## At a glance. Insect and disease problems that should be considered this week.

<table>
<thead>
<tr>
<th>PEST/DISEASE/CULTURE</th>
<th>MAY 16- MAY 23</th>
<th>MAY 23 -MAY 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTHRACNOSE</td>
<td>Continue applications on Bluecrop for approximately one more week maintain a 7-10 day interval.</td>
<td></td>
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<tr>
<td>Abound, Cabrio, Captan, Omega, Ziram</td>
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<tr>
<td>PHYTOPHTHORA ROOT ROT</td>
<td>Have plants tested for Phytophthora root rot and apply appropriate fungicides for control.</td>
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<tr>
<td>Phosphite fungicide or Ridomil</td>
<td></td>
<td></td>
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<tr>
<td>VIRUSES AND MYCOPLASMAS</td>
<td>Flag all suspicious looking plants and target for removal or further testing</td>
<td></td>
</tr>
<tr>
<td>STEM BLIGHT</td>
<td>Prune all symptomatic canes as close to the crown as possible</td>
<td></td>
</tr>
<tr>
<td>CRANBERRY FRUITWORM (CBFW)</td>
<td>Treatment timing if one application is used – late this week to early next week.</td>
<td>Monitor for any increases in population, and infested fruit.</td>
</tr>
<tr>
<td>Intrepid/Confirm, Esteem – 1st early trt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altacor, Danitol, Delegate, Guthion, Imidan, Lannate, Hero – 2nd later trt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLUM CURCULIO</td>
<td>Maintain PC effective insecticides.</td>
<td>Monitor for fresh egg scars &amp; treat if needed.</td>
</tr>
<tr>
<td>Avaunt, Guthion, Imidan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APHIDS</td>
<td>Monitor for aphid colonies, and treat if over 10% of terminals are infested.</td>
<td>Treat if over 10% of terminals are infested.</td>
</tr>
<tr>
<td>Admire, Assail, Actara</td>
<td></td>
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</tbody>
</table>
CULTURE
Dr. Gary C. Pavlis, Ph.D.
Atlantic County Agricultural Agent

No Leaves: Here we go again. A few growers have been calling and telling me that their plants bloomed, appeared to set fruit but there are very few leaves. In some cases, leaf buds lag behind bloom due to temperature changes and cool nights. This spring has been strange to say the least and a little lack of synchronous timing between fruit buds and leaf buds should be expected.

However, by the time berries set the leaves should be out. They have to be or there is nothing in the plant to drive the ripening of the fruit. To really tell what is going on you have to pull up or dig out one of the plants. I have yanked many a plant out of the ground, usually with a corresponding groan from the farmer. You can tell a lot about a blueberry plant when you look at the roots. Are there fine roots, are there rotten roots, how much roots are there, how deep do they go, are there ants present? All of these point to a different problem.

No fine roots equal grubs. Dark colored rotten roots are root rot. Shallow roots points to a hard pan, and ants point to mealy bugs attacking the roots. All of these can be devastating to the blueberry planting and must be dealt with as soon as the problem is discovered.

Sincerely,

Editor, Blueberry Bulletin   GP/sp

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INSECTS
Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University
Mr. Dean Polk, IPM Agent – Fruit
Mr. Gene Rizio, IPM Program Associate – Fruit

Plum Curculio (PC): Beating tray samples showed adults in 6% of our samples, about the same as last week. One site was scouted after an all day rain while the bushes were still soaked and adult PC were seen in the tray samples. Fruit samples are showing egg scars and/or fruit feeding at a frequency of 38% injured cluster samples. The percentage of fruit samples over the 1% injury level is now at 8%. PC is clearly a key pest at the present time and still active. Insecticides should be chosen that have some PC activity.

Leafrollers and Other Leps: About 15% of shoot / beating tray samples have been positive for worms and 2 samples have exceeded the threshold of 5% shoots infested. Fruit samples in a few sites have evidence of larval feeding. This is all external injury that will cause the injured fruit to drop. Obliquebanded leafroller larvae are maturing and pupating. As the larvae mature, they stop feeding, pupate and emerge as adults. The first adult was seen on 5/14.

Aphids: Scouting has shown that 47% of shoot samples show some level of aphid infestation. We saw 12% of the samples taken with over 10% of shoots infested. This is only a slight increase over the previous week.

Cranberry Fruitworm (CBFW): No fruit injury has been seen yet but should start to appear soon in areas of higher activity.
### Blueberry Insect Trap Counts - Atlantic County

<table>
<thead>
<tr>
<th>Week Ending</th>
<th>CBFW</th>
<th>RBLR</th>
<th>OBLR</th>
<th>SNLH</th>
<th>Or. Beetle</th>
<th>BBM</th>
<th>BMSB</th>
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<tbody>
<tr>
<td>4/7</td>
<td></td>
<td></td>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/14</td>
<td></td>
<td></td>
<td>51</td>
<td></td>
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</tr>
<tr>
<td>4/21</td>
<td>2.6</td>
<td></td>
<td>25</td>
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<tr>
<td>4/28</td>
<td>0.43</td>
<td></td>
<td>5.6</td>
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<tr>
<td>5/5</td>
<td>0.27</td>
<td></td>
<td>1.3</td>
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<tr>
<td>5/12</td>
<td>0.91</td>
<td></td>
<td>0.7</td>
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### Blueberry Insect Trap Counts - Burlington County

<table>
<thead>
<tr>
<th>Week Ending</th>
<th>CBFW</th>
<th>RBLR</th>
<th>OBLR</th>
<th>SNLH</th>
<th>Or. Beetle</th>
<th>BBM</th>
<th>BMSB</th>
</tr>
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<tbody>
<tr>
<td>4/7</td>
<td></td>
<td></td>
<td>49</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4/14</td>
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<td></td>
<td>42</td>
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</tr>
<tr>
<td>4/21</td>
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<td></td>
<td>16</td>
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</tr>
<tr>
<td>4/28</td>
<td>.4</td>
<td></td>
<td>4.3</td>
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<tr>
<td>5/5</td>
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<td>3.38</td>
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<tr>
<td>5/12</td>
<td>2.8</td>
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<td>0.25</td>
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</table>

**Oriental Beetle**

*Life cycle.* The oriental beetle completes a single generation per year. Adults start to emerge in the middle of June, peaking in early July (Picture 1). Females lay eggs in the soil at the base of bushes. Most larvae reach first and second instars by the end of July. Third-instar (Picture 1) appear by the end of August, they remain in the soil during winter, resume feeding the following spring, and enter the pre-pupal stage in late May.

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Picture 1. Oriental beetle life cycle
**Scouting and Control:** Japanese beetle sex pheromone traps (Trécé, Adair, OK), baited with septa lures containing the sex pheromone are used to monitor oriental beetle populations and initiation of male flight (Picture 2). Imidacloprid is recommended to manage oriental beetle grubs infesting blueberries in New Jersey. Imidacloprid is most effective if targeted against early instar grubs. It should be applied in June to mid-July, at least 7 days before the first picking, or applied as a post harvest material. Grubs should be targeted at their youngest stage or as they hatch and are at the 1st and 2nd instars, and while still close to the soil surface. Imidacloprid has little effect on 3rd instars and older larvae. Older 3rd instars start to appear by early to mid August. Therefore, applications should be made well in advance of that date. Because the first oriental beetle eggs are not expected to hatch before late June, you should try to delay application as late as possible. For example, applications made in May simply degrade if exposed to the sun. However, imidacloprid has a long residual activity (>100 days) as long as the insecticide is not exposed directly to the sun. Applications for early varieties like Weymouth can be made immediately after the last picking. If Duke picks by the 3rd week of June, then application should be conducted during the 2nd week of June or after harvest, between mid to the end of July. Applications for Bluecrop are recommended 7 days before the first picking, in late June or early July. Similarly, applications for late season varieties like Elliott should be conducted no later than end of July. Imidacloprid is most effective when applied before most eggs have hatched and grubs are still near the soil surface. Please read and follow all the conditions and restrictions on the container label for these insecticides. Remember to irrigate the field with at least .5 to 1” of water immediately after application. This moves the insecticide closer to the root zone, and removes it from the sun’s rays and consequent UV breakdown. If the soil is dry, then also water just previous to application. Begin applications late in the evening hours to avoid UV exposure. No more than one application of imidacloprid can be used per season. Soil and foliar applications of imidacloprid may be used in the same field as long as the total a.i. applied does not exceed 0.5 lb/A.

**Oriental Beetle Mating Disruption**
As an alternative to insecticides, we recommend the use of mating disruption for oriental beetle control. Dispensers (picture 3), containing the oriental beetle sex pheromone, are now available to growers. These dispensers are being sold by AgBio:

Mr. Jan Meneley, Ph.D.
AgBio Inc.
9915 Raleigh St.
Westminster, CO 80031
[www.agbio-inc.com](http://www.agbio-inc.com)
ph 303-469-9221
fx 303-469-9598

To use, simply attach the dispensers to a lower blueberry branch at a density of 20-40 dispensers per acre in a grid pattern, depending on the size of the area to be treated. Please see label for information on restrictions, spacing, timing, etc.
Blueberries are mostly out of bloom. Mummy berry and Phomopsis twig blight, are no longer active. Fields with symptoms of these diseases should be confirmed and targeted for management next season. To evaluate for mummy berry infections, the berries can be sliced open so that the ovaries are visible in cross section. Some or all of the locules of the infected fruit will be filled with a spongy white material that will eventually become the mummy. These are visible now. Healthy fruit will not have any of the white spongy material in the locules. Phomopsis can be recognized by dead cane tips that can be tracked down to a single point of origin such as an infected bud.

If Botrytis blossom blight was present in your field it may still spread via infected plant material. If this is the case a botrytis material may still be warranted however, I have not observed any problems with this disease this season. However, I have not seen any of this disease even in frost damaged areas.

For anthracnose management protectant sprays should be the major emphasis now. Duke plantings that received fungicide applications during bloom will not require additional sprays now. Bluecrop will benefit from continued applications. Ziram, Captan, Cabrio, or Abound may be used to protect the developing fruit. Ziram will provide a longer residual activity and therefore the interval between applications can be stretched to 14-days. However, Ziram has a 14-day PHI and it covers the fruit with a whitish residue. My recommendation is to leave a 20-30-day PHI for Ziram to time to allow the residue to dissipate. Since we expect to start picking Duke around June 5 this year it would be advised to avoid use Ziram use on that cultivar now.

In Season Blueberry Disease Management New Jersey

Please note these are suggestions only. Fungicides should be used only when diseases are present and always properly diagnosed. Always follow the label and recommendations may vary among regions.

Fig 1. Disease management considerations for mid-late May. Treatments and diseases that are in gray may be upcoming whereas those in black are current. Please remember to scout for diseases now.
Blueberry Scorch Virus

The symptoms of Blueberry Scorch have been rare this season. The infected bushes have not been cured; the disease is latent (symptoms are not appearing) but the virus can still be transmitted by aphids or via cuttings. Suspect plants should be tested and removed if found to be positive.

Stem Blight

Symptoms are beginning to appear now. Prune out dying branches and try to prevent the disease from entering the crown of the plant. Symptoms will continue to appear throughout the remainder of the season.

Phytophthora Root Rot

Symptoms are beginning to show. Get samples for testing to determine a course of action.
Food Safety Modernization Act
Creating a Farm Food Safety Plan: Part II
Farm Mapping
Meredith Melendez Senior Program Coordinator, Rutgers NJAES Mercer County
Wes Kline, Agriculture Agent Rutgers NJAES Cumberland County

Farm mapping is a familiar thing for growers in New Jersey. Field maps, pesticide storage maps and customer maps are regular tasks, but mapping for food safety? Mapping your farm with food safety in mind allows you to manage the physical characteristics of the farm to minimize microbial contamination hazards.

Hand drawn maps are acceptable for an audit, but if you want a computer generated map, or an aerial image, there are several free resources that you can use. The easiest to use is the My Maps section of Google Maps, located at: www.maps.google.com. Just plug in your farms physical address, zoom in so the map shows the entire farm and print. You can then hand draw in the details required for the food safety maps or trace the prominent features of the farm onto a clean sheet of paper and add in the required components. Another good resource is the USDA Web Soil Survey at http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Your local FSA also has aerial photo maps that could be used. Simple computer drawn maps, like the ones shown in the Henderson Farm Plan, can be created using standard computer software such as Microsoft Word, PowerPoint, or Publisher.

What map(s) will you need for your food safety plan?

Field map
The field map will most likely be much like what you currently use for planning crop rotations and schedules. Field maps need to include, where applicable:
- Fields uniquely numbered with crops indicated
- Farm roadways
- Indoor growing facilities such as high tunnels, greenhouses, etc.
- Farm buildings including barns, and other structures
- Packing house location
- Water systems, you have the option of including this in your field map or in a separate map. Whichever is easier for you to do. (Water systems will be discussed in a separate area below)
- Animal waste storage areas, including compost
- Animal housing and grazing areas

Packing House Layout
The packing house layout should have enough detail so the auditor can see the flow of product into, through and out of the packing house. The packing house layout needs to include, where applicable:
- Washing and grading line
- Packing line
- Receiving area
- Office
- Crate/box etc. storage area
- Cold room
- Loading area
- Restrooms
- Wash stations
- Doorways
- Rodent traps
- Break room
- Employee belongings storage

Water System Map
Sources of water and methods of protecting that water from contamination
- Permanent fixtures such as wells, gates, reservoirs, valves, returns, under ground main and any above ground water transportation systems
- Flow of water system including holding reservoirs and water capturing for re-use

These maps should have enough detail so the auditor can easily use them to locate its components. The maps should be kept accurate by reviewing them annually and make changes as needed. Once the maps are created not only will they be one more piece of the food safety certification package, but they will also help you consider safer and more efficient methods of production.
May 14, 2012

BLUEBERRY BULLETIN

If you have any comments about this newsletter, please make them in the space below and mail to:
Dr. Gary C. Pavlis, County Agricultural Agent
Rutgers Cooperative Extension of Atlantic County
6260 Old Harding Highway, Mays Landing, NJ 08330

I would like to see an article on the following subjects: __________________________________________________________

I would like to comment on the following articles:
Title: __________________________________________ Date: __________________________________________
Comment: ____________________________________________________________________________________________

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