CULTURE

Dr. Gary C. Pavlis, Ph.D.
Atlantic County Agricultural Agent

Fertilization: Fertilizer recommendations which are based on soil analysis are nearly worthless. Leaf and soil samples which had been taken from the same plant never agreed, and the leaf analysis shows what is actually getting into the plant. So, what do we do about this? I believe the only important thing that we learn from soil analysis is pH. Yes, pH is critical. Many growers have heard me say that the three most important things you must know to grow blueberries is pH, pH, and pH. This is especially true for growers who have plantings that are not on soils that are naturally 4.5 to 4.8. The pH of the soil must be known because leaf analysis results assume that the pH is within the correct range. If it is not within that range, I would not rely on the leaf analysis recommendations.

So, what should growers do about fertilizing their blueberries? First, every blueberry grower should have their blueberry soils tested for pH. If soil pH is not within the 4.5-4.8 range, this should be adjusted immediately. If the pH is higher, sulfur is added. If the pH is lower, lime is added. The amount of sulfur or lime depends on your pH and I would have the pH tested in the spring and fall until the proper range is attained. Thereafter, fall pH tests are best because adjustments can be made then and the pH will be correct by bud break in the spring. Second, this year's N-P-K application should be made at bud break. But realize that the amount, 600 lbs/Acre of 10-10-10 on a mature planting is largely a guess until we take leaf samples in July. After that we can make recommendations based upon the leaf analysis. Note: this can only happen if the soil pH is correct or we must continue to guess on
the recommendations. Lastly, these changes are needed because even though the samples we took last year were from growers who are some of the best blueberry growers in the world, 70% of the plants were deficient in Nitrogen, and 97% were deficient in one of the micro-nutrients. Nutrient deficiencies cause decreased yield, lower fruit quality, increased disease problems and plant mortality. We need to make these changes as soon as possible.

INSECTS

Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University; Dean Polk, IPM Agent, Rutgers Cooperative Extension; Amy Raudenbush, Fruit IPM Program Associate, Rutgers Cooperative Extension

Cranberry Weevil (CBW): Activity has increased over the past week due to the increase in temperature. The percentage of sites with CBW activity went from 37.5% the week of April 6th to 72.3% for the week ending April 18th. Additional sites have shown CBW activity, however only 4.6% of the sites monitored over the last week were above threshold. The threshold level for adult CBW is an average of 5 weevils per bush.

<table>
<thead>
<tr>
<th>Cranberry Weevil Summary April 13 to April 18, 2015</th>
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<tbody>
<tr>
<td>Max average per bush</td>
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<tr>
<td>Min average per bush</td>
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<tr>
<td>% positive sites</td>
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<tr>
<td>% of sites above threshold (5 CBW/bush)</td>
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Samples with adult activity above threshold level are monitored on edge rows and at least 6 rows into the field to determine if border sprays or full field sprays are necessary. If inner field CBW counts are at or above threshold level, a full field spray is recommended.

Observations for CBW feeding are also part of the scouting process. The treatment level for CBW feeding is 20% of blossom clusters injured, or 1 out of every 5 buds damaged. Cranberry weevil feeding leaves a noticeable pinhole on the bud (Figure).

Plum Curculio (PC): Several PC adults were seen on Monday in commercial fields, even though there is no bloom or fruit present. PC overwinters on the adult stage in the woods, hedgerows and other protected areas. When temperatures start averaging 60° or more for several days, adults will start to move. Even if the average temperatures are below 60°, a couple of days with maximum temperatures above 75° will stimulate adult movement. With favorable temperatures over half the overwintering population can emerge in a single day. They may also return to overwintering sites if temperatures drop for a prolonged period of time.

Photo by: A. Raudenbush
Use of Rimon against PC
We have tested a preventive PC control using Rimon (novaluron) pre-bloom. Rimon is a chitin inhibitor. It affects larval development but also has transovarial activity. Thus, eggs can become sterile when adults ingest Rimon-treated plants. Rimon does not control adults; thus, you might still need a post-bloom application. Rimon needs to be ingested by adults. It needs to be applied right before bloom. Rimon does not have direct toxicity to adult bees but if it gets on pollen it can be carried to the hive and affect the brood. Based on our data, 25 oz/A of Rimon at 25 gal/A works best. Rimon applied to young foliage causes phytotoxicity. Based on our observations plants grow out of this but growers should be aware of these effects.

Life Cycle. In New Jersey, PC completes a single generation a year in blueberries. This insect overwinters as an adult in leaf litter. Adults become active during bloom and feed on young fruit just after bloom, causing feeding scars. We have noticed that in the absence of fruit, adults feed on blueberry flowers (petals). Females lay eggs in the fruit causing crescent-shaped oviposition scars (see Picture). White maggot-like larvae develop inside the fruit (one larva per fruit). Feeding by the larvae causes fruit to develop prematurely and fall off the bush. Mature larvae exit the fruit to pupate in the ground, and become an adult in July and August. If berries are picked before they drop, larvae can contaminate harvested fruit.

Scouting and Control. To monitor PC populations, scout for the semi-circular scars on the fruit. Sampling should be biased towards field edges or infields that border woods and hedgerows. PC infestations are more common in weedy fields and those with sod middles. This pest is more of a problem on early maturing varieties. No threshold has been established, so treatment is mainly based on past history and an estimate of damage to fruit. Control methods target the immature and adult stages. Rimon can be used before bloom to prevent fruit infestation. Rimon affects female oviposition behavior and egg and larval development. Chemical controls targeting the adults should be applied soon after bees are removed. Post-bloom control options include Avaunt, Danitol, Brigade, Mustang Max, and Imidan.

Frequently Asked Questions on Plum Curculio
Why is PC a problem now?
PC has historically been considered an occasional pest in blueberries in New Jersey. Over the past 10-15 years more early varieties have been planted. Long term trends seem to be to plant more Duke. Duke is likely to have more infested fruit than later varieties (Bluecrop and Elliot). It thus becomes a contamination risk for early varieties.
Why is PC a problem during bloom?
PC is active before bloom (right now!) and populations peak during bloom. Different blueberry varieties bloom at different times, which extend the bloom period to several weeks. Females oviposit on young berries while blossoms are still open and other fruit is still setting. Early varieties like Duke are often picked while the larvae are still developing inside the fruit, and before the fruit drops. Later varieties are picked after any infested fruit drop to the ground with matured larvae.

Why is this not a problem in other crops?
While PC is a pest on other crops, such as apples, other crops do not have this long, extended bloom period. This makes blueberries unique when managing this pest.

Can I control this pest during bloom?
We do not have good control measures for PC that are not harmful to bees and that can be used during bloom. Thus, for now, avoid any treatments during bloom.

What can I do to prevent berries to get infested?
We have tested a preventive control using Rimon (novaluron) pre-bloom. Rimon is a chitin inhibitor. It affects larval development but also has transovarial activity. Thus, eggs can become sterile when adults ingest Rimon-treated plants. Rimon does not control adults. Thus, we might still need a post-bloom application.

When should I use Rimon?
Rimon needs to be ingested by adults. It needs to be applied right before bloom.

Can Rimon harm the bees?
Rimon does not have direct toxicity to adult bees but if it gets on pollen it can be carried to the hive and affect the brood.

What Rimon rate/volume works best?
Based on our data, 25 oz/A of Rimon at 25 gal/A works best.

Any phytotoxicity concerns?
Rimon applied to young foliage causes phytotoxicity. Based on our observations plants grow out of this but growers should be aware of these effects.

Mummy Berry: Monitoring for the mummy berry cups has started. Currently no mummy berry cups have been detected in monitored sites. However, this is the time of year when mummy cups should be visible on the ground. Mummy cups should be more common in wet, poorly drained sites. The ascospores that cause primary infection are released from those cups. Fungicides that target mummy berry should be maintained. See page 12 of the 2015 Commercial Blueberry Pest Control Recommendations for New Jersey for rates of Indar, Orbit, Proline, Pristine, Quash and Switch.
April 20, 2015

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: _______________________________________________________

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Title: __________________________________________ Date: ______________________________________________________

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Rutgers Cooperative Extension of Atlantic County
6260 Old Harding Highway, Mays Landing, NJ 08330
Phone: 609/625-0056, Fax: 609/625-3646
E-mail: pavlis@njaes.rutgers.edu
http://www.njaes.rutgers.edu/pubs/blueberrybulletin
Dr. Gary C. Pavlis, County Agricultural Agent
Editor - The Blueberry Bulletin
Sharon Ponzetti, Secretary
E-mail: ponzetti@njaes.rutgers.edu