break and the early bud break date may have disrupted the normal association between scab ascospore maturation and apple tree bud development. Extended dry weather after the scab maturity model begins running used to be a concern, but the model was revised with a “dry switch” to stop estimated maturation during extended dry periods to account for this.

There has been interest in developing a way to detect and predict if this has happened, but that question has not been answered in published research. The scab squasha method has not been considered useful in this regard because doing a scab squasha does not account for the declining population of overwintered scab-bearing leaves in the orchard. The real measure of scab infection risk is to run a spore trap in the orchard. But that requires expensive equipment and time to operate it and read the results. Because of the logistical difficulty, not even plant pathologists with technician assistance and an equipment budget still run orchard spore traps outside of specific research studies. Even scab squashes have fallen by the wayside.
They no longer run an orchard spore trap at the Cornell Hudson Valley Lab either. But because of concern about the dry spring in Hudson Valley this year, have done some scab squashes recently. Moreover, Dr. Dave Rosenberger and Fritz Meyer at the lab went back through their past records of scab squash observations taken at the same time as spore trap data. From this, they were able to construct an association between the two. What they saw in scab squashes on May 4, and then again May 17 suggests the even though the degree model estimates scab spore maturation was complete by last week, there may still be spores available for release with the next rain.

**The point again:**
Regardless of what is or is not happening in the Hudson Valley, even the degree day model says we are still not finished with scab spore releases in Sanford, the earliest site we track with Orchard Radar. For Madison and Levant, the low end of the 90% confidence interval estimate from the scab ascospore degree day model estimates that as much as 50% of the season’s spores have yet to mature.

**...and another point:**
Any discussion of scab risk needs a reminder that the absolute level of risk is much more dependent on the density of scab spores than differences in early vs. late season infection periods, duration of rain etc. Estimates of variation between orchards in potential ascospore dose made by Dr. Bill MacHardy, Sam Sutton, and Dr. Dave Gadoury found that the difference between orchards is on the scale of single digits to millions of ascospores per square meter. This range far exceeds the relative difference between a mid-season estimate of 50% of season’s ascospores released with a rain vs. 1% or less for an early season or end of season release. Thus, the absolute number of infective spores released in a high scab orchard for even the tiniest sliver of relative ascospore maturity can exceed the absolute number in the highest intensity full bloom infection period in a low scab orchard. The ratio of 1,000,000 to 5 is much bigger than 50 to 1.

This is a key point behind Bill MacHardy’s work on sanitation and inoculum reduction as key element for scab management.

**Fire blight**

The MaryBlyt model shows no fire blight blossom infection periods so far at any of the five Mains sites tracked. It does show a marginal infection period from showers forecast for Tuesday May 22 and early Wednesday May 23. But by then, even late blooming cultivars will have few if any flowers left. MaryBlyt does not see any fire blight infections in the coming week elsewhere in Maine.

The Cougarblight model estimates that infection risk was high on Monday and Tuesday, May 14–15 this week in the Sanford area if fire blight was active within one mile last year. And that there will be similar risk on May 22–23 for that area if there were any flowers still on the trees.

For the Monmouth, Turner, Madison, and Levant, Cougarblight only estimates high risk on May 22–23 for orchards with active fire blight. But I do not think there is active fire blight in any of those areas given the cool weather earlier.
Apple Insect and Mite Pests

Petal Fall is an important window to check for European red mites, tentiform leafminer mines, and white apple leafhopper. They all appear at this time and are more susceptible to control until about two weeks after Petal Fall. Threshold information is online at http://pronewengland.org/INFO/PROpubs/AppleScoutCard-2007web.pdf

Plum curculio will begin cutting fruit as trees reach fruit diameter reaches and exceeds 8mm diameter. The warm weather this weekend could kick PC into high gear where fruit size is suitable, but the relatively dry air might reduce that somewhat. Note that Sevin (carbaryl) applied at the insecticidal rate (which apparently does not increase thinning activity much above the thinning rate) provides about a week protection. My guess is that at the thinning rate, carbaryl might protect against PC damage for about 5 days.

Thinning Apples in 2012

It is common in years like this to underestimate the cropload and decide to forgo chemical thinning. This is the best way to achieve small fruit at harvest and another light crop next season. Thinning also breaks up clustered fruit and prevents pests and diseases that develop where apples are in close contact with each other.

With the uncertainty surrounding fruit set and the potential for very easy thinning, it is important to do a thorough check of each orchard this spring. Weather conditions and last year’s heavy crop will make it easy to thin, so the general recommendation is to use lower rates of thinner this year.

Where more than 75% of the fruit were damaged by freezing temperatures or where pollination is uncertain, it is prudent to wait until fruit set is obvious. With warmer temperatures, fruit will begin increasing in size which is a sign of fruit set. Look through each block to determine the number of fruit setting in each cluster and how far apart each cluster is spaced. If most clusters have more than one fruit, apply a mild thinner such as Sevin or 6-benzyladenine (MaxCel) at a low rate in orchards where you want minimal crop load reduction. Sevin is relatively rate insensitive and is ideal for breaking up clusters. Where fruit set is one per cluster and fruit are widely spaced, no further reduction in crop load is needed.

Thinning may be very easy this year, so I suggest low rates of thinners, and avoid applying thinners if the high temperature will be above 80 °F. Thinners applied at the beginning of a warm spell will thin more than during cool weather. Thinners applied before a cold spell (<65 °F) will not result in thinning. The long range forecast indicates temperatures favorable for thinning. On May 16, McIntosh fruit diameter was 4 mm at Highmoor Farm, and Honeycrisp were at petal fall. In southern Maine (Berwick), fruit were at the early fruit set stage or about 7 mm in diameter. Pay close attention to fruit size in the next several days since fruit growth can rapidly reach the point where thinners are no longer effective. Once fruit reach a diameter of 18 mm (¾ inch), they become insensitive to thinning.

There is some disagreement about how easy it is to chemically thin some varieties, so it is best to rely on your own experience in deciding what rate of thinner to apply. The classification below is based on information from the pest management guide and grower experience in Maine, and is intended as a general guide. Stressful conditions can make it easy to thin a difficult to thin variety. This happened at Highmoor Farm in the last three years when we have overthinned one block of Golden Delicious.
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<th>Easy to thin varieties</th>
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The thinning materials available this year are the same as last year. Suggested rates of thinners are listed below.

**McIntosh and other easy-to-thin varieties:**
Sevin at 0.5 to 1 pint per 100 gallons dilute equivalent.

**Honeycrisp and other intermediate varieties:**
Sevin at 1 pint and Fruitone at 1 to 2 oz. per 100 gallons
or Sevin at 1 pint and MaxCel at 32 fl. oz. per 100 gallons

**Macoun and other difficult varieties:**
Sevin at 1 pint and Fruitone at 2 to 3 oz. per 100 gallons.
or Sevin at 1 pint and MaxCel at 48 fl. oz. per 100 gallons

Use lower rates where fruit set is light or when temperatures will be above 75°F. Other products available for thinning are listed in the New England Tree Fruit Guide, page 164.

For organic orchards, time is running out for chemical thinning. Although not registered for thinning, lime sulfur applied soon after bloom will promote fruit drop. When combined with oil, additional thinning will occur, as well as an increased potential for fruit russet. Rates are given on page 161 of the 2012 New England Tree Fruit Management Guide.

Pears can be thinned now with NAA (Fruitone), NAD or 6-BA (MaxCel, Exilis or RiteWay). Suggested rates of MaxCel are not clear from reading the 2012 New England Tree Fruit Guide, and it looks like there is an error for the rate recommended for pear. The label states 48 to 128 ounces per 100 gals. as the range of rates for pear. For Fruitone N or Fruitone-L, the suggested rate is 4 to 6 ozs. per 100 gals. Sevin is not labeled for thinning of pear, and can cause fruit deformities or excessive thinning.

Extension specialists in the Midwest and Northeast are now using a “Carbon Balance Model” or “MaluSim” to predict the potential for good thinning. This method was developed at Cornell University and is still considered experimental. The model takes into account sunlight and temperature to predict response to thinners and as a guide in deciding when to apply a thinner and is based on the theory that trees shed fruit more easily when there is an insufficiency of carbs to feed both fruit and shoots. The lack of photosynthetically produced carbs during cloudy weather combined with the greater rate of respiration during warm weather is thought to lead to a deficit of energy, so fruit are easier to knock off during these times.
The Horticulture section of Orchard Radar for each Maine site has a thinning model based on the same factors of cloud cover impact on photosynthesis and effect of night time temperature on respiration consumption of store carbohydrates. The Highmoor Farm chart and table versions (same information, just different presentation) are at http://pronewengland.org/AllModels/MEmodel/me-Monmouth-ThinChart.htm and http://pronewengland.org/AllModels/MEmodel/me-Monmouth-ThinningWeather.htm

Spray burn has occurred again at Highmoor Farm and I suspect that it is elsewhere, as well. Spray burn is common this time of year when leaf cuticles are thin and spray materials can easily burn foliage. Both cluster and shoot leaves have brown edges and spots along the leaf margins. Trees quickly outgrow it, so it should not have an impact on fruit growth or thinning unless it is severe.

If you have any questions about thinning or checking fruit set, feel free to call me (Renae) at 933-2100 or 713-7083. I have time to visit orchards this month and next month.

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Closing Words

"Age is not important unless you're a cheese."
~ Helen Hayes

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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.