Apple maggot

Apple maggot (AM) trap captures are so block-specific that there isn’t much to be gained from a general statement about conditions from 30 monitored blocks across the state. The only trap counts that matter are the ones in your orchard. If you don’t have traps, you should definitely be protected now, as emergence has begun and egglaying activity is underway.

AM trap counts in Maine orchards have generally been low so far this summer, but emergence may have been delayed by the dry spell from July 14 –24. Recent rains may result in increased emergence this week. Traps should be monitored until at least August 15. For late harvested cultivars, it may be worthwhile to monitor traps until the end of August.

The table below shows insecticide options for AM control. While there is not much concern about resistance in AM populations due to genetic mixing of orchard populations with those arising from unsprayed host trees, there is concern about resistance arising in codling moth and other lepidopteran caterpillar pests. Most Maine orchards have potentially threatening populations of codling moth, oriental fruitworm (OFM), and/or lesser appleworm (LAW), but these pests are usually controlled by insecticide sprays targeted against AM.

Ratings for Japanese beetle are provided in case growers have need for JB control at time of spraying against AM.
<table>
<thead>
<tr>
<th>Insecticide / Resistance group</th>
<th>Pre-harvest interval (PHI)</th>
<th>Rating against AM</th>
<th>Rating against Codling moth, LAW &amp; OFM</th>
<th>Rating against Japanese Beetle</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assail (Neonic)</td>
<td>7</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Baythroid, Tombstone (Pyrethroid)</td>
<td>7</td>
<td>Good</td>
<td>Good</td>
<td>Not rated</td>
<td>Harmful to beneficials. Restricted use.</td>
</tr>
<tr>
<td>Imidan (Organophosphate)</td>
<td>7</td>
<td>Good</td>
<td>Good</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>Leverage (Pyrethroid + Neonic)</td>
<td>7</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Danitol (Pyrethroid)</td>
<td>14</td>
<td>Good</td>
<td>Good</td>
<td>Not rated</td>
<td>Suppresses mites. Harmful to beneficials. Restricted use.</td>
</tr>
<tr>
<td>Guthion (Organophosphate)</td>
<td>14</td>
<td>Good</td>
<td>Good</td>
<td>Not rated</td>
<td>Being phased out. Restricted use.</td>
</tr>
<tr>
<td>cyhalothrin - Warrior, Lambda-Cy, Proaxis, etc. (Pyrethroid)</td>
<td>21</td>
<td>Good</td>
<td>Good</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>deltamethrin - Battalion, Decis, Delta Gold etc. (Pyrethroid)</td>
<td>21</td>
<td>Good</td>
<td>Good</td>
<td>Not rated</td>
<td></td>
</tr>
<tr>
<td>Asana, Adjourn (Pyrethroid)</td>
<td>21</td>
<td>Good</td>
<td>Good</td>
<td>Not rated</td>
<td></td>
</tr>
<tr>
<td>Calypso (Neonic)</td>
<td>30</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Restricted use.</td>
</tr>
<tr>
<td>Surround (none)</td>
<td>0</td>
<td>Fair</td>
<td>Fair</td>
<td>Poor</td>
<td>Likely residue at harvest with late season use. Organically certifiable.</td>
</tr>
<tr>
<td>GF-120 (Spinosyn)</td>
<td>0</td>
<td>Fair</td>
<td>0</td>
<td>0</td>
<td>Require special applicator. Organically certifiable.</td>
</tr>
<tr>
<td>Sevin, Carbaryl (Carbamate)</td>
<td>3</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Delegate (Spinosyn)</td>
<td>7</td>
<td>Fair</td>
<td>Good</td>
<td>Not rated</td>
<td></td>
</tr>
<tr>
<td>SpinTor, Entrust (Spinosyn)</td>
<td>7</td>
<td>Fair</td>
<td>Fair</td>
<td>Not rated</td>
<td>Entrust is organically certifiable.</td>
</tr>
<tr>
<td>Avaunt (Oxadiazine)</td>
<td>14</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Altacor (Diamide)</td>
<td>14</td>
<td>Fair</td>
<td>Good</td>
<td>Not rated</td>
<td></td>
</tr>
<tr>
<td>Lannate (Carbamate)</td>
<td>14</td>
<td>Fair</td>
<td>Good</td>
<td>Not rated</td>
<td>Restricted use.</td>
</tr>
</tbody>
</table>
European red mite

Mite counts have increased in the last two weeks as 4th generation ERM reach adulthood. This is typically the year’s peak population. As summer progresses, an increasing portion of ERM eggs will be overwintering eggs that do not hatch until next spring. But counteracting this is the tendency for twospotted spider mite populations in apple trees to increase in August, especially if lack of rain causes their ground cover host plants to become unfavorable habitat.

The recommended treatment threshold starting August 1 is if 86% or more of middle-aged leaves have living hatched mites present, or if there is an average of 7.5 mites per leaf. If you find mites on less than 28 out of 40 leaves collected randomly across a block, it is highly likely that the population is below threshold. If you find mites on all 40 leaves, even with the small sample size it is statistically probable that the average number of mites per leaf is >= 7.5. If the mite population is close to the threshold, it is better to use a larger sample of 100 leaves. If living mites are present on less than 86 out of 100 leaves, mites are considered below need for treatment.

Note that following miticides are in the same resistance / mode of action group. There are enough miticide alternatives that for resistance management only one application of a material from a resistance group should be used per season.

**Nexter, Portal**: 21A, Meti I blockers.

**Apollo, Savey, Onager**: 10A, Mite growth inhibitors. **Zeal** is in group 10B. While cross-resistance is less likely between rather than within sub-groups, it would be wise to avoid multiple applications from group 10A or B within the same season.

**Agri-Mek (and other abamectin products), Proclaim**: 6, Avermectins.

Other miticides (**Acramite, Envidor, Kanemite, Kelthane, Vendex and summer oils** are in unique resistance classes and not expected to be cross resistant to other miticides.
Japanese Beetles, Wooly apple aphid, Leafminer

Japanese beetle love to feed on apple foliage, with a distinct preference for Honeycrisp. Losing some foliage on established trees may not be a great consequence, but massive defoliation is, especially on young trees for which maximum growth is desired. Unfortunately, insecticidal control of Japanese beetle is difficult. You can severely reduce the population present at time of spraying and the residue may provide protection for several days thereafter. But after a few days as insecticide protection wanes and new beetles fly in, repeat treatment may be needed. Ground treatments for Japanese beetle are not recommended as the source of the problem may be far distant from the ground in the crop area.

Wooly apple aphid (WAA) are present here and there, but have not be found at a level likely to lead to fruit staining from sooty mold growing on their honeydew droppings. There is no reliable threshold, but if more than 50% of branches have WAA present, treatment is recommended. Only Movento is rated “Good” for WAA control. Assail (7 day PHI) and Calypso (30 PHI) are rated “Fair” against WAA and both are “Good” against apple maggot.
Spotted tentiform and apple blotch leafminer were scarce in the first generation after Petal Fall, and remain scarce now that second generation mines have had time to appear. Treatment is advised if you find more than 2 sap feeding mines per leaf (visible as light patch on the underside of leaves). If you plan on using ReTain, a lower threshold of 0.5 to 1 mine per leaf is worth consideration.

**Apple Scab and Flyspeck**

![Graph showing apple scab lesion observations in a 2011 Maine Apple Orchard](image)

Even though scab is less likely to spread as terminal growth stops and new tender leaves are not available, it is important to keep an eye on scab levels in late summer. If left unchecked, as fungicide protection wanes after the final spray, there could be enough active scab in the orchard to spread infections to a significant number of unprotected fruit.

If there are more than 5 leaves with active scab per 100 shoots and fruit clusters checked, then captan protection should be renewed at 14-day intervals until the number of active lesions falls below that threshold.

If there are 15 or more active scab lesions per 100 shoots-fruit clusters, then Topsin M or a strobilurin fungicide combined with at least a half-rate of captan at a 14-day interval until the number of active scab lesions falls below this level. The strobilurin can be used alone, but if the scab level is high, adding the half-rate captan will reduce the chance of selecting for resistant scab strains and will increase fruit protection from new infections.
Topsin M or a strobilurin fungicide will provide protection against new scab infections plus postsymptom activity against existing lesions to reduce the production of secondary scab spores (conidia) from those lesions. Topsin M and strobilurins are also the best fungicides to provide prolonged protection against new infections by the flyspeck and sooty blotch fungal complex.

Sterol inhibitors and dodine (Syllit) also provide postsymptom activity against scab, but they are not good options for this time of year. The sterol inhibitors provide forward protection against new foliage infections for a few days (and may be even less effective at preventing new fruit infections). Neither sterol inhibitors nor Syllit provide good protection against flyspeck and sooty blotch. The expense of combining these materials with captan, plus the risk to selecting for resistant scab strains, in order to get additional postsymptom scab activity is not worth it. Mancozeb and Polyram are effective against flyspeck and sooty blotch, but because of their 77-day preharvest interval they are no longer options as harvest approaches.

### Flyspeck and Sooty blotch – part 2

The later the final fungicide application date, the later the depletion date for that application, and the shorter the interval between that depletion date and harvest. The shorter the unprotected preharvest period, the less chance there is for flyspeck infections to have enough cumulative warm, wet hours during which to grow enough to become visible as dime-sized circles of black specks (flyspeck) or as greasy dark stains on the apple (sooty blotch).

<table>
<thead>
<tr>
<th>Final application date</th>
<th>Monmouth Latest “safe” harvest date* with low risk of flyspeck (assuming continuous protection prior to final spray)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Captain or Ziram</td>
</tr>
<tr>
<td>August 1</td>
<td>Sept. 18</td>
</tr>
<tr>
<td>August 11</td>
<td>Oct. 1</td>
</tr>
<tr>
<td>August 21</td>
<td>&gt; Oct. 31</td>
</tr>
</tbody>
</table>

* Estimates for Monmouth and Sanford are updated twice daily at [http://pronewengland.org/AllModels/DecisionModels.htm](http://pronewengland.org/AllModels/DecisionModels.htm).

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Preharvest interval (PHI)</th>
<th>Earliest allowed harvest date based on final application date (Pristine, captan and sulfur* have 0 days to harvest)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>August 1</td>
</tr>
<tr>
<td>Topsin M**</td>
<td>1</td>
<td>Aug. 2</td>
</tr>
<tr>
<td>Ziram</td>
<td>14</td>
<td>Aug. 15</td>
</tr>
<tr>
<td>Flint</td>
<td>14</td>
<td>Aug. 15</td>
</tr>
<tr>
<td>Sovran</td>
<td>30</td>
<td>Aug. 31</td>
</tr>
</tbody>
</table>

* Sulfur residual efficacy estimated at 7 days, but is more likely to be depleted by first rain > 0.5 inch after application. PHI based on Yellow Jacket WP, other sulfur formulations may have different PHI.
** PHI based on Topsin M 70 WDG and T-methyl 70W formulations. Others may vary.
Fire Blight

I thought fire blight was unusually “cranky” this year, but re-reading last year’s reports, 2011 seems about the same as 2010: i.e. a little bit of fire blight in a fair number of orchards. The only difference is that this year the secondary shoot strikes are appearing later than last year (which is especially odd given that 2010 was an unusually early year for bloom etc.) There was an increase of noticeable fire blight during the week of July 18-25.

The speed at which this disease can spread is disturbing. The sooner you can remove blighted shoots the less chance of it spreading. There is a good chance that a fire blight canker will form where the removal cut is made. By leaving and marking a 4 inch “ugly stub” (orange spray paint works well), those cankers can be restricted to the stub, which you can remove during winter pruning without creating a new canker near the branch union.

There is no need to sterilize blades between cuts as long as you are only cutting out other fire blighted shoots. Blades should be sterilized before using the same tools on unaffected branches. Unless it is hot and dry enough for cuttings to dry out that day, they should be removed from the orchard.

Estimated Harvest & ReTain application Dates

Predicting harvest date is useful for timing ReTain application. Orchard Radar estimates the date for McIntosh first pick or harvest for long-term storage using a formula developed at Michigan State. The beginning of McIntosh harvest for long-term storage corresponds with a starch index of 4.0. Based on this formula, the estimated 2011 dates for beginning of harvest of non-spur McIntosh are:

Sanford – September 16
Monmouth - September 21.

Based on these dates, the estimated dates for applying ReTain four weeks ahead of predicted first pick are:

Sanford – August 17
Monmouth – August 23

ReTain is used to delay ripening and preharvest fruit drop. To get the most out of ReTain, follow the recommended application procedures.

Applying ReTain three to four weeks ahead of normal harvest is generally used for once-over picking 7-10 days after normal harvest or to delay the timing of the first harvest. Applying ReTain too early before harvest could reduce its ability to hold fruit on the tree later in the season.

Applying ReTain two weeks before normal harvest can extend drop control later into the season, but ripening and drop of early-ripening fruit will not be controlled. Be willing to take this risk if you push the application date close to harvest. This later timing is useful for drop control in orchards that will be harvested more than once.
**Recommended application procedures for ReTain**

1. Apply two to four weeks before anticipated first pick of untreated fruit. ReTain has a seven-day preharvest interval.

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

3. 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, which are extra sensitive to ReTain, use a reduced rate of slightly more than the half-rate.

4. 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 if temperatures near 86°F are predicted. Avoid vigorous agitation since excess foaming could result. Organic orchards can use only an approved surfactant and the ones listed here are not.

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

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

7. Conditions that Reduce ReTain Effectiveness:
   - When any of these conditions exists, ReTain may not be effective.
   - Drought
   - Sunburn
   - Heavy insect damage to foliage or fruit
   - Mite infestation
   - Severe disease or scab
   - History of bitter pit
   - Rain within 8 hours of application
   - Ethrel applied to neighboring trees

8. Incompatibilities:
   - Do not apply calcium chloride 4 days before or after Retain application that includes Silwet or Sylgard. Application with other chemicals is also not recommended.

   NAA (Fruitone or Fruitfix) can also be used as a stop drop alone or in combination with ReTain. Trees previously treated with ReTain can subsequently be treated with NAA for extended drop control. However, fruit left on the tree for an extended period have little storage potential. NAA used alone as a stop drop may advance ripening, so such fruit should not be placed in long term storage. The optimum time for application of NAA is just prior to the onset of fruit drop. A single spray can provide drop control for about seven days from the date of application. In my experience at Highmoor Farm, drop of McIntosh usually begins at the time when I can measure detectable levels of ethylene in the core of the apple. In years past, this has corresponded with a starch index of 5 to 6.

Apple leaf-tissue samples for nutrient analysis can be sent to Highmoor until August 15. Soil samples can be taken anytime.

"If a man is called to be a street sweeper, he should sweep streets even as Michelangelo painted, or Beethoven composed music, or Shakespeare wrote poetry. He should sweep streets so well that all the hosts of heaven and earth will pause to say, here lived a great street sweeper who did his job well."

- Martin Luther King Jr.

Where brand names are used it is for the reader's information. No endorsement is implied nor is any discrimination intended against products with similar ingredients. Always consult product label for rates, application instructions, and safety precautions. Users of these products assume all associated risks.

Orchard Radar weather and pest tracking models at http://pronewengland.org/AllModels/DecisionModels.htm

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