



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Vegetable Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Cabbage

Continue to scout all fields for harlequin bugs, beet armyworm, fall armyworm, diamondback and cabbage looper larvae.

Lima Beans

Continue to scout all fields for lygus bugs, stinkbugs, corn earworm, soybean loopers and beet armyworm.

Peppers

Be sure to maintain a 7-day spray schedule for corn borer, corn earworm, beet armyworm and fall armyworm control. You should also watch for flares in aphid populations.

Snap Beans

All fresh market and processing snap beans will need to be sprayed from the bud stage through harvest for corn borer and corn earworm control.

Spinach

Continue to sample for webworm and beet armyworm larvae. Controls should be applied when worms are small and before webbing occurs.

Sweet Corn

Our last trap catches for the season will be Thursday, September 11. If you have questions

about spray intervals, please call Joanne Whalen at 302-831-1303 for more information.

Low Plant Tissue Potassium and Calcium - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Growers, consultants, and soils laboratories have noted that plant tissue tests on several vegetables (such as watermelon) have been showing lower than expected levels of potassium (K) and calcium (Ca) in plant tissues this year, even though soil levels are high.

There are a number of possible causes for these lower than expected tissue test results.

One cause is excess fruit load or delayed harvest. When fruits such as watermelons are left on the plant longer than expected, they place added demands on the plant and will reduce levels of many nutrients in plant leaves, especially K. Plants will also be more disease susceptible. Once fruits are removed, tissue K will return back to the normal range. Excess fruit loads will also reduce tissue K levels. Take home message - timely removal of fruits and managing fruit loads will maintain leaf tissue K levels in normal ranges if soil levels are high.

High rates of nitrogen applied to vegetable crops can often reduce the levels of K and Ca in plant tissue. High nitrogen promotes foliage growth and more leaf area. This can have a dilution effect on K and Ca as there is less available proportionally to supply the new leaves.

The use of fertilizers high in ammonium and/or urea (which quickly released ammonium) can cause a temporary suppression of K and Ca uptake because ammonium is a competing cation. This suppression lasts until the ammonium is converted into nitrate in the soil by nitrifying bacteria. In drip irrigated vegetables where Urea Ammonium Nitrate (UAN) solutions are used as the nitrogen source during regular fertigation, this suppression can last throughout much of the season. The use of fertilizers with calcium nitrate and potassium nitrate as the nitrogen source can eliminate this competitive effect.

Very high levels of K fertilization can also reduce Ca uptake and excess magnesium can interfere with both K and Ca uptake.

In addition to dilution effects and cation competition, use of acidifying nitrogen fertilizers such as UAN or ammonium sulfate will drop the soil pH. When soil pH drops below 5.3, root function can be negatively affected, which will further limit K and Ca uptake. This can occur if soil pH is marginal to begin the season. It is common practice to lime fields on a 3 year rotation throughout the region. In the third year before the next liming, many fields fall into this marginal pH category.

Lower than normal K and Ca in leaf tissues can also be related to high temperatures and plant stress. In periods with extreme high temperatures, plant stomates close earlier in the day, transpiration is reduced, and K and Ca uptake are reduced because less water is being taken up by the plant.

Managing plant tissue K and Ca requires balancing fertilization. Where high nitrogen rates are being used to push high production, additional K should also be added in equal or higher amounts than nitrogen (1:1 to 1:2 ratio). This is particularly true for fruiting crops such as tomatoes, peppers, watermelons, and cantaloupes. Additional fertilizer calcium will also be needed for crops susceptible to blossom end rot.

Pumpkin Bacterial Leaf Spot on Fruit - *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland; keverts@umd.edu*

This week I received the pumpkin fruit shown below. The fruit has bacterial leaf spot, which is a disease that causes lesions on both leaves and the fruit. The disease is often seed borne and can be spread from plant to plant in the field by irrigation or splashing rain. It is favored by warm wet weather. Leaf symptoms are small, less than ¼ inch, angular, water soaked lesions. These lesions often occur near a vein and may not be very noticeable. Fruit lesions are initially very small, sunken tan spots like those in the image. These spots often have a small dark border. When they enlarge they can crack and the lesions will penetrate the fruit. Control measures are sanitation, bacterial seed treatment, avoidance of overhead irrigation, and crop rotation. Copper sprays may be effective if applied early in the season to reduce plant to plant spread, however once the lesions are present on the fruit, it is too late.



Fruit Crops

Plasticulture Strawberry Planting - *Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu*

Planting season is underway for plasticulture strawberry systems. In our area, most strawberries are planted using plugs produced by rooting tips. While plugs are more forgiving than bare root plants, actions prior to planting and at planting still can affect future performance. The

goal is to have quick, uniform rooting across all plants on the bed so that proper sized crowns are produced before going into winter.

The first key is to have a firm, high, uniform raised bed with black plastic mulch tight against the soil. This allows heat to transfer to the soil, warming the root zone, and promoting fall growth. Loose plastic will not do this.

Liming should be done ahead of time if necessary to raise pH and provide Ca and Mg if necessary. Base fertilizer should be applied to the bed before formation to provide necessary P and K and adequate but not excessive N for fall growth (60-75 lbs N is recommended at bedding).

Whether you are planting by hand using a dibber to make holes or are using a water wheel transplanter, uniform planting depth is critical. Workers placing plugs should be trained to place plants so that crowns are not buried or are not above soil level. If buried, crowns will be susceptible to rots and plants may die or be stunted. Buried buds may not be able to leaf out. If planted too shallow, plugs will be susceptible to drying out before being able to root. In addition, during planting, workers should not plant weak, diseased, or damaged plants

Water is also critical during establishment. While we are having a spell of rainy weather, you cannot always count on rain during the establishment period. Drip irrigation should be run to wet the bed. However, this is usually not enough. Plants should receive water at transplanting in the hole and should also be watered overhead during the establishment period for best results.

Planting date is critical for plasticulture systems. While row cover management can be used to control growth, planting at the proper date will make row cover management in the fall much simpler. The ideal planting window is the first half of September, prior to September 20, for most areas in our region. Strawberries planted in this window should produce adequate numbers of branch crowns in the fall period and can then be covered in late November or early December for winter protection.

Later plantings (after September 20) will require earlier row covering to trap some heat and put on adequate fall growth.

In high tunnels, the planting window in the fall will be wider because of the extra heat provided and later plantings can be successful. However, some earliness will be lost.

Recommended varieties are Chandler, Sweet Charlie, Camarosa, Allstar, and Ovation for "June Bearers"; Albion, San Andreas, and Seascape for Day Neutral types. Flavorfest is a new USDA release that can be grown on plastic with a large flavorful berry but shorter harvest window compared to Chandler.

Agronomic Crops

Agronomic Crop Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Alfalfa and Grass Hay

Continue to sample fields on a weekly basis for defoliators including earworm, webworms and all armyworm species. Although we have limited experience at this time of year with damage to re-growth, be sure to check re-growth if worms were present at harvest to determine if larvae are still present and holding back the re-growth.

Soybeans

Corn Earworm

Corn earworm larval levels still remain low in fields throughout the state. We did see a spike in moth catches in some of our pheromone traps on Sept 8, so late planted soybean fields that still have susceptible pods could still be at risk from pod damage.

Defoliators

This past week the predominant defoliators found were soybean looper, grasshoppers and newly hatched green cloverworm. If economic levels are present, you will also need to consider the maturity of the crop as well as the health of the leaf canopy to make a treatment decision. In an article printed in 2010 regarding defoliation from soybean loopers, entomologists and agronomists in the south suggested that if economic levels of defoliation are present, fields will need to be protected as long as the pods are still green and until the lower leaves are just

beginning to yellow. This should correspond, more or less, with the R6.5 stage (10 days after R6.0 = full green seed). If leaves are beginning to yellow up the stem from the maturity process, and there are any pods on the plant that are beginning to yellow, the field should be safe, that is, there is no need to treat. Next you have to determine the health of the leaf canopy: is it robust, average, or thin. Each can tolerate different amounts of leaf loss before reducing yield potential. Robust fields (mid chest or higher) can tolerate a lot of feeding. Average fields (upper thigh to mid chest) can tolerate normal amounts of feeding. Thin canopy fields (mid thigh or below) cannot tolerate additional leaf loss. Also you need to estimate defoliation. Be sure to look at the entire canopy from top to bottom not just the more affected top leaves to come up with an overall average.

For more information on soybean looper and when to treat please see the following link : <http://blogs.ext.vt.edu/ag-pest-advisory/soybean-looper-alert/>. NOTE - not all materials listed for control in this blog are labeled on soybeans in our area -- the label is the law so be sure to read all labels.

Stinkbugs

When it comes to stinkbugs, you should continue scouting until the latest planted fields reach the mid R-6 stage, when beans should no longer be susceptible to direct loss from stink bug feeding. Once soybeans reach mid R-6 to R-7 (beginning seed maturity), studies from the south say that scouting may still be needed to avoid quality damage from stinkbugs, which can include underdeveloped or aborted seeds, green stem syndrome, reductions in seed vigor and viability, and a reduction in the storage stability of harvested seeds

Pod Scarring

You also need to consider the potential for grasshoppers and bean leaf beetles to feed on pods. Although bean leaf beetle populations have been generally low this past season, there are still some hot spots of activity so you will need to examine pods for feeding damage. During the last wet fall, we did see significant pod scarring late in the season that resulted in moldy beans. Information from Ohio indicates that a “treatment is usually indicated when pod

feeding reaches 10-15% and beetles are still present and actively feeding. In fields where the pods have started turning yellow and brown, the adults will be leaving in search of greener pastures”.

Soybean Aphid

We continue to here reports of economic levels. To review treatment decision making (information developed in the Midwest): (a) the current economic threshold for aphids is still set at 250 aphids per plant through the R5 growth stage (3 mm long seed in the pod at one of the four uppermost nodes on the main stem) with an increasing population. (b) You should check fields at least twice before making a treatment decision. If you find 250 per plant you need to re-check in 3-4 days to see if the population is increasing. This insect can be controlled by beneficial insects so be sure to watch for natural enemies including lady beetles, parasitized aphids and fungal pathogens that can help to crash populations.

Reminder -- If you do need to treat for any of the above insects, be sure to check the label for the pre-harvest interval (time needed between last application and harvest) as well as other restrictions, including rotational restrictions.

Fusarium Ear Rots in Corn - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

There have been a few reports of ear rots in some fields in Delaware and Maryland. The most common ear rot this season is Fusarium ear rot, which we have observed in trials at the Carvel Research Center in Georgetown, Delaware, and in variety trials in Middletown.

Fusarium ear rot tends to be more of a problem when conditions are dry and hot around flowering. Therefore, you may notice it more this year in dryland fields when compared to irrigated fields. Three species *Fusarium* are common throughout our corn: *F. verticilloides*, *F. proliferatum*, and *F. graminearum* . These fungi can produce mycotoxins under some conditions. Potential mycotoxins produced by Fusarium-ear-rotting-fungi include fumonisin,

deoxynivalonol, and zereleone. Of these, fumonisins are the most important as they are known to cause equine leukoencephalomalacia, “blind staggers” in horses, pulmonary edema in swine, and have been linked to human esophageal cancers in other parts of the world.

Symptoms of Fusarium ear rot vary, but typically infected kernels are scattered throughout the ear. A white to pink fungal growth is sometimes observable on kernels and silks. Often, infected kernels have a starburst symptom, where fungal growth has damaged channels within the pericarp (Figure 1). The fungus overwinters in debris and produces spores under favorable conditions. Spores land on silks and grows into the ear as the silks senesce. Ears may also be infected through the shank or stalk. Insect and bird injury often enhances colonization of kernels.



Figure 1. Starbursting of corn kernels. This is a characteristic of infection by *Fusarium* spp. Photo www.aps.org. Photo by B.M. Anderson from the Compendium of Corn Diseases, 3rd Edition.

Affected corn harvested for silage or grain should be dried to below 15% moisture within 1-2 days of harvest to halt the production of mycotoxins. If you plan on storing the grain long term then it should be dried to 13% to decrease spoilage. *Fusarium* and other ear rotting fungi will continue to grow in higher moisture corn in bins.

Factors that Exacerbate Soybean Sudden Death Syndrome

Death Syndrome - *Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu*

Sudden Death Syndrome (SDS) is an important disease that impacts soybean growers in the Mid-Atlantic. The disease is caused by a fungus that infects seedling roots early in the season. After flowering, and when conditions are warm and wet, interveinal necrosis, defoliation, and plant death can occur. For more information on SDS see [my article from August 30th](#).

It has been suggested by some that glyphosate use can exacerbate diseases of field crops. Some suggest manganese may play a role in these putative effects. [A recent publication in the journal Plant Disease](#) examined the effects of glyphosate on SDS, yield, and plant nutrition. A total of 14 field experiments were conducted in the Midwest and parts of Canada from 2011 through 2013. **What did they find?**

- 1) There were no effects of glyphosate or herbicide use on SDS
- 2) Glyphosate use tended to be associated with increased yields
- 3) Glyphosate did not impact plant manganese levels
- 4) SDS was worse in irrigated fields

In sum, these data indicate that glyphosate use is not likely to increase SDS or alter manganese levels in plant tissues. Glyphosate use does suppress weeds and increase yields. If you have a field with a history of SDS, avoid over-irrigation, which favors infection and disease development.

Reference: Kandal et al. 2014. Effect of glyphosate application on sudden death syndrome of glyphosphate-resistant soybean under field conditions. Plant Disease. <http://dx.doi.org/10.1094/PDIS-06-14-0577-RE>

Online brochure at:
<http://www.ascfg.org/images/stories/growinggrowers.pdf>

Additional conference information at:
http://www.ascfg.org/index.php?option=com_content&task=view&id=503&Itemid=1014

Announcements

Delaware Beekeepers Association's Open Hive Event

Saturday, September 13, 2014 8:30 a.m. - noon
Delaware State University Outreach and Research Center
884 Smyrna-Leipsic Road
Smyrna, DE 19977

Please join us for educational lecture, demonstrations and honey extraction.

This event is open to everyone, from those who are just curious about beekeeping, to highly experienced beekeepers. Katy Evans from the University of Delaware will be doing a presentation on Honey Bee Anatomy and Social structure. After Katy presents, we will head out and examine a few hives.

Contact info: Ken Outten, DBA President
Ken.Outten@comcast.net or 302-284-4767

Sponsored by:
Delaware Beekeepers Association and Delaware State University

Association of Specialty Cut Flower Growers Conference: "Growing Growers"

October 19-22, 2014
Hilton Wilmington/Christiana
100 Continental Drive
Newark, DE 19713

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Fall Pasture Walk

Thursday, October 2, 2014 5:00 - 7:30 p.m.
Whitehead Cattle Company
1303 Dexter Corner Rd., Townsend, DE 19734

Come and learn about pasture management and renovation practices used at Whitehead Cattle Company. Hear about plant establishment and fall weed control. Get help with pasture design and rotation programs. Particulars on Natural Resource Conservation Service programs will also be covered. Experts will be on hand to answer specific questions.

DE Nutrient Management and Pesticide credits will be offered.

AGENDA

Welcome and Introductions

Dan Severson, University of Delaware Cooperative Extension

Tour of Pastures and Pasture Management

George Whitehead, Whitehead Cattle Company

Pasture Renovation and Plant Establishment

Dr. Richard Taylor, University of Delaware Extension Agronomy Specialist

Weed ID and Fall Weed Control in Pastures

Quintin Johnson, University of Delaware Cooperative Extension

Pasture Design and Rotation

Dan Severson, University of Delaware Extension Agent

Overview of NRCS Programs

Marianne Hardesty, New Castle County NRCS District Conservationist

The meeting is free and everyone interested in attending is welcome. If you have special needs in accessing this program, please call the office two weeks in advance. To register or request more

information, please call our office at (302) 831-2506.
Please call to register by Monday, September 29.

Risk Management Workshop

Tuesday, September 16, 2014 6:30 p.m.
Carvel Research and Education Center
16483 County Seat Highway
Georgetown, DE

Looking to keep your cash flowing?

Are you a farmer interested in having enough money to pay your bills in times of crop loss or fluctuating markets? Do you need to know how to keep your farm up-to-date with new farm bill changes? Are you an operation in transition, switching between farming methods, size and/or ownership? Do you need help with estate planning and don't know where to start? You can find help at this upcoming free workshop.

Speakers will include farm risk management specialist Clif Parker and farm financial and tax expert Darrell Tennie.

There will be complimentary, locally produced ice cream available to all attendants.

To register or for more information, please call 877-673-2767. Sponsored by USDA Risk Management Agency and Delaware Department of Agriculture.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of September 4 to September 10, 2014

Readings Taken from Midnight to Midnight

Rainfall:

0.65 inch: September 6
0.06 inch: September 7
0.20 inch: September 8

Air Temperature:

Highs ranged from 87°F on September 6 to 71°F on September 8.

Lows ranged from 69°F on September 6 to 60°F on September 4.

Soil Temperature:

77.0°F average

Additional Delaware weather data is available at
http://www.deos.udel.edu/monthly_retrieval.html
and
<http://www.rec.udel.edu/TopLevel/Weather.htm>

**Weekly Crop Update is compiled and edited by
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Crops**

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