RUTGERS
New Jersey Agricultural Experiment Station

The BLUEBERRY BULLETIN

A Weekly Update to Growers
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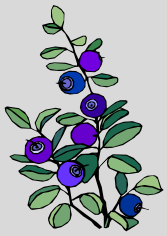

June 1, 2014 **Vol. XXX No. 8**

At a Glance……

PEST/DISEASE/CULTURE	JUNE 2 – JUNE 9 FRUIT SET	JUNE 9 – JUNE 16 FRUIT SET
CRANBERRY FRUITWORM (CBFW) Assail, Avaunt, Altacor, Delegate, or Imidan	Treatment timing if one application is used.	Monitor for any increases in population, and infested fruit.
PLUM CURCULIO Avaunt, Imidan, or pyrethroids	Monitor for fresh egg scars & treat if needed.	Monitor for fresh egg scars & treat if needed.
APHIDS Admire, Assail, or Actara	Treat if over 10% of terminals are infested.	Treat if over 10% of terminals are infested.
PUTNAM SCALE Esteem or Diazinon	Use Esteem as soon as possible if crawlers are present, or there was a problem last year that remained untreated.	Monitor with black sticky traps for crawler emergence.
SCORCH	Remove infected plants, kill crowns with herbicide	
PHYTOPHTHORA ROOT ROT	Have root samples tested and treat affected fields	
STEM BLIGHT	Remove symptomatic canes by pruning below infected (brown) stems	
RHIZOCTONIA	Check propagation beds for dying plants	

Culture

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

Farm visits this week didn't reveal any major problems but I did make some observations that I should pass on. First, the young leaves at the end of canes are light green and they are everywhere. This is very normal and nothing to worry about. The blueberry plant is

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actively growing and the uptake of nitrogen can't keep up with this growth. Result, light green to yellow leaves. No need to do anything about it. Your normal applications of nitrogen will take care of this temporary deficiency.

Second, I see Bluecrop canes with lots of fruit and not too many leaves within a bush that looks otherwise normal. I inspected some of these canes and usually found that they were injured in some way. Harvester wounds, tractor blight, cane rubbing are all possible causes. Once the transport system of the cane is damaged the flow of water and nutrients is disrupted or at least slowed down. Often the plant catches up with time. However, sometimes these wounds develop into stem blight problems. The severe winter is another complicating factor which could make matters worse. There is not much a grower can do about it now. Keep an eye out for canes that collapse and try to prune them out as soon as possible.

Lastly, many growers use mulch in their blueberry fields now to increase organic matter. This is fine but I must mention that uncomposted mulch ties up your fertilizer, especially your nitrogen. Often in a well mulched field the resulting leaf nitrogen is deficient. The only recourse is to increase the nitrogen application rates. How much? Hard to say. Every mulch is different and at different levels of decomposition. This all affects the amount of nitrogen that will be tied up. A good rule of thumb would be to increase N application rates by 50%. It may take more to get into the optimum range. The only way to monitor this and see if the rate is correct is to do a leaf analysis in late July/early August.

Insects

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

Cranberry Fruitworm (CBFW): Trap counts are spotty with most locations having "0" to low trap captures. However, some locations show 20-22 adults per trap. Given the time of year, and the past history of how fast adults will emerge, we are calling this the ideal time to treat for CBFW if present. Remember that this can be an edge related pest, so large acreage growers are more likely to be concerned with field edges, while smaller acreage growers surrounded by woods will wish to treat the entire acreage.

Life Cycle: CBFW has one generation a year. It overwinters as a fully-grown larva within a cocoon made of silk and soil particles (hibernaculum). Pupation occurs during the early spring and moths begin to emerge during the second-third weeks of May (adults started to emerge last week in Atlantic Co.). Male moths emerge 3-4 days earlier than females. Adults are brownish gray with a pair of white markings on each forewing (see photo). The eggs are pale-green, flat, and are

Adult cranberry fruitworm (photo by Z. Szendrei)

laid singly, mostly along the inside rim of the calyx cup. Eggs hatch in 5-7 days and the newly emerged larva is pale yellowish-green. Upon hatching, larvae bore into the fruit usually near the junction of stem and berry. The larva remains inside a fruit until its content is consumed, and then it moves to another fruit. A larva may feed on as many as 5-8 berries. Infested berries are contaminated with larval excrement which can be seen near the entrance hole. CBFW infestations can be recognized by the presence of webbings filled with excrement in berries (see photo). Infested fruit prematurely drop. Larvae drop to the ground under blueberry plants beginning the third week of June and build a cocoon.

Cranberry fruitworm damage to developing fruit (photo by Z. Szendrei)

Monitoring: Time of treatment can be established based on data from pheromone traps. Based on a degree-day model from Michigan State University 85 degree-days are required from first male capture –biofix– to egg laying. The number of males caught in the traps provides information on the presence and distribution of CBFW within a field. Traps are usually placed at the wooded borders of fields, where pressure tends to be high. Growers with a history of high CBFW population should especially be aware of the importance of monitoring. In addition, eggs may be scouted for after early fruit set. Larval infestation is difficult to detect early in the season, but as larvae grow, the increasing numbers of fruits affected and frass produced provide clear indication of infestation.

Control: CBFW can be controlled by registered insecticides. Post-bloom applications with broad spectrum materials (such as Danitol, Asana, Diazinon, Guthion, or Imidan), or with newer softer materials such as Assail, Avaunt, Altacor, or Delegate can be done 7-10 days following the first application and after bees are removed.

Aphids (Several species): Aphid populations are starting to increase, and can be found on all farms. There is a huge variability in what is found from field to field. We bias our sampling, and count the percent infested shoots on new lush growth at the bottoms of the bushes. Remember that aphids are a vector for scorch disease. Therefore we use a very conservative treatment threshold. Anytime 10% of the new shoots are infested with 1 or more aphids, a treatment is recommended. Recent scouting showed numerous fields with over 10% of terminal infested. As of early this week colonies were composed of single aphids, reproducing colonies, and winged forms. This means that populations will increase rapidly and treatments are justified on most farms.

Putnam Scale: Tape traps were set on several farms in “hot spots” about 2 weeks ago. Counts taken on Monday June 2 showed about 1,000 crawlers per trap at some locations. This is a little earlier than expected, but does indicate that the cold winter and cool spring did nothing to delay scale activity. Growers who have significant scale populations should consider treating the first generation. High volumes of Esteem or Diazinon will control scale, but Diazinon will

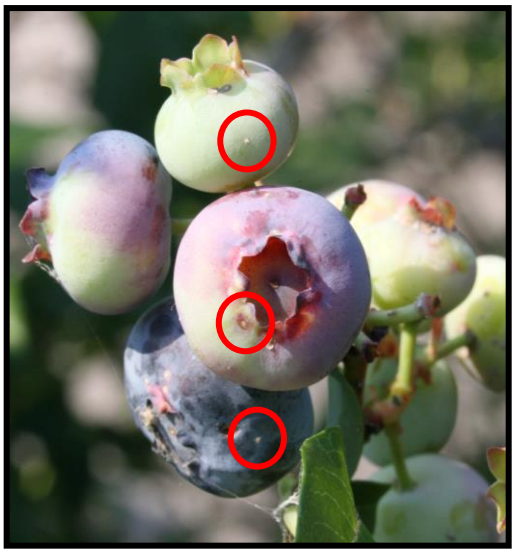
also control SWD. Crawler activity should increase over the next couple of weeks.

Life history: Scales feed on plant sap, decreasing plant vigor and fruit yield. Adult scales are protected from insecticide sprays by a waxy covering. These insects are common in older canes when not removed, and located mostly under loose bark. In New Jersey, the Putnam scale has two generations a year. It overwinters as second-instar nymphs under loose bark. Spring activity begins in early February. Eggs from the first generation are laid in late April, and immature "crawlers" typically begin to appear in mid-May. Peak crawler emergences occur in late May and early June (this time of the year). Peak crawler emergences for the second generation occur in early to mid-August.

Monitoring and Management. Growers who had a scale problem last year can treat the first generation crawler stage with Esteem (35W or .86EC, 7 day PHI), or Diazinon (7 day PHI). Diazinon can only be used once in a season. The second generation can be treated later in early August. Crawlers can be monitored by wrapping black electricians' tape covered by double-sided sticky tape around canes. Use a hand lens to see crawlers on the sticky tape.

Spotted Wing Drosophila (SWD): Traps have been installed at 25 locations with 3 different bait types. Monitoring of these traps will start later this week. Given the other pests that are present, the use of Assail for Leps (CBFW) and aphids is common. When applied late next week, it is likely that some fruit will start to show some color, at least in Atlantic County, making the fruit attractive for SWD. Therefore, Assail used at that time will likely target the early low populations of SWD. Growers in some areas have added 1lb/A of sugar as a feeding stimulant, which makes the Assail a more effective control.

Plum Curculio (PC): Some injury is present, but little to no adults remain active. This is no longer a pest of concern on most farms.



Maturing blueberries showing freshly settled scales (circled).

Blueberry Trap Counts – Atlantic County

Week Ending	CBFW
5/24	1.2
5/31	6.0

Blueberry Trap Counts – Burlington County

Week Ending	CBFW
5/24	2
5/31	0.13

What is Your Soil Cation Exchange Capacity?

Soil cation exchange capacity (CEC) is a significant number for an important soil characteristic. It comes into play when applying water, nutrients and herbicides, but do you really know why?

by Ron Goldy, Michigan State University Extension

What is your CEC? Don't take this as a personal question, but it is an important soil characteristic growers need to know and understand. CEC is short for cation exchange capacity, but what is that? What does CEC mean for you as a grower and how does soil with a low number differ from soil with a high number?

Soil particles are negatively charged and attract positively charged molecules. These molecules can be nutrients, water, herbicides and other soil amendments. A soil particle's ability to react with these molecules is called the cation exchange capacity. If the CEC number is low, not many molecules are able to bind (react) to the particle surface. If the number is high, a larger number of molecules can bind to the particle's surface. Michigan soils have a wide range of CEC values with sand-based soils having numbers below 10, clay and silt soils having values of 15 to 25 and organic soils approaching 100. To further confuse the picture, since Michigan is a glaciated state, values can change significantly within many fields.

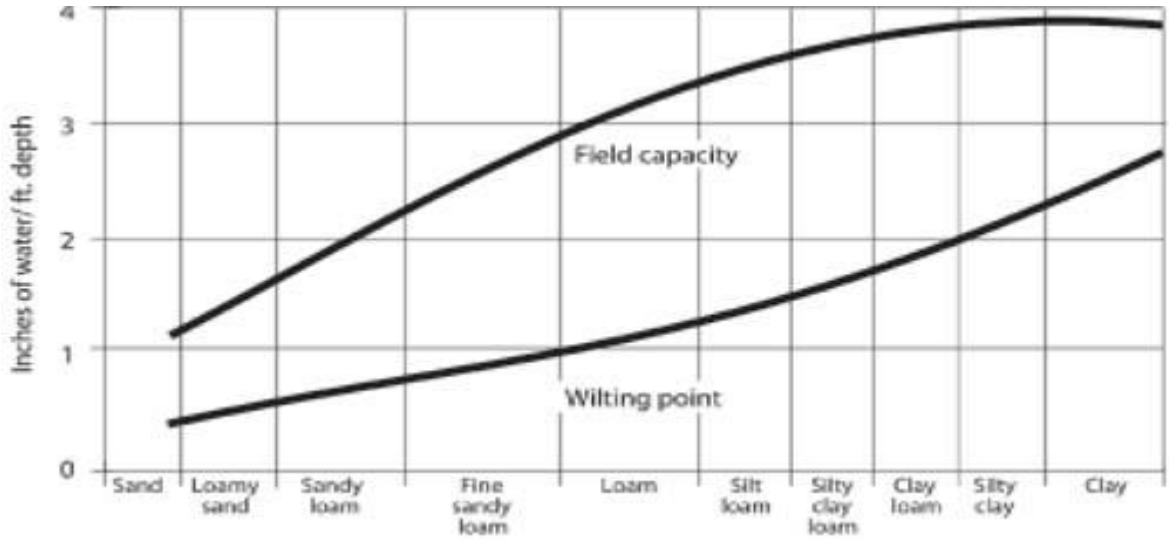
CEC is directly related to soil composition. High sand soils have low CEC values with the number increasing as the soil contains more clay, silt and organic matter.

A good visual analogy is to think of a sand grain as a book. A book has definite width, height and depth that can be measured, but has a low surface area compared to volume – just like a sand grain. The relatively small surface area provides a limited number of sites where molecules can bind. The pages of the book are like clay molecules. If the pages were removed, they would have the same volume as the book itself, but a greatly expanded surface area providing more molecular binding sites, thus increasing soil reactivity (higher CEC). The next step in increasing surface area would be to shred the book. Shredding again keeps volume the same, but greatly increases total surface area, providing more binding sites, leading to increased CEC. Shredding the book would be analogous to an organic soil.

Now that you understand (I hope) CEC, how does knowing the number and understanding the concept relate to your farming practices? The basic aspect to remember is CEC indicates how well soil holds on to ***anything*** applied to it (emphasis on anything) and how difficult it is for plants to take it away. Soils with low CEC grab hold of very little. Water passes through beach sand at 20 inches an hour, but in clay or organic soil, it could be less than an inch an hour. This indicates how to irrigate different soils. Low CEC soils need quick but often irrigation, while high CEC soils need slow irrigation less often. If growers have drip irrigation on a sandy site, it is best to irrigate twice a day using high flow emitters, but only for an hour or less each time. If soil has greater clay content, it may be best to irrigate with low flow emitters for a longer time (six or more hours) every three of four days.

One foot of a sand-based soil at field capacity may have less than an inch of water available to plants while a loam or a silt-clay loam may have close to 2 inches available water. With evapotranspiration rates of 0.3 inches per day (a good hot, sunny day in late July), plants exhaust available water in three days in sand but seven days in loam. Clay soils contain more unavailable water than what sand can have at field capacity (Figure 1). This is due to the high reactivity of clay particles hanging onto water molecules and plant roots being unable to take it away.

Figure 1. Available water capacity for 10 soil textures in inches of water/foot of soil.



Dr. Jim Beuerlein, Ohio Agronomy Guide, 14th Edition, Ohio State University Extension Bulletin 472-05

When applying nutrients to low CEC soil, it is best to apply a little at a time otherwise you run the risk of leaching them through the soil and into ground water, especially on seasonally high water table sites. When applying nutrients to clay soils, due to their naturally slow infiltration rate, it is best to incorporate them. If they are placed on the surface they are prone to run-off during periods of heavy rain (or overhead irrigation) and contaminating surface water.

Many herbicide application rates are also CEC dependent. That is why they will indicate on the label that you need to use lower rates on coarse-textured soils (sand) and higher rates on fine soils (clay and silt). Some herbicides are simply not used on organic soils. This is because the high CEC of organic soils binds the product so tightly that it is not effective and will not give the desired weed control.

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

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