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 assumes 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.
Lastly, if you going to have fertilizer delivered in the near future and you live in New Jersey it makes sense to call the NJ Dept. of Agriculture first. They will analyze the fertilizer and let you know if it is true to label. Some fertilizers have been found to be low in analysis. This service is free.

Sincerely,

[Signature]
Gary C. Paolis, Ph.D.
Atlantic County Agricultural Agent

Editor - Blueberry Bulletin
GP/slp

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

Cranberry Weevil (CBW): The first CBW of this season was caught on March 29 in Hammonton using a tray to detect presence on the buds. Scouting for this insect began on March 18 and most searches since then have been conducted in areas where the highest activity was observed last year. This first catch was seen in a field that had a very high CBW level last Spring (over 20/bush before treatment). The block is surrounded by woods and the weevils were only seen on the edges. Levels seen here are low – only 0.8/bush (5/bush is the treatment threshold). This sample was done during late afternoon with a temperature of 45 degrees.

The movement and injury potential of this pest is very dependent on temperatures. During the warmer periods of the day the CBW may migrate into the field from the woods or up into the buds from the covers at ground level. The warmer the conditions, the faster they can injure the buds. Later in the day as the temperature falls, the pest may drop to the ground or settle down into the nooks of the bud and remain somewhat dormant until it warms up again thus resuming the bud feeding and egg laying.

When scouting for CBW it may be most efficient to use tray samples during the warm sunny periods of the day; however, it may be possible to detect them during cool/cold conditions as described above. You can also evaluate the injury level of the buds by searching the buds for tiny dark pinpoint marks on the unopened flower/buds (although not every such marked flower will result in a lost berry).

With the buds swollen and starting to unfold as they are now, the potential for CBW infestation is very high (depending on temperatures) but as the flower gets close to opening the pest will migrate out of blueberries. Because the 10 day forecast is calling for consistent cool temperatures, we have a favorable condition since this should limit the injury potential and buy us some time until we get closer to flower opening.

For comparison:

<table>
<thead>
<tr>
<th>SEASON</th>
<th>BLOOM PERIOD</th>
<th>APPROX DATE</th>
<th>MAXIMUM % CBW SAMPLES</th>
<th>CURCULLIO CATCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>4/25 - 5/21</td>
<td>22-Apr</td>
<td>2-Apr</td>
<td>24-Apr</td>
</tr>
<tr>
<td>2010</td>
<td>4/11 - 5/12</td>
<td>5-Apr</td>
<td>19-Mar</td>
<td>5-Apr</td>
</tr>
<tr>
<td>2011</td>
<td>4/14 - 5/12</td>
<td>9-Apr</td>
<td>27-Mar</td>
<td></td>
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</tbody>
</table>
**Life cycle:** Adults move from wooded areas, where they overwinter, into the fields; however, adults occasionally overwinter inside blueberry fields if left unmanaged. The adults are small (1/16 inch long), dark reddish brown beetles, with few whitish bands on the wings, and a long snout (see Picture 1). Eggs are laid singly through the feeding holes into the flower. Larvae feed from egg hatch to pupation within the flower buds in which they were deposited as eggs. Pupation occurs within the infested flowers and adults emerge in late May. Infested flowers turn purplish, fail to open, and eventually fall to the ground.

**Scouting and Control:** Because weevils are abundant near the woods where they overwinter, sampling for weevils should be intensified along the edge rows near the woods. Spraying should be confined to these “hot” spots on edge rows. Treatment thresholds are 5 weevils per bush or 20% of blossom clusters with feeding injury (i.e., at least 1 injury/puncture per 5 clusters) (see Picture 2). To monitor adults, use a beating tray under each bush and hit the bush to dislodge weevils; repeat on both sides of the bush to obtain number of weevils per bush. Adults are found on sunny days. Monitor at least 10 bushes per sample site. Asana XL 6-8 fl oz per acre, Imidan 70WSB 1.33 lb per acre, or Mustang Max 4 fl oz per acre are recommended for cranberry weevil control.

**Picture 1: Cranberry Weevil on a Blueberry Flower Bud**

**Picture 2: Cranberry Weevil Feeding Injury to Buds**

**DISEASE**

*By Peter V. Oudemans, Ph.D.*

*Associate Professor and Extension Specialist*

*Plant Pathology*

**Phomopsis Twig Blight:**

Buds are beginning to swell and the season will soon be upon us. Phomopsis Twig Blight has been seen with increasing prevalence over the past few years and it is highly recommended that appropriate controls be implemented if this disease is present in a particular field. Yield losses due to Phomopsis Twig Blight as high as 40% have been recorded in commercial Weymouth blocks in New Jersey. Susceptibility varies among cultivars and Sierra, Weymouth and Elliott seem to be most susceptible. The disease is relatively easy disease to identify during flowering when infected buds begin to dieback however, by then it is too late to make any type of treatment. Effective treatments begin at bud break.

There are two options for fungicide control of Phomopsis. Lime sulfur and Indar are both effective. Most growers who plan to use lime sulfur have already done so. Applications of Indar should begin when blueberry flower buds are at the T3 stage of development (See photo on next page and this is estimated between April 7-10, 2011).

Follow the labeled rates for this treatment and be sure to pay careful attention to the warning labels. Since there is no foliage
at this time of year make applications to minimize drift.

**SPRAYER CALIBRATION**

*Brad Majek*

*Specialist in Weed Science*  
*Rutgers University*

Herbicide labeled rates and recommendations are written based on the application of a certain amount of active ingredient on a certain area. The most common area designations are the acre, or 43,560 square feet, for agricultural uses, or per 1,000 square feet, an alternative often used in turf. The job of the sprayer (or spreader in the case of granular formulations) is to distribute the recommended amount of the active ingredient evenly and uniformly on the area.

Keeping this in mind, and relating it to blueberries, the shape of the area to be treated is not a factor, only the uniform distribution of the herbicide is important. An acre could be 208.7 feet by 208.7 feet, or it could be 1 foot by 43,560 feet. In blueberries, it is likely to be close to 3 feet by 14,520 feet, applied in two parts, half on each side of the bush.

Now all that remains is to calibrate your sprayer. First decide how wide a sprayed strip you want on each side of the bush and set up the sprayer to apply that width of spray at an appropriate nozzle height and pressure. For the sake of this example we will spray 1.5 feet on each side of the bush at 30 psi an 2 mph. Second, decide on your forward speed (tractor gear and RPM’s) and measure the time how long it takes you to spray some measured distance, say 290.4 feet, chosen because 1.5 feet X 290.4 feet = 435.6 square feet, or 1/100th of an acre. It takes 1 minute and 39 seconds to travel 290.4 feet at 2 mph. Next, measure you nozzle(s) output in 1 minute and 30 seconds while the tractor is parked and running at the spraying rpm’s. Do both the actual travel time for 290.4 feet in the blueberry field and the spray output several times and use an average. Always calibrate in the field, never on a blacktop road.

Finally, get a calculator, a cup of coffee, and get comfortable while you do the arithmetic to determine the Gallons of Spray Solution applied per acre (1 acre = 43,560 square feet).

**FOOD SAFETY SPRING TUNE UP**

*Wesley L. Kline, PhD*

*Cumberland County Agriculture Agent*

Spring is here and field work has begun in some parts of the state. Spring harvest of some overwinter crops is underway and soon planting will start for lettuce and herbs. Now is the time to think about your food safety plan for the year. Start out with a food safety self audit before the season gets too busy to think about it. Take the USDA audit or go to one of the websites for a food safety audit company and download their self audit. Doing this at the beginning of the season will allow time to make early changes.

Next, it is time to think about food safety training for workers. Each year workers need a refresher in worker protection standards and this is also a good time for the initial food safety training. The most critical areas for worker training are hygiene and what happens
if someone is injured. Proper hand washing must be stressed; before and after taking a break, after eating, after using the facilities or whenever hands are dirty. Hands should be washed with soap for 20 seconds then dried on single use paper towels. Hand sanitizers are not acceptable in agricultural situations since hands may be rough and soil gets lodged in the cracks and crevices. Signage is important to remind and encourage workers to wash their hands. Wash stations should be located outside port-a-johns and in packinghouses. Placing wash stations in the port-a-john or just in the restrooms in packinghouses is not sufficient. Supervisors must have the ability to observe workers washing their hands.

Cuts and abrasions can be sources of pathogens and blood that may contaminate produce. Workers should be made aware of the location of first aid kits and what supplies are available. Cuts and abrasions should be treated; then a glove placed on the injured hand. Workers can continue in harvesting and grading, but they must wear a glove. Pathogens can be found around blisters and scabs. That is the reason for the glove even after thorough hand washing.

A reoccurring problem observed in field situations is eating or drinking during the harvest process. Workers can eat on farm roads or areas which have already been harvested, but not where they are harvesting. There have been situations where produce was contaminated from workers eating in the field. Someone must be responsible to ensure that all trash is picked up at the end of the day so it does not end up in a packing box. Picking baskets should only be used for harvesting. If one is needed for trash, make sure it is clearly marked “not for harvest.” Any container that is used for irrigation parts, pesticides, etc. should be clearly labeled to ensure they are not used for any other purpose.

Worker training is not a one time deal. When a worker is observed doing something that may jeopardize your food safety plan, it is time for a refresher. This could be just with that worker or groups of workers. Remember workers are food handlers and someone will eat everything they harvest and handle.

March 2011

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Fumigation Safety and Regulations Update
Thursday, April 14, 2011
6:00 p.m.
Rutgers Eco-Complex
Mt. Holly, NJ

New fumigation safety regulations require that any growers who use fumigants must be trained before they are allowed to purchase and use those materials. Rutgers Cooperative Extension Plant Pathologist Andy Wyenandt has arranged another training session with John Harper for any growers (vegetable, fruit, nursery) who missed the session provided by CPS and Helena last month. The session will be held on Thursday April 14th at 6 PM at the Eco-Complex in Burlington County.

Some of the important details in the fumigation rules are included in this informative article by Alicia Whidden and Dr. Joe Noling, Berry Vegetable Times, March 2011 available online at http://strawberry.ifas.ufl.edu/BerryTimes/BVT0311.pdf.

Important Changes in New Fumigation Rules for Restricted Pesticide License Holders

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There is a very important point that is being repeatedly emphasized at the fumigation meetings and that we are sure will be pointed out again and again at upcoming meetings.

The point that we would like to bring to your attention, and that is printed on each and every new fumigant product label, defines a new requirement and responsibility of the certified applicator of soil fumigants. From ordering to receiving delivery of the fumigant, from the beginning to the end of applying the product in the field, to signing off on the Fumigation Management Plan, it all falls on the restricted pesticide license holder/certified applicator to be at the field application site for each day’s fumigation activity.

What this means in practical terms for our farming operations is that the pesticide license holder or another designated pesticide license holder/certified applicator must be at the field site at all times, i.e., in the line of sight of the application and providing direct supervision of all persons performing handling activities from the very beginning to the very end of dispensing the fumigant in the field.

This is a very important point for some of our farm operations to consider how they will satisfy this new fumigant label requirement. This can be a problem if the operation has multiple locations with multiple fumigation crews making daily applications and having only one person holding a pesticide license or the person that holds the license is not dedicated to being on the farm at all times.

Clearly, to resolve such a problem will require licensing of new certified applicators to assume responsibilities for fumigant applications when either the primary applicator cannot remain at the site, or when fumigations are proceeding concurrently at multiple sites.

All are welcome to attend this important training session. Pass this on to your neighbors who you know missed the earlier session. Remember, anyone who wants to buy and apply fumigants this season must be trained!
March 28, 2011                                      Vol. XXVII, No. 2

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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