Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt, Eugene Rizio and Atanas Atanassov, Ph.D., Program Associates, Tree Fruit IPM

Peach
✔ Oriental Fruit Moth (OFM): Trap counts of adults have started to increase this week as the second brood larvae mature and emerge as adults. The second brood emergence will be 100% over by 7/1 in southern counties and third brood hatch will start around July 8. The first insecticides should be timed for 2100 to 2200 degree days after first catch (standard insecticides), or a predicted timing of 7/8-11. Timing in central counties should be around 7/13-16. Degree day spray timings are as follows for the third generation:

<table>
<thead>
<tr>
<th>County Area</th>
<th>Application and Insecticide Type 3rd Brood OFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern</td>
<td>1st 7/8-11 Standard Insecticides 1st trt 7/7-08</td>
</tr>
<tr>
<td>Central</td>
<td>1st 7/14-16 Standard Insecticides 1st trt 7/11-13</td>
</tr>
<tr>
<td>Northern</td>
<td>1st about 7/18-22 Intrepid 1st about 7/16-19</td>
</tr>
</tbody>
</table>

✔ Brown Marmorated Stink Bug Insecticide Use: Very low levels of injury are being seen, and only 1 farm was seen with BMSB presence this past week. Some reproduction was seen in apples during the previous week.

✔ June Beetle; Japanese Beetle: June beetles and Japanese beetles are now flying. These insects can be troublesome on ripening fruit and usually peak around Redhaven season. Sevin is the most commonly recommended material and is effective even at low rates. Provado/Admire is also effective and has a 0 day PHI. Most materials being applied for BMSB should be effective, but residual activity will vary, depending on the material, precipitation and heat.

Apple
✔ Codling Moth (CM): In southern counties, the time to treat for codling moth will be on or about 7/3-4. If using Intrepid, applications need to go on 1-2 days earlier than if using standard materials. Do not use trap counts as a guide for this second generation degree day timed spray. Treatments should be completed at the optimum timing with the correct rate and volume. After 2 complete CM treatments have been applied, then trap counts can be used as a guide to help determine the
need for supplemental applications. Based on recent research we are placing a 100 degree day delay in the degree day table published in the Tree Fruit Production Guide. Use the following chart to time applications:

<table>
<thead>
<tr>
<th>County Area</th>
<th>Application and Insecticide Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Codling Moth Degree Day Timing</td>
</tr>
<tr>
<td></td>
<td>Rimon; Intrepid; Diamides:</td>
</tr>
<tr>
<td></td>
<td>1250-1300DD</td>
</tr>
<tr>
<td></td>
<td>1550-1600DD</td>
</tr>
<tr>
<td>DD</td>
<td>1250  1300  1550  1650  1700</td>
</tr>
<tr>
<td>Southern</td>
<td>6/30  7/2  7/10  7/3  7/14  7/16</td>
</tr>
<tr>
<td>Central</td>
<td>7/4  7/5-6  7/14  7/7  7/18  7/20-22</td>
</tr>
<tr>
<td>Northern</td>
<td>7/7-8  7/9-10  7/20-22  7/11-12 7/25-26 7/27-29</td>
</tr>
</tbody>
</table>

✔ Hot Weather and Sunburn: A number of apple plantings, especially in northern counties, have exhibited sunburn injury on fruit (see photo). Surround WP can be applied to mitigate this injury, but is normally used prior to the occurrence of excessive heat and sunburn conditions. Even so, use of this product may minimize further injury, especially if more heat is yet to come.

Grapes

✔ Grape Berry Moth (GBM): Trap captures are picking up. The first applications for generation 2 are on July 2nd in southern counties. This is the timing for Intrepid and the diamides. Other materials can be applied a couple of days later. On Friday newly hatched larvae were observed in low numbers feeding under the skin in Atlantic County. No injury was seen in vineyards in Gloucester County. Trap captures are increasing which may indicate that most mating is over. Regional differences may greatly influence insect development and may account for a slightly earlier hatch in some vineyards. A summary of the first generation flight is in the table below. This is based on the model that predicts optimal control at 810 degree days after wild grape bloom.

✔ Grape Root Borer (GRB): Grape Root Borer adults have begun flying in southern counties. This has not been a major pest of commercial Vineyards in New Jersey. The following is taken from the Virginia Tech Web Site (http://www.virginiafruit.ento.vt.edu/GRB.html):

“This species overwinters as larvae in two different stages of development. The life cycle takes two years to complete (some studies indicate a three-year cycle), and almost all of this is spent as larvae feeding on grape roots. They bore into the roots and crown below the soil surface, reducing the productivity of the vine. Roots may be hollowed and sometimes packed with frass. Vines eventually die; there may also be increased susceptibility to cold injury. Young larvae are spread throughout the root zone while older larvae are found on larger roots close to the trunk. Ninety per cent of the pupae are within 35 cm of the trunk and the mean depth in the soil is 9-10 cm. A lack of plant vigor is usually the first sign of the presence of this pest. Another indication is the presence of cast pupal skins protruding from the soil near the base of the trunk in late July and August.

Full-grown larvae are about 25 mm long, white, and have brown heads. They leave the roots and pupate in cocoons near the soil surface beginning in June. Adults emerge 35-40 days later, beginning in about the first week of July, with greatest numbers present in the last two weeks of July. Moths are wasplike in appearance. The body is generally brown. The top of the head has orange; antennae are orange with brown-black markings; the abdomen is dark brown with reddish-brown markings, with a very narrow yellow band on posterior edge of segments two, four, and sometimes on six. Legs are orange with brown-black markings. The forewings are dark and mostly opaque. The hind wing is more transparent. These moths are daytime flyers. After flying for several days, females begin ovipositing on grape foliage, canes, and weeds. Each female lays an average of 300 eggs. About two weeks after hatching, first instar larvae drop to the ground and tunnel to roots. The greatest natural mortality occurs at this point in the life cycle. Only 1.5-2.7% survive the first stage because of predation, parasitism, and desiccation; but, once established in roots, mortality is very low. Infested vines are usually encountered randomly across a vineyard. Larvae do not travel very far in the soil, usually remaining on the roots of a single vine.”

See Grapes on page 3
This has been a sporadic pest in NJ vineyards, but is more common in southern counties. A Kentucky threshold suggests that treatment be used if 5% of the vines show visible pupal skins. The most common control is to apply Lorsban 4E in mid to late July to the crown and on the soil at the base of the plant. Apply on the soil to an 18” radius around the crown, and do not allow the spray to contact foliage or fruit. This year's timing will be during the first half of the month. The insecticide forms a barrier that kills young larvae, larvae as they emerge from eggs, and adults as they deposit eggs.

**Scouting Calendar**

The following table is intended as an aid for orchard scouting. It should not be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made over the past 5-10 years in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

<table>
<thead>
<tr>
<th>Pest Event or Growth Stage</th>
<th>Approximate Date</th>
<th>2012 Observed Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pit Hardening Peach</td>
<td>June 16 +/- 8 Days</td>
<td>June 13</td>
</tr>
<tr>
<td>3rd Pear Psylla Hatch</td>
<td>June 28 +/- 1 Days</td>
<td>Not yet observed</td>
</tr>
<tr>
<td>San Jose Crawlers 2nd Generation</td>
<td>July 21 +/- 5 Days</td>
<td>Not yet observed</td>
</tr>
</tbody>
</table>

**Blueberry**

✔ **Spotted Wing Drosophila (SWD) and Blueberry Maggot (BBM):** Trap captures have gradually increased over the past week. Where some of our vinegar traps have had “0” to low counts, an observation on Monday 7/2, showed that many of our blueberry maggot traps were also catching high numbers of SWD on the same farms where the vinegar traps were at “0”. Some yeast traps also had high numbers. By now SWD is likely spread across most farms. We have also found a few hanging blueberry samples with larvae. Given the widespread nature of this pest, the lack of thresholds and good monitoring tools, and the fact that some fruit is infested, it is prudent to go to a regular protective schedule for any fields that have yet to be picked. See last newsletter for products and suggestions, and make sure to be careful with preharvest intervals and the lack of established MDLs if your fruit is intended for export.

✔ **Aphids:** We are seeing less aphids compared to the previous week. About 67% of samples are positive, and 26% exceed the 10% infestation level. Small colonies and single aphids are the majority. Very strong predator activity has been seen on occasion. Recent heat and the hardening of plant tissue have also been factors in the population decline.

✔ **Oriental Beetle (OB):** Adults are still mating and laying eggs in the field. If not done already, there is still time to treat if needed, especially for ‘Duke’ if the field harvest has been completed. Do not extend treatments past the middle of July this year, since it is likely that this year’s larvae will be too old by late July to be adequately controlled.

✔ **Leafrollers and Other Leps:** Leafroller larval activity is a rare sight in the field at this time. Only 1% of shoot and beating tray samples show low levels of larvae.

✔ **Putnam Scale:** About 22% of fruit samples are positive for scale, and 4% exceed the 1% infestation level. Only a small number of sites have had high levels of infestation this season. Some of the active areas seen this year have had no history of problems during past seasons. Crawler traps are almost 0 at this time so treatments should not be made until activity begins again later in July or early August.

**Trap Counts – Southern Counties**

<table>
<thead>
<tr>
<th>Week ending</th>
<th>STLM</th>
<th>TABM-A</th>
<th>CM</th>
<th>AM</th>
<th>OFM-A</th>
<th>DWB</th>
<th>OFM-P</th>
<th>TABM-P</th>
<th>LPTB</th>
<th>PTB</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/2</td>
<td>33</td>
<td>16</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>58</td>
<td>1</td>
<td>30</td>
<td>39</td>
<td>0</td>
</tr>
<tr>
<td>6/9</td>
<td>13</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td>60</td>
<td>0</td>
<td>13</td>
<td>60</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6/16</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>37</td>
<td>0</td>
<td>5</td>
<td>21</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6/23</td>
<td>47</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>51</td>
<td>0</td>
<td>2</td>
<td>35</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>6/30</td>
<td>22</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>29</td>
<td>0</td>
<td>1</td>
<td>19</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Trap Counts – Northern Counties**

<table>
<thead>
<tr>
<th>Week ending</th>
<th>STLM</th>
<th>CM</th>
<th>TABM-A</th>
<th>AM</th>
<th>DWB</th>
<th>OBLR</th>
<th>OFM-P</th>
<th>TABM-P</th>
<th>LPTB</th>
<th>PTB</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/2</td>
<td>163</td>
<td>5.4</td>
<td>14.2</td>
<td>8.8</td>
<td>6.7</td>
<td>0.5</td>
<td>17.2</td>
<td>18.1</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>6/9</td>
<td>114</td>
<td>3.3</td>
<td>21.2</td>
<td>5.8</td>
<td>21.3</td>
<td>0.4</td>
<td>23.9</td>
<td>10.8</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>6/16</td>
<td>76</td>
<td>4.1</td>
<td>19.1</td>
<td>5.8</td>
<td>10.3</td>
<td>0.3</td>
<td>22.9</td>
<td>9.4</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>6/23</td>
<td>135</td>
<td>2.4</td>
<td>14.9</td>
<td>0</td>
<td>4.0</td>
<td>7.0</td>
<td>0.5</td>
<td>16.7</td>
<td>5.1</td>
<td>0.1</td>
</tr>
<tr>
<td>6/30</td>
<td>146</td>
<td>1.3</td>
<td>7.8</td>
<td>0</td>
<td>5.0</td>
<td>1.3</td>
<td>1.4</td>
<td>10.4</td>
<td>4.1</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Very Early Ripening Peach Varieties
Jerome L. Frecon, Agricultural Agent

Very early ripening peach varieties began maturing on June 11, with the harvest of Rich May. This was about ten days earlier than normal, and this has continued through this harvest. We were well into Sentry and Flamin Fury® PF#7 harvest on the first of July. This was to be expected with the early bloom we had in March and unless it becomes very cool I would expect it to continue through the harvest season. This was the earliest bloom and the earliest harvest I have seen in the 30 plus years I have been evaluating peaches and nectarines in southern New Jersey.

Most of our very early varieties have been exposed to heavy pressure for bacterial spot, powdery mildew/ rusty spot, and blossom blight. I have also seen a few more shattered and split pits but this has been dependent on location and probably due to low temperatures during fruit set and early fruit development.

Yellow fleshed peach varieties – Raycrest ripened after Rich May on June 14 while Queencrest ripens just after Raycrest. Queencrest is still the nicest of the three that are moderately susceptible to bacterial spot. Spring Flame® 21 ripens just after Queencrest about June 17 and is still the most attractive but is highly susceptible to bacterial spot. Spring Prince ripening with Spring Flame® 21 has looked very nice with great color, uniform size and shape, and good firmness, but this year had a high amount of bacterial spotting on the fruit. This spotting has caused me to reduce my excitement for this variety. Sunbrite was very attractive this year and has held its firmness well, ripening with Spring Prince and Spring Flame® 21. Desiree™ NJ 350 cultivar also ripens in this season. Desiree™ has great size, has been very attractive, and is firm. All of our peaches in this very early season have had above average flavor. Desiree™ ripened about June 18 just ahead of Flamin Fury® PF#5B and Carored. Desiree™ has more red color and averages better size than Flamin Fury® PF#5B. Carored has been very attractive with good firmness and color but is susceptible to bacterial spot unlike Flamin Fury® PF#5B and Desiree. Earlystar™ ripens with Carored and had very good color. The Earlystar™ trees were small and had quite a bit of bacterial spot. We saw no very early yellow-fleshed varieties in the Rutgers NJAES breeding program better than Desiree™ or the other very early yellow-fleshed varieties.

White-fleshed peach varieties – We have evaluated two very early white-fleshed varieties from the Rutgers NJAES fruit breeding program that did not have bacterial spot. Spring Snow, a very nice, low acid, white-fleshed variety, ripened about June 20. Sugar May ripens just after Spring Snow with more red color, and bacterial spot but not the size or flavor of Spring Snow. Manon another white-fleshed peach from France has been tested for many years. Our test trees have been removed but we see it in grower’s orchards. It has been a better variety than Sugar May with a brighter color, better flavor and size. We have also seen some very early white and yellow-fleshed nectarines from the Rutgers NJAES breeding program that may be introduced. One, NJ N100, a white-fleshed selection has been patented and offered by Adams County Nursery. NJ 100 is a full red attractive nectarine with very good flavor. It does not get bacterial spot and has better flavor than Jade. It is not as large as Arctic Star but does not exhibit the problems of cracking, skin finish and bacterial spot of Arctic Star and Jade.
Rooting Strawberry “Tips” to Create Plugs
Steve Bogash and Kathy Demchak, Penn State Horticulture and Extension


1) Use tips only from a reputable source. Tissue cultured mother plants are the preferred source. Using tips from your own or other local fields can create future problems, as there is the potential to move diseases and mites from field to field. Also, many varieties are patented and require licensing in order to take cuttings. USDA varieties are not patented, and can be propagated at no charge.

2) Ideally, tips should be planted as soon as they arrive. However, if this is not possible, the tips may be stored at 34°F and 75-80% humidity for up to 2 weeks from the date they were harvested from the mother plants. If you’re in a pinch for time and cooler space, pack the plants in ice. Allow 35 days from planting to grow a field-ready plug. Trim any runner cord to a 3/8-1/2 inch stub before planting.

3) Carefully cull the tips you are going to plant. Anything that looks at all questionable should be discarded.

4) Sort tips by size. Do not plant small and large tips in the same trays, as the smaller plants are likely to get shaded. The smaller plants in this now lower canopy in the flat are ripe for botrytis and powdery mildew as air circulation will be poorer in the lower canopy.

5) Plant the tips in plug trays with 50 cells/tray. Use a sterile media designed for rooting herbaceous “bare-rooted” plants. This includes most professional grower mixes. If you are recycling trays, be sure to remove all organic matter from them, then chlorine dip (1 part liquid bleach to 9 parts clean water) the trays prior to use. Be careful to avoid contamination of the propagation area.

6) The hook on the tip should be just in the potting media. Do not bury the crown.

7) Do not fertilize just planted tips. The fertilizer charge in most potting media will be sufficient until the plants are well-rooted. Fertilize for the first time at two weeks after planting using 100 ppm of nitrogen with calcium nitrate as the source, and repeat at weekly intervals. If you are holding the plants for longer than 4–5 weeks (thus creating super plants), switch to 20-20-20 at 100 ppm of nitrogen for later applications.

8) Your goal is to keep the leaves moist until the tips start to create their own roots. Hot, sunny days will require extra mist, while cooler, cloudy days less mist. The assumption with the following misting regimen is that you will be placing the new tips in a greenhouse or high tunnel. Enclosed structures will require less misting as wind will not dry the leaves as with plants growing outdoors. Do not allow the surface of the leaves to dry for the first 7 days. Mist using fogger nozzles of an intermediate discharge rate. Start with the following misting regimen, but adjust it as needed to prevent over-watering or desiccation of the leaves:

<table>
<thead>
<tr>
<th>Day</th>
<th>Misting Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7</td>
<td>Use 5 seconds of mist every 15 minutes.</td>
</tr>
<tr>
<td>7-12</td>
<td>Gradually reduce misting. Keep the media moist. Misting should be terminated by the end of this period.</td>
</tr>
</tbody>
</table>

- Do not mist after sundown, even at first. Some growers believe misting after sundown can create bigger plugs, but the greater chance of disease offsets any possible benefits.

Additional Recommendations

- Plants can be rooted in either an enclosed structure (greenhouse/high tunnel) or outdoors. If outdoors, choose a protected location to keep the unrooted tips from being dislodged by wind or heavy rain. Be sure to put down a layer of groundcover fabric before rooting plants outdoors. Make sure your misting set-up is working ahead of time.

- Shade cloth can be used to limit plant desiccation, but is not recommended. This will slow the time from sticking the tips to having field-ready plugs by about a week.

- Soil inoculants such as Plant Shield and Mycostop may be advantageous in preventing soil-borne diseases. However, no definitive research has been done using these products on strawberry tips at this time. In other crops, these products have prevented a wide range of soil-borne diseases.

- Due to the constant misting, control of diseases should be managed primarily with good ventilation. Any fungicides that are applied during the time the tips are being misted will be washed off too quickly to accomplish anything. However, a fungicide application to the plants prior to planting is probably a good idea.

- Scout the plants for spider mites. Their eggs are tiny so use a hand lens. If any eggs or mites are found, treat before planting in the field. Materials for two-spotted spider mite control include: Vendex, Acramite, Oberon, Kanemite, Portal and Zeal. Zeal is only for eggs and immatures. As always, growers should closely follow label restrictions and requirements.

Submitted by Jerome Frecon, Agricultural Agent.

Page 5
Vol. 17 No. 14
Preparing Your Farm Food Safety Plan
Part 8: Creating Logs to Document Compliance – Storage and Transportation Logs

Meredith Melendez, Mercer County Senior Program Coordinator and Wesley Kline, Ph.D., Cumberland County Agricultural Agent

The USDA Good Agricultural Practices audit requires that certain activities on the farm be documented. These logs should accurately reflect what you have done on the farm to ensure food safety. If you do not write your activities down, the auditor will assume that the activity never happened. This documentation may be new for many growers, so making it as easy as possible for you to comply will ensure that the documenting happens in a manner that is acceptable to an auditor. This is the eighth article in a series dedicated to preparing a farm food safety plan. For previous articles refer to earlier editions of the Plant and Pest Advisory, or visit the Rutgers Vegetable Crops blog at: http://jerseyvegcropsagupdates.blogspot.com. Remember you may not need a third party audit; it depends on who is purchasing your produce. However, everyone should have a food safety plan.

Storage Temperature Log
Storage facilities that are refrigerated should be monitored daily during use. Make sure to check the temperature the same time each day to ensure correct temperatures. This log should indicate:

✔ Date
✔ Time
✔ Temperature
✔ Any necessary comments
✔ Employees signature

Thermometer Calibration Log
Thermometers used in storages need to be checked for accuracy once a month during the growing season. The thermometer used to check storage temperatures should be calibrated before using your calibration log which should include the following:

✔ Date
✔ Thermometer location number
✔ Time
✔ Temperature
✔ Were corrective measures needed? (Yes or No)
✔ If corrective measures were needed briefly describe them.
✔ Date corrective action was completed
✔ Employees initials

Calibration can be easily done. The following method is recommended by the USDA Food Safety Inspection Service:

Using the ice water method, fill a large glass with finely crushed ice. Add clean tap water to the top of the ice and stir well. Immerse the food thermometer stem a minimum of 2 inches into the mixture, touching neither the sides nor the bottom of the glass. Wait a minimum of 30 seconds before adjusting. (For ease in handling, the stem of the food thermometer can be placed through the clip section of the stem sheath and, holding the sheath horizontally, lowered into the water.) Without removing the stem from the ice, hold the adjusting nut under the head of the thermometer with a suitable tool and turn the head so the pointer reads 32 °F. If a digital thermometer is used it can be checked in the same way. If the digital thermometer is not reading correctly check the instruction for adjustments or replace.

Carrier Monitoring Log
Keeping track of and monitoring the trucks that carry your product to various markets is a key component of your traceability program. The following information should be documented for each load that is taken from your farm:

✔ Date
✔ Time
✔ Carrier
✔ Trailer number
✔ Drivers name
✔ Trailers last load (previous)
✔ Is the trailer clean, dirty, or washed
✔ Is the trailer refrigerated? (Yes or No)
✔ If the trailer is refrigerated, what is the temperature?
✔ What produce was loaded onto the trailer.
✔ Additional produce on the truck, if applicable?
✔ Is there a temperature monitor installed in the trailer? (Yes or No)
✔ Employees initials

Next week: Farm Review
PLANT & PEST ADVISORY

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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