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Vegetable & Fruit Headline News

The University of Maryland Extension Agriculture and Natural Resources Profitability Impact Team proudly presents this bi-weekly publication for the commercial vegetable and fruit industry.

Volume 3 Issue 8 July 26, 2012

Field Observations from Southern Maryland

By Ben Beale
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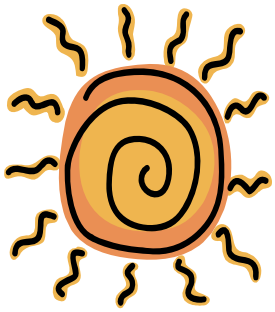

Southern Maryland remains hot and mostly dry!

- ✓ In St. Mary's county, rain has been very spotty, with most areas receiving less than a tenth of an inch in the last two weeks. Other areas of the region, particularly to the north have received some rains. Irrigation water from ponds is being rationed on many farms.
- ✓ Insect problems present now include stink bugs (mainly the Brown and Green, but some BMSB) in tomatoes, peppers and vine crops; squash bugs in cucurbits and mites present in most crops. While pest are present the main challenge remains a lack of water and high temperatures.
- ✓ Fruit set on many plants has been reduced. Sunscald is occurring on peppers and tomatoes, especially on those plants with limited foliage.
- ✓ Powdery mildew is present in most pumpkin fields now. Early blight and other leaf spot diseases are showing up in tomatoes.

Vegetable Crop Insect Update

By Joanne Whalen
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Lima Beans

Be sure to scout fields for leafhoppers, spider mites as well as plant bugs and stink bugs. As soon as pin pods are present, be sure to watch carefully for plant bug and stinkbug adults and nymphs. As a general guideline, treatment should be considered if you find 15 adults and/or nymphs per 50 sweeps. The higher rates of labeled products will be needed if stinkbugs are the predominant insect present.

Melons

Continue to scout all melons for aphids, cucumber beetles, and spider mites. The first beet armyworm (BAW) larvae have been detected in melon fields. As a reminder, both cucumber beetles and beet armyworm feed on rinds. Since BAW are difficult to control, be sure to select a material that is labeled for beet armyworm (BAW) on melons such as Coragen, Avaunt, Intrepid, Radiant, Synapse/Belt or Vetica. The pyrethroids will not provide effective BAW control.

Peppers

As soon as the first flowers can be found, be sure to consider a corn borer treatment. Depending on local corn borer trap catches, sprays should be applied on a 7 to 10-day schedule once pepper fruit is ¼ – ½ inch in diameter. Be sure to check local moth catches in your area by calling the Crop Pest Hotline (instate: 800-345-7544; out of state: 302-831-8851) or visiting our website at: http://ag.udel.edu/extension/IPM/traps/latestblt.html

Peppers (cont.)
You will also need to consider a treatment for pepper maggot. Beet armyworm larvae can be found in fields and can quickly defoliate plants. Be sure to use a material that provides beet armyworm control — The pyrethroids will not effectively control this insect.

Potatoes
Continue to scout fields for Colorado potato beetle (CPB), aphids and leafhoppers. Controls will be needed for green peach aphids if you find 2 aphids per leaf during bloom and 4 aphids per leaf post bloom. This threshold increases to 10 per leaf at 2 weeks from vine death/kill. If melon aphids are found, the threshold should be reduced by half.

Snap Beans
Continue to scout for leafhopper and thrips activity in seedling stage beans. We are seeing a significant increase in leafhopper activity in seedling stage beans. Sprays will be needed for corn borer at the bud and pin stages on processing beans. As earworm trap catches increase, an earworm spray will also be needed at the pin stage. Additional sprays may be needed after the pin spray on processing beans. Since trap catches can change quickly, be sure to check our website for the most recent trap catches and information on how to use this information to make a treatment decision in processing snap beans after bloom at:
http://ag.udel.edu/extension/IPM/traps/latestblt.html and
http://ag.udel.edu/extension/IPM/thresh/snapbeanecbthresh.html
Once pins are present on fresh market snap beans and corn borer trap catches are above 2 per night, a 7-10 day schedule should be maintained for corn borer control.

Sweet Corn
Continue to sample all fields from the whorl through pre-tassel stage for corn borers, corn earworms and fall armyworm. We have started to see an increase in fall armyworm damage in whorl stage corn. A treatment should be considered when 12-15% of the plants are infested. Since fall armyworm feeds deep in the whorls, sprays should be directed into the whorls and multiple applications are often needed to achieve control. The first silk sprays will be needed for earworm as soon as ear shanks are visible. Be sure to check both blacklight and pheromone trap catches for silk spray schedules since the spray schedules can quickly change at:
http://ag.udel.edu/extension/IPM/traps/latestblt.html and
http://ag.udel.edu/extension/IPM/thresh/silkspraythresh.html
You can also call the Crop Pest Hotline (in state: 800-345-7544; out of state: 302-831-8851).

Marginal Chlorosis on Cantaloupe Leaves

By Jerry Brust, IPM Vegetable Specialist
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I have been seeing and receiving a few samples of yellowing (chlorosis) around the margins of cantaloupe leaves (fig 1). There was no chlorosis between the veins and no marginal necrosis (these two symptoms would indicate molybdenum deficiency). The marginal chlorosis would indicate salt burn, which is a noninfectious problem that mostly affects cantaloupes. This yellowing at the leaf margin is likely the result of guttation, which is how plants exude water at the margin of the leaf. Water droplets from the plant accumulate at the edge of a leaf in the early morning. This water often contains organic and inorganic compounds, and mineral nutrients, especially potassium. As the water evaporates these compounds are left behind and concentrated at the leaf margin. Over time the high concentration of compounds shows up as a marginal yellowing called 'salt burn'. These deposits also can have a toxic effect on the gas exchange pores (the hydathodes) located at the leaf edges. Salt accumulation often is associated with foliar applications of nutrient solutions or pesticides during very hot, dry weather. Frequent copper applications when hot and dry also can result in distinct bands of yellow tissue around leaf margins (fig 2). Soil applied urea or ammonium nitrate fertilizers may contribute to the problem as well. In most cases there is no yield loss as a result of these symptoms and no control measures are needed; however there could be yield losses if salt burn is severe and widespread in the field.

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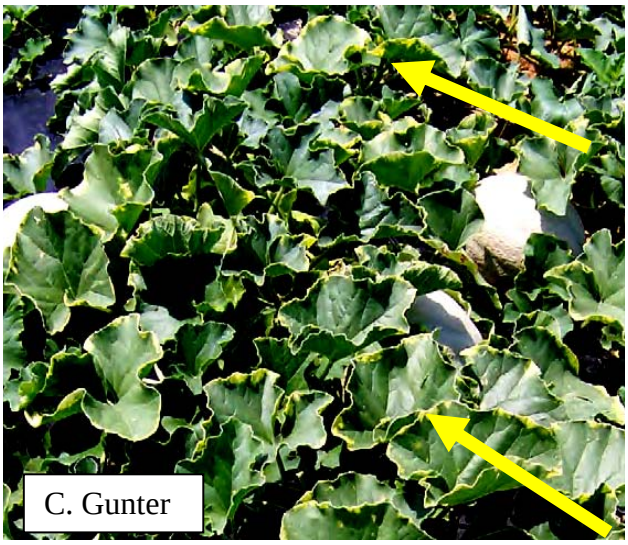
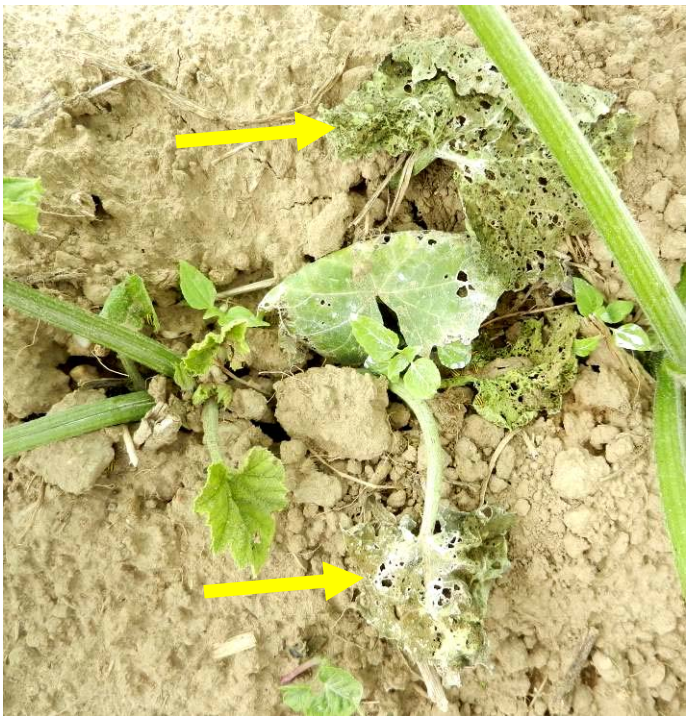


Fig. 1 Marginal chlorosis on cantaloupe leaves (arrows) caused by salt burn.

Fig. 2 Marginal chlorosis most likely caused by copper sprays and salt burn



Striped Cucumber Beetle Populations Still Very High

By Jerry Brust, IPM Vegetable Specialist
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&
By Karen Rane, Entomologist,
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We have seen very high populations of striped cucumber beetles on squash, pumpkins, cantaloupe, watermelon and other cucurbits over the last few weeks. These populations at times have reached over 20-30 beetles per plant. If a spray was missed or plants were not thoroughly covered with an insecticide application the beetles would soon consume that unprotected area very rapidly (fig 1). This area is often times the base of the plant. This is especially true if the cucurbits are sprayed with an air-blast sprayer. While air-blast sprayers do a good job of covering leaves with material, they often do not do a great job of covering the base of a plant and heavy feeding can occur (fig 1). The feeding can lead to plants being girdled by beetles or can lead to bacterial wilt infection—even though the leaves of the plant show almost no feeding. This feeding by the beetles also opens the base of the stem to infection from soil organisms and greater rates of *Fusarium* and bacterial soft rots are possible. When beetle populations are this high the base of the plant even more so than the foliage needs to be protected from heavy feeding.

Fig. 1 Two squash leaves (left) and base of pumpkin plants heavily fed upon by striped cucumber beetles because of the lack of good spray coverage.

Disease ID for Pumpkins

By Kate Everts, Vegetable Pathologist,
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I recently wrote an update article about fungicide programs for pumpkin available at: http://annearundel.umd.edu/files/VegetableFruitHeadline3-7.pdf However, because many fungicides are effective on some diseases, but not others, it is important to be able to identify the diseases present in a field as you design your spray program.

Foliar Diseases

The most common foliar diseases of pumpkin are powdery mildew, downy mildew, white speck (Plectosporium), gummy stem blight and anthracnose.

Powdery Mildew

Figure 1a. Powdery mildew sporulation covering leaves and defoliating pumpkin plants.

Figure 1b. Close up image of a leaf showing the "powdery" white sporulation on the upper surface of the leaf. Note that sporulation is usually seen first on the lower leaf surface. Scout a field by looking at the under surface of 45 old leaves in a field each week. Begin targeted sprays for powdery mildew when it is first observed.

White Speck (Plectosporium)

Figure 2. White speck or *Plectosporium* on the leaf causes tan spindle shaped lesions which form on the veins and result in distorted leaves. *Plectosporium* also causes lesions on the fruit (Figure 5).

Downy Mildew

Figure 3. Downy mildew lesions are initially seen on the upper surface as angular water soaked or yellow spots (3a) that are limited by the leaf veins. The angular nature of the lesions is especially evident on the lower leaf surface where sporulation occurs (3b). Look for grey angular lesions on the under surface of leaves after dewy nights. Lesions become necrotic over time.

Anthracnose on Leaves

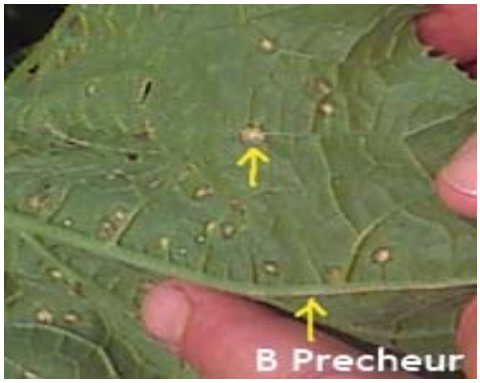

Figure 4. Anthracnose will initially be small tan lesions with darker margins (image courtesy of B. Precheur, Ohio State Univ.). They will expand as they age and damage large portions of the leaf. They may develop small holes in the leaf. Anthracnose also causes lesions on the fruit (Figure 7).

Fruit Diseases

There are several pathogens that cause fruit rot on pumpkin. To manage fruit rot the single most important practice is to follow a good fungicide management program in the field. The same fungi that cause white speck, black rot and anthracnose also cause lesions on the leaves. If the leaves are protected from disease, the fruit will be less likely to become diseased. In addition to protecting fruit from rot, a good spray program will protect "handles" from damage and will maintain foliage health and keep sunscald at a minimum.

White Speck (Plectosporium)

Figure 5. White speck (caused by *Plectosporium*, formerly *Microdochium*) causes white or tan "pimples" on the fruit.

Black Rot

Figure 6. Black rot (caused by *Didymella bryoniae* the same fungus that causes gummy stem blight on the foliage) results in large grey lesions on fruit.

Anthracnose Fruit Rot

Figure 7. Anthracnose fruit rot (caused by *Colletotrichum* spp.) appears as smaller grey lesions on fruit.

Fusarium Fruit Rot

Figure 8. Fusarium fruit rot (*Fusarium solani*) causes a relatively dry fruit rot that initially appears as small white or pink spots as in this photo. Eventually however, the lesions may become black or tan because of saprophytic growth.

Southern Blight

Figure 9. Southern blight on pumpkin fruit (*Sclerotinia rolfsii*) appears as a fan shaped white growth embedded with small round brown "seeds".

Phytophthora Blight

Figure 10. A young target shaped lesion (10a) of Phytophthora blight (caused by *Phytophthora capsici*). Large lesion where fruit was in contact with soil (10b). Close up image of *P. capsisi* fruit lesion with felt-like sporulation (10c).

Hot Year Means More Blossom End Rot

By Gordon Johnson
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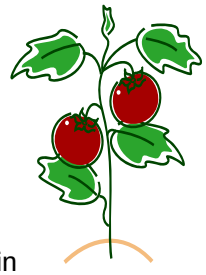


Blossom end rot (BER) is showing up again this year in peppers and tomatoes. BER is a disorder where developing fruits do not have enough calcium for cell walls, cells do not form properly, and the fruit tissue at the blossom end collapses, turning dark in color. Calcium moves through cation exchange with water movement in the fruit, so the end of the fruit will be the last to accumulate calcium. Larger fruits and longer fruits are most susceptible. With fruits, the rapid cell division phase occurs early in the development of the fruit and if calcium accumulation in the fruit is inadequate during this period, BER may occur. While it may not be noticed until the fruit expands, the deficiency has already occurred and cells have already been negatively affected. We most commonly see signs of blossom end rot on fruits many days after the calcium deficiency has occurred.

Understanding blossom end rot also requires an understanding of how calcium moves from the soil into and through the plant. Calcium moves from the soil exchange sites into soil water and to plant roots by diffusion and mass flow. At plant roots, the calcium moves into the xylem (water conducting vessels), mostly from the area right behind root tips. In the xylem, calcium moves with the transpirational flow, the movement of water from roots, up the xylem, and out the leave through stomata. Calcium is taken up by the plant as a divalent cation, which means it has a charge of +2. It is attracted to negatively charged areas on the wall of the xylem, and for calcium to move, it must be exchanged off the xylem wall by other positively charged cations such as magnesium (Mg++), potassium (K+), ammonium (NH4+), or additional calcium cations (Ca++). This cation exchange of calcium in the xylem requires continuous movement of water into and up through the plant. It also requires a continuous supply of calcium from the soil.

In general, most soils have sufficient calcium to support proper plant growth. While proper liming will insure there is adequate calcium, it is not the lack of calcium in the soil that causes blossom end rot in most cases. It is the inadequate movement of calcium into plants that is the common culprit. Anything that impacts root activity or effectiveness will limit calcium uptake. This would include dry soils, saturated soils (low oxygen limits root function), compaction, root pathogens, or root insect damage. In hot weather on black plastic mulch, roots can also be affected by high bed temperatures. Low pH can also be a contributing factor. Calcium availability decreases as pH drops, and below a

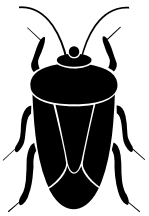
pH of 5.2 free aluminum is released, directly interfering with calcium uptake. Again, proper liming will insure that this does not occur. Applying additional calcium as a soil amendment, above what is needed by normal liming, will not reduce blossom end rot.

In the plant, there is a “competition” for calcium by various plant parts that require calcium such as newly forming leaves and newly forming fruits. Those areas that transpire the most will receive more calcium. In general, fruits have much lower transpiration than leaves. In hot weather, transpiration increases through the leaves and fruits receive lower amounts of calcium. High humidity will reduce calcium movement into the fruit even more. Tissue tests will often show adequate levels of calcium in leaf samples; however, fruits may not be receiving adequate calcium. In addition, in hot weather, there is an increased risk of interruptions in water uptake, evidenced by plant wilting, when transpirational demand exceeds water uptake. When plants wilt, calcium uptake will be severely restricted. Therefore, excess heat and interruptions in the supply of water (inadequate irrigation and/or rainfall) will have a large impact on the potential for blossom end rot to occur. Proper irrigation is therefore critical to manage blossom end rot.

As a positive cation, there is “competition” for uptake of calcium with other positive cations. Therefore, if potassium, ammonium, or magnesium levels are too high in relation to calcium, they can reduce calcium uptake. To manage this, do not over-fertilize with potassium or magnesium and replace ammonium or urea sources of nitrogen with nitrate sources.
Applying additional soluble calcium through irrigation, especially drip systems, can reduce blossom end rot to some degree if applied prior to and through heat events and if irrigation is applied evenly in adequate amounts. Foliar applications are much less effective because fruits do not absorb much calcium, especially once a waxy layer has developed, and calcium will not move from leaves into the fruit (there is little or no phloem transport).

In conclusion, the keys to controlling blossom end rot are making sure roots are actively growing and root systems are not compromised, soil pH is in the proper range, and irrigation is supplied in an even manner so that calcium uptake is not interrupted. Supplemental calcium fertilization will only marginally reduce blossom end rot if water is not managed properly.
Another calcium disorder that is found in peppers is called “stip”. These spots on peppers occur later in the year, commonly in the late summer or fall, during cool, humid conditions. Under these conditions, calcium movement into the fruit is uneven, leading to localized collapse of cells, causing the spotting. Again, making sure adequate calcium is moving in the plant is critical to control stip.

Section 18 Granted for Bifenthrin Products Labeled for BMSB Control in Stone & Pome Fruits



By Bryan Butler
Senior Agent, Carroll County & Mid-Maryland Tree Fruit Agent, UME

EPA has authorized Maryland's Section 18 request for the use of 3 bifenthrin products to control BMSB's on stone and pome fruit. Attached are copies of the Section 18 labels for the products that EPA approved to control Brown marmorated stink bug on stone and pome fruit in Maryland. Applicators using these products under the approved Section 18 must have a copy of the label on site, at the time of the application.

See the attached MD Section 18 labels for Bifenture and Brigade.

Commercial 2012 Vegetable Production Recommendations Maryland EB 236

On-Line at:

http://www.mdvegetables.umd.edu/files/Maryland%20complete%20book%202012.pdf

Also available in a new very interactive format at the Delaware Extension site at:
http://ag.udel.edu/extension/vegprogram/publications.htm#vegrecs

Crops Twilight
Barbecue & Ice Cream Social
CMREC Upper Marlboro Farm
August 2, 2012

You are invited to attend **a Field Crops Research Twilight, Barbecue and Ice Cream Social at the Central Maryland Research & Education Center, Upper Marlboro Farm on Thursday, August 2, 2012 from 4:30 pm to 9 pm.** A barbecue dinner will be served at 4:30 pm followed by homemade ice cream prior to the evening tour!

The research farm is located at **2005 Largo Road, Upper Marlboro, Maryland.**

University of Maryland Extension Educators and Specialists will showcase their field crop, vegetable and fruit research plots.

Barbecue Begins at 4:30

Ice Cream Served at 5:15

Crops Twilight at 6:00

- **Please arrive on-time as the tour will start promptly at 6:00 pm. This event is free. However, a reserved meal ticket is required.**

If you need special assistance to participate, please contact the Anne Arundel County Extension office at 410-222-6759 by August 1, 2012.

For full meeting details, and registration information contact any of the Southern Maryland Extension offices. For more information contact David Myers at the Anne Arundel County Extension office at 410-222-6759.

Cut Flower Tour
August 6, 2012
8:30 a.m. to 3:30 p.m.

Tour Stop Locations:
1) M and M Plants Dickerson, MD
2) Farmhouse Flowers and Plants Brookeville, MD
Sponsored by:
University of Maryland Extension
In cooperation with:
Maryland Greenhouse Growers' Association
Association of Specialty Cut Flower Growers
See the attached Flier For more information.

Organic Vegetable Field Day
August 9, 2012

Where: Upper Marlboro Research and Education Center Located at: 2005 Largo Rd, Upper Marlboro, MD 20774.
When: Thursday August 9 from 5-8:30 pm. Dinner at 5:30 and tour starts at 6:30 pm.
Who: Anyone interested in organic vegetable production
What: Topics will include use of Compost tea for plant health and pest management, value of cover crops and manure in a fertility program, changing the soil microbial population for better crop production, weed control and management, companion planting for pest management, cucumber beetle control, along with other topics.

Contact Jerry Brust for full program details at:
jbrust@umd.edu or 301-627-8440

Vegetable & Fruit Headline News

A bi-weekly publication for the commercial vegetable and fruit industry available electronically in 2012 from April through September on the following dates: April12 & 26; May 10 & 24; June 7 & 21; July 12 & 26; August 16; September 6

Published by the University of Maryland Extension Agriculture and Natural Resources Profitability Impact Team

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Article submission deadlines for 2012: April 11 & 25; May 9 & 23; June 6 & 20; July 11 & 25; August 15; September 5

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See the Attachments!