**AT A GLANCE…INSECTS AND DISEASE PROBLEMS THAT SHOULD BE CONSIDERED THIS WEEK.**

<table>
<thead>
<tr>
<th>PEST/DISEASE/CULTURE</th>
<th>JUNE 10–JUNE 17 FIRST PICKING</th>
<th>JUNE 17-24 HARVEST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ORIENTAL BEETLE</strong></td>
<td>Monitor and treat with imidacloprid (Admire Pro) or generic product now through mid July if OB populations are high. Alternatively use mating disruption.</td>
<td>Monitor and treat with imidacloprid (Admire Pro) or generic product now through mid July if OB populations are high.</td>
</tr>
<tr>
<td>Admire or imidacloprid generic. Mating disruption.</td>
<td></td>
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<tr>
<td><strong>APHIDS</strong></td>
<td>Monitor for aphid colonies, and treat if over 10% of terminals are infested.</td>
<td>Monitor for aphid colonies, and treat if over 10% of terminals are infested.</td>
</tr>
<tr>
<td>Admire, Assail, Actara</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BLUEBERRY MAGGOT</strong></td>
<td>Monitor traps and treat if catching 1 or more flies per trap in any production area.</td>
<td>Monitor traps and treat if catching 1 or more flies per trap in any production area.</td>
</tr>
<tr>
<td>See list</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SPOTTED WING DROSOPHILA</strong></td>
<td>Monitor with traps.</td>
<td>Monitor with traps, and use materials for aphids and maggot that also control drosophila when possible.</td>
</tr>
<tr>
<td>Sevin, Lannate, Imidan, Malathion, Delegate/Entrust, Asana, Brigade, Danitol, Mustang-Max</td>
<td></td>
<td></td>
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<tr>
<td><strong>SCORCH</strong></td>
<td>Remove infected plants, kill crowns with herbicide</td>
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<td></td>
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<tr>
<td><strong>PHYTOPHTHORA ROOT ROT</strong></td>
<td>Have root samples tested and treat affected fields</td>
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<tr>
<td><strong>STEM BLIGHT</strong></td>
<td>Remove symptomatic canes by pruning below infected (brown) stems</td>
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<tr>
<td><strong>RHIZOCTONIA</strong></td>
<td>Check propagation beds for dying plants</td>
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<tr>
<td><strong>NUTRITION</strong></td>
<td>Continue to apply N-P-K</td>
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</tbody>
</table>

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**CULTURE**

*Dr. Gary C. Pavlis, Ph.D.*

*Atlantic County Agricultural Agent*

Yellow Leaves: Numerous fields in the Hammonton area showed yellow leaves on the new growth. This has occurred almost entirely on ‘Duke’. Last week I mentioned that yellow
leaves at this time of year are normal because
the plant is growing so fast that it causes
Nitrogen deficiency in the new growth. When
the growth slows during fruit maturation, the
problem will fix itself. This is not the problem I
am seeing this week. These leaves are light
green/yellow but the veins are green. They are
found only on the new growth. This is definitely
iron deficiency. Years ago I would always say
that this means the pH has climbed up past 5.5.
For most varieties this is true, but for ‘Duke’, it
may not be true.

It appears that the iron requirement for
‘Duke’ is higher than ‘Bluecrop’ and ‘Elliott’.

As a result it is possible to get iron deficiency
when the pH is in the optimum range of 4.5 to
4.8. If you see this problem it is critical to fix it
now. A simple foliar application of an iron
chelate will green these plants up in a few days.
If left unchecked, growth will be decreased and
next year’s flower bud development will also be
decreased. This will have an effect on next
year’s yield.

Sincerely,

[Signature]

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

Blueberry Maggot (BBM): The first trap
capture was seen on June 7 in Burlington
County. This starts the clock for those growers
on a calendar based spray program if
exporting fruit to Canada. The first insecticides
must be applied within 10 days of first capture,
and again every 7-10 days through the Canadian
shipping season. For the trap based program,
growers need only to pay attention to traps
placed in specific production areas, and treat on
a schedule based on those trap catch dates. Due
to Spotted Wing Drosophila programs, which
will require 7 day insecticide programs, it will
no longer be practical trying to use the trap
based program for blueberry maggot control.

Life Cycle. There is one generation per growing
season. BBM overwinters in the soil below
blueberry bushes enclosed in a brown puparium
buried one to two inches deep in the soil. Pupae
lay dormant until environmental conditions
become suitable to emerge as adults (early
through mid-June). Peak emergence and
migration from wild hosts continues from mid-
July through mid-August. Female blueberry
maggot flies do not begin laying eggs until 10
days after emergence, typically corresponding to
when the blueberry fruit turns blue. Adult
females live for about 30 days, feeding on
nectar, dew, and honeydew. Female flies lay
one egg per berry under the fruit skin, which
hatches in five to seven days. Maggots feed for
about three weeks inside ripening and harvested
fruit. The full-grown larva is about 7/16 to ½
inch long and white. The body is tapered, with
an indistinguishable head at the narrow end. As
the larvae mature, infested fruit become soft and
watery, and drop to the ground. The cycle is
perpetuated for the following year as larvae then
pupate in the soil under the bushes from which
they have dropped. Pupae may remain in the
soil for up to 2 to 3 years.

Monitoring and Management. Determining the
onset of adult fly activity is essential to the
control of BBM as protective sprays must be
applied in the 7 to 10 day period before
oviposition begins. Regular monitoring of
blueberry maggot emergence is done with
yellow baited sticky traps. A trap and lure
system has been developed that increases
blueberry fly capture. Pherocon AM yellow
sticky boards baited with ammonium acetate
work effectively in monitoring blueberry maggot
flies. Traps should be hung in a “V” orientation
within the top 6-8” of the bush canopy, not
above it, with the yellow surface facing down
(see photos). Sometimes this means cutting

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away a little foliage so it doesn’t stick to the trap. If the trap is hung above the foliage then fewer to no maggot flies will be caught. The traps should ideally remain open at a 90º angle. As the trap gets wet, it looses form and gets heavier. Use of a # 14 or 12 wire in place of the plastic coated wires that come with the traps will help maintain proper orientation and shape.

Traps should be placed at least a week before first flies are expected to emerge (early June).

Traps should also be changed every 2 weeks, since the ammonium acetate will volatilize off the traps. Place traps on field borders near wooded areas, with a few traps in the field interior.

Trap Orientation and Placement - Upside down tent or “V” in top 6” of canopy
Blueberry Maggot Insecticide Options

<table>
<thead>
<tr>
<th>Material</th>
<th>Rate/A</th>
<th>REI</th>
<th>PHI</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diazinon 50W</td>
<td>1 lb</td>
<td>5 days</td>
<td>7 days</td>
<td>G</td>
</tr>
<tr>
<td>Imidan 70WSB</td>
<td>1.33 lb</td>
<td>24 hr</td>
<td>3 days</td>
<td>E</td>
</tr>
<tr>
<td>Lannate 90SP</td>
<td>1 lb</td>
<td>48 hr</td>
<td>3 days</td>
<td>G</td>
</tr>
<tr>
<td>Malathion 8</td>
<td>1.5 pt</td>
<td>12 hr</td>
<td>1 day</td>
<td>G</td>
</tr>
<tr>
<td>Sevin 80WSP /4F</td>
<td>1.5 lb / 3 pt</td>
<td>12 hr</td>
<td>7 days</td>
<td>G</td>
</tr>
<tr>
<td>Asana XL</td>
<td>8 oz</td>
<td>12 hr</td>
<td>14 days</td>
<td>G</td>
</tr>
<tr>
<td>Danitol</td>
<td>10 2/3 – 16 oz</td>
<td>24 hr</td>
<td>3 days</td>
<td>G</td>
</tr>
<tr>
<td>Hero</td>
<td>4 – 10.3 oz</td>
<td>12 hr</td>
<td>1 day</td>
<td>G</td>
</tr>
<tr>
<td>Admire (Imidacloprid)</td>
<td>6–8 oz</td>
<td>12 hr</td>
<td>3 days</td>
<td>G</td>
</tr>
<tr>
<td>Actara</td>
<td>4 oz</td>
<td>12 hr</td>
<td>3 days</td>
<td>G</td>
</tr>
<tr>
<td>Assail 30SG</td>
<td>4.5 – 5.3 oz</td>
<td>12 hr</td>
<td>1 day</td>
<td>E</td>
</tr>
<tr>
<td>Rimon</td>
<td>20-30 fl oz</td>
<td>12 hr</td>
<td>8 days</td>
<td>G</td>
</tr>
<tr>
<td>Delegate</td>
<td>6 oz</td>
<td>4 hr</td>
<td>3 days</td>
<td>F</td>
</tr>
<tr>
<td>Surround</td>
<td>25 lb</td>
<td>4 hr</td>
<td>day of harvest</td>
<td>suppression</td>
</tr>
<tr>
<td>Entrust</td>
<td>2 oz</td>
<td>4 hr</td>
<td>3 days</td>
<td>suppression</td>
</tr>
<tr>
<td>GF120</td>
<td>20 oz</td>
<td>4 hr</td>
<td>day of harvest</td>
<td>F</td>
</tr>
</tbody>
</table>

E=excellent, G=good, F=fair, suppression=suppression only
Assail, Admire, Actara, Rimon, and Delegate are reduced-risk/OP replacement products.
Surround, Entrust, and GF120 are organically-approved insecticides.
Adult identification. Proper identification of the BBM flies is important. There are several flies that resemble and may be confused for BBM adults. The BBM adults are identifiable by the characteristic solid “W” or “M” shape mark on their wings. In most cases, this looks identical to apple maggot but assume that if it is in a commercial blueberry field, then it is BBM. See illustrations from Carroll et al. (2002).

![Adult identification](image1)

Plum Curculio (PC): Adults have been seen on only 1 site, an organic farm, and is in a cooler area compared to most farms in our program. Therefore we consider this recent catch to reflect activity that is behind other farms in the region. No fresh PC injury has been seen, and PC is not a target at this time on most farms. Field fruit samples show that fruit with egg scars will easily drop off with just a slight disturbance.

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Leafrollers and Other Leps: Most shoot samples for worm larvae have been negative and of those that are positive, none have been close to the threshold of 5% of shoots infested. BB Leafminer (teepee shelters) are being seen at a few sites. This insect is usually not a significant pest, and there is no treatment threshold established.

Aphids: Sampling shows that 64% of shoot samples are positive for aphids. About 36% of samples are above the 10% infestation level. One site in Burlington Co was noted as having numerous lady bug larvae predators feeding on aphids.

Cranberry Fruitworm (CBFW): Recent trap levels are lower compared to the previous week. Low levels of fruit injury have been seen at just 3 sites. Most farms in our program have not needed to treat for this pest.

Oriental Beetle: The adult flight is starting with low trap captures. An Atlantic Co. farm that has had some of the highest trap counts in previous seasons has just been recorded with a count of 7 adult beetles in a 7 day count.

Life cycle. OB completes a single generation per year. Adults (see picture) start to emerge in early June, and flight peaks in early July. Females lay eggs in the soil at the base of bushes. Most larvae reach first and second instars by the end of July. Third-instars (see picture) 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.

Monitoring. Japanese beetle sex pheromone traps (Trécé, Adair, OK), baited with septa lures containing the sex pheromone are used to monitor OB populations and initiation of male flight (see picture).

Japanese beetle trap used for monitoring OB populations
Control. Admire Pro (imidacloprid) (4.6 lb ai/gal) is recommended to manage OB grubs infesting blueberries in New Jersey. Other formulations are also available in generic brands. Most of these are 2 lb ai/gal. These include Alias, Nuprid, Couraze, and others. 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. Applications will degrade if exposed to the sun. Therefore, imidacloprid should be immediately irrigated into the soil to form a layer of insecticide just below the soil surface. 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 as eggs hatch 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. If the soil is dry, then also water just previous to application. Begin applications late in the evening hours because this insecticide is sensitive to breakdown by UV radiation. No more than one application of Admire Pro can be used per season. However, Admire Pro (and other generics) 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 (see picture), 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
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. Below are instructions on how to space the disruptors through blueberry fields.

The price of each dispenser is $2.45 or $61.25 for a package of 25.

Putnam Scale: Crawler trap counts are indicating that this pest is still a target for a limited time. Fruit samples in infested Duke fields are showing some injury at a few locations. This is a good time to scout for scale in Duke since there is plenty of colored fruit which easily shows the pinpoint cream colored wax dots often surrounded by a light colored halo. If this is present you could consider a treatment over the next several days, although Esteem has a 7 day PHI, and is better suited for Bluecrop and later plantings. History of previous scale problems on the fruit can be used as a scouting tool to target the most likely fields that will need scouting and possible fields to treat.
High water volumes are best in the treatment of scale.

**INSECT TRAP COUNTS**

**Blueberry Insect Trap Counts - Atlantic County**

<table>
<thead>
<tr>
<th>Week Ending</th>
<th>RBLR</th>
<th>CBFW</th>
<th>OBLR</th>
<th>SNLH</th>
<th>Or. Beetle</th>
<th>BBM</th>
<th>BMSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/13</td>
<td>116</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4/20</td>
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**Blueberry Insect Trap Counts - Burlington County**

<table>
<thead>
<tr>
<th>Week Ending</th>
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<th>CBFW</th>
<th>OBLR</th>
<th>SNLH</th>
<th>Or. Beetle</th>
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<td>1</td>
<td>0.07</td>
<td>2.8</td>
<td>1.2</td>
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June 10, 2013

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: ____________________________________________________________________________________________

__________________________________________________________________________________________________