



# WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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## Vegetables

**Vegetable Crop Insects** - *Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)*

### Cucumbers

All fields should be scouted for cucumber beetles and aphids. Fresh market cucumbers are susceptible to bacterial wilt, so treatments should be applied before beetles feed extensively on cotyledons and first true leaves. Although pickling cucumbers have a tolerance to wilt, a treatment may still be needed for machine-harvested pickling cucumbers when 5% of plants are infested with beetles and/or plants are showing fresh feeding injury. A treatment should be applied for aphids if 10 to 20 percent of the plants are infested with aphids with 5 or more aphids per leaf.

### Melons

Continue to sample all fields for melon aphids, cucumber beetles and spider mites. The first spider mites have been detected and consultants are reporting a few fields with economic levels. With the current dry conditions, be sure to sample carefully for spider mites and apply treatments before populations explode. The threshold for mites is 20-30% infested crowns with 1-2 mites per leaf. Acramite, Agri-Mek, Capture (bifenthrin), Danitol, and Oberon are labeled on melons for mite control. As a reminder, the manufacturer of Acramite recommends against mixing Acramite with any sticker or products containing stickers. LI700 has

been used with Acramite on apples and they have not experienced any problems. They have also had good success using silicone based wetting agents, such as Silwet and Kinetic, with Acramite. It is also important to maintain a tank-mix at or below pH 7.0 with Acramite. In actual field use, they have seen that a pH of 6.5 or lower is better. You should also watch for increases in cucumber beetle populations. Since beetles can continue to re-infest fields as well as hide under the plastic, multiple applications are often needed. Be sure to watch for bees foraging in the area when making insecticide applications.

### Peas

Be sure to sample any later planted peas for aphids. Economic levels of aphids can still be found in later planted fields.

### Peppers

Continue to sample for corn borers and watch carefully for egg masses. Before fruit is present these young corn borer larvae can infest stems and petioles. Be sure to also check local moth catches in your area by calling the Crop Pest Hotline (instate - (800) 345-7544; out of state - (302) 831-8851). You should also watch for an increase in aphid populations. A treatment may be needed prior to fruit set, if you find 1-2 aphids per leaf for at least 2 consecutive weeks and beneficial activity is low.

### Potatoes

In addition to Colorado potato beetle and European corn borer, be sure to sample fields for

potato leafhoppers. Consultants are reporting an increase in populations. As a general guideline, controls should be applied for leafhoppers if you find ½ to one adult per sweep and/or one nymph per every 10 leaves.

### Snap Beans

Continue to scout all seedling stage fields for leafhopper and thrips activity. As a general guideline, once corn borer catches reach 2 per night, fresh market and processing snap beans in the bud to pin stages should be sprayed for corn borer. Sprays will be needed at the bud and pin stages on processing beans. 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 seedling stage fields for cutworms and flea beetles. You should also sample all whorl and pre-tassel stage corn for corn borers and corn earworm. A treatment should be applied if 15% of the plants are infested. The first corn earworms are now being caught in blacklight and pheromone traps throughout the state. The first silk sprays will be needed for corn earworm as soon as ear shanks are visible. For fresh market sweet corn, be sure to check trap catches in your area to determine the spray interval. Trap catches information should also be backed up by field scouting. Trap catches are generally updated by Tuesday and Friday mornings on the Crop Pest Hotline - instate: (800) 345-7544; out of state: (302) 831-8851.

### Potato Disease Advisory May 31, 2007 - Bob Mulrooney, Extension Plant Pathologist

Disease Severity Value (DSV) Accumulation as of May 30, 2007 is as follows:

Location: Broad Acres, Zimmerman Farm, Rt 9, Greenrow: May 2

Remember that 18 DSVs is the threshold to begin a spray program for late blight

Date	LATE BLIGHT			EARLY BLIGHT
	Daily DSV	Total DSV	Spray Recs	Accumulated P days*
5/2- 5/9	2	2	none	50
5/10- 5/11	2	4	none	69
5/12- 5/16	0	4	none	109
5/17	1	5	none	117
5/18 - 5/20	0	5	none	139
5/21 - 2/23	0	5	none	163
5/24 -5/28	0	5	none	196
5/29- 5/30	0	5	none	222

\*P days- We use the predictive model WISDOM to determine the first fungicide application for prevention of early blight as well. The model predicts the first seasonal rise in the number of spores of the early blight fungus based on the accumulation of 300 physiological days (a type of degree-day unit, referred to as P-days) from green row. To date, 163 P-days have accumulated at the site. Once 300 P-days have accumulated, the first fungicide for early blight control should be applied. This usually occurs when rows are touching.

Remember that these values are for potatoes that would have about 50% emergence and made a row that you can see on or before May 2.

If pink rot or leak is a concern and no pink rot fungicide was applied at planting consider applying one of the following when potatoes are nickel-sized and repeating 14 days later. Apply in as much water as possible (20-30 gal/A): Mefanoxam/chlorothalonil (Ridomil/Bravo or Flouranil) 2 lb/A, or Ridomil Gold/MZ 2.5 lb/A, or Ridomil Gold/Copper 2 lb/A. For specific fungicide recommendations, see the 2007 Delaware Commercial Vegetable Production Recommendations Book.

## Weed Control in Row Middles of Watermelons - Mark VanGessel, Extension Weed Specialist; [mjv@udel.edu](mailto:mjv@udel.edu)

Weed control in row middles is very important. Use of a hooded sprayer will allow for an application of paraquat (Gramoxone) to control emerged weeds and allow for delayed application of residual herbicides such as Curbit, Sandea, or Sinbar. Delayed applications allow for improved weed control later into the growing season. Curbit and/or Command are labeled for grass control in row middles. Sandea will provide control of numerous broadleaf species plus nutsedge. However, Sandea will not control morningglory. Sinbar should be included if morningglory control is needed.

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## Thrips on Vegetable Leaves - Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)

This week I have looked at several vegetable and fruit crops and was surprised to find a fairly large number (10-15 adults and 7-10 immatures/leaf) of thrips on the leaves of cantaloupe, watermelon and potato. No thrips feeding damage was visible on the leaves. I would have expected to find the highest number of thrips in flowers, but instead found only a few thrips in the flowers of cantaloupe. Most of the thrips were eastern flower thrips (*Frankliniella tritici*) along with some western (*F. occidentalis*) and tobacco (*F. fusca*) thrips. The thrips on the leaves of these plants may have been feeding on pollen - not pollen from the vegetables, but tree pollen such as pine. A recent study in Georgia found western flower and tobacco thrips feeding and laying eggs on plants covered with pine pollen. The plant species are normally poor hosts for the thrips, but not when covered in pine pollen. When the pollen was removed from the plants, the thrips did not lay eggs or feed on the plants.

What does this mean for vegetable growers? If we had to contend with tomato spotted wilt virus in our area on a regular basis it would mean a great deal but since we rarely have TSWV outbreaks in the mid-Atlantic it means we

must be sure NOT to apply insecticides unless we absolutely have to. Why? The thrips are feeding on the pollen that is on the leaves and are causing little damage to the leaves. Once the pollen washes off the leaves and no more tree pollen falls, the thrips should move on. However, if chemical sprays (such as pyrethroids or carbaryl) are used on a calendar basis (once a week) for striped cucumber beetle or worm control when the pests are not present or are present in low numbers this could increase the chances of a thrips outbreak. Chemical applications for pests should only go out when thresholds are reached and not on a calendar spray basis.

Could pollen-feeding thrips on the leaves of fruit crops such as strawberry, blueberry and brambles move to the flowers as they appear on these crops? That is a good question and one I hope to answer in a thrips survey I am conducting in the mid-Atlantic area. Because there is usually no apparent feeding damage to the leaves the thrips are populating, the only way to find them is to take a random survey of the leaves and closely examine them. If any grower thinks they may be having thrips problems on any early season fruits or vegetables please email me ([jbrust@umd.edu](mailto:jbrust@umd.edu)) or call me (410-742-1178) and I will survey your crops.

## Agronomic Crops

Agronomic Crop Insects - Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)

### Alfalfa

Since potato leafhopper adults and nymphs can both be found in fields, be sure to sample fields on a weekly basis for both. As a reminder, leafhopper nymphs can quickly cause damage and once you see yellowing, yield loss has already occurred. As a general guideline the following treatment thresholds should be used: 20 per 100 sweeps on alfalfa 3 inches or less in height, 50 per 100 sweeps in 4-6 inch tall alfalfa and 100 per 100 sweeps in 7-11 inch tall alfalfa. If plants are drought stressed, you may need to reduce these thresholds.

## Field Corn

We have received reports of a number of fields with cutworm damage. In many cases, larvae are large (greater than 1 inch long) and are cutting plants below the ground. Under the current dry conditions, cutworms will often feed under ground (referred to as "drill worm" injury) and may go undetected. Although additional damage may still occur, under the current dry conditions and when larvae are large it will be extremely difficult to achieve an acceptable level of control with a rescue treatment.

## Small Grains

Economic levels of armyworms and sawflies can be still be found in barley and wheat that was not treated earlier. As we get closer to harvest, be sure to check the label for the number of days needed between application and harvest.

## Soybean

Continue to sample seedling stage soybeans for bean leaf beetles as well as grasshoppers. Small grasshoppers can be found in full season no-till plantings. In general, the treatment threshold for grasshoppers is 1 per sweep and 30% defoliation. Multiple applications are often needed for grasshopper control.

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**Agronomic Crop Diseases** - *Bob Mulrooney; Extension Plant Pathologist; [bobmul@udel.edu](mailto:bobmul@udel.edu)*

## Soybean Rust Update

The weather continues to be very dry in the Southeast. There have been no new reports of soybean rust on kudzu or soybeans. What soybean rust is present on kudzu is moving very slowly. The weather forecast is for warmer, dry weather in the southeast and here, so conditions for rust are unfavorable at the present time.

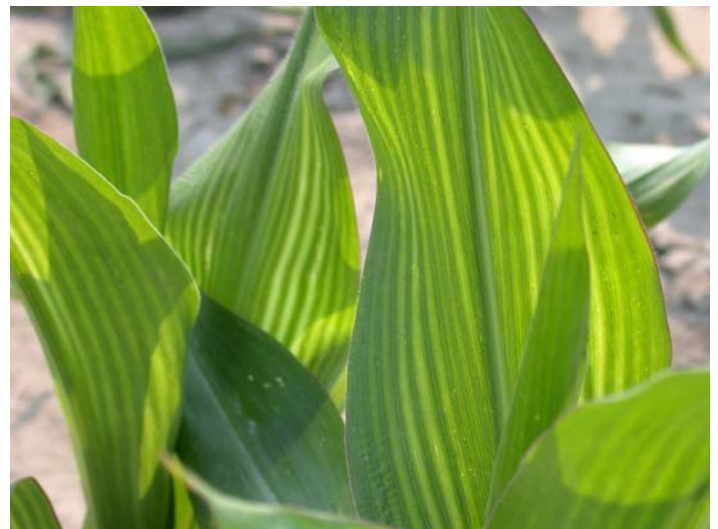
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**Manganese Deficiency Appearing on Young Corn** - *Richard Taylor, Extension Agronomy Specialist; [rtaylor@udel.edu](mailto:rtaylor@udel.edu)*

During the past two weeks, I've had several reports of manganese (Mn) deficiency in corn where the soil test reveals soil pH in the range of 6.5 to 7.0, often at both the typical 0-8 inch

depth as well as at deeper soil layers. In several cases, the high pH soil has also received annual manure applications or at least in two out of three years. A foliar application of 0.5 to 2.0 lb actual Mn per acre in either a chelated formulation or as techmangam (manganese sulfate) will be effective in providing the crop with the needed Mn. Unless the soil pH is lowered slightly, to around 6.2, Mn deficiency can occur on subsequent crops, especially soybeans and barley and sometimes wheat.

The deficiency symptoms of Mn can be confused with other nutrient deficiencies unless you examine the plants carefully. Magnesium (Mg) also shows up as interveinal chlorosis (veins remain dark green but the tissue between turns yellow to white) but will be most severe on the older leaves whereas Mn deficiency is worse on the younger leaves (Photo 1). Many of the metal micronutrients show interveinal chlorosis on the younger leaves as their deficiency symptoms, so a tissue test is needed to distinguish among the metal micronutrient deficiencies. In our region, generally the only metal micronutrient deficiencies we observe are for Mn (high soil pH) and zinc [high soil pH, high soil test phosphorous levels, and cool to cold soils (no-till)].



R. Taylor

Photo 1. Manganese deficiency on a high pH sandy soil in southern Delaware. Note that deficiency symptoms appear on the younger leaves.

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## Nitrogen Deficiency Appearing on Young Corn

- Richard Taylor, Extension Agronomy Specialist; [rtaylor@udel.edu](mailto:rtaylor@udel.edu)

During the past week, I also have had calls about nitrogen (N) deficiency on corn. The deficiency symptoms on corn for N appear on the oldest leaves and can be described as an inverted V-shaped yellow to orange pattern that begins at the leaf tip and extends toward the stem base of the leaf (Photo 1 and 2).

Very early season N deficiency on dryland corn may not cause significant yield loss if sidedressed N is applied before the corn reaches the rapid growth phase (12 to 15 inches tall) since all too often the most limiting yield factor during the growing season will be water or heat. However for irrigated corn and especially after the plant reaches about the fifth leaf stage, early season N deficiency can have a significant impact on yield potential. With corn prices relatively high, watch fields critically to ensure that early season N deficiency is not robbing you of yield potential. Reproductive structures and yield potential (row number and the beginning of kernels per row) are being determined at this early stage and need adequate nutrition to maximize yield.



R. Taylor

Photo 1. Nitrogen deficiency on corn. Note that deficiency symptoms appear on the oldest leaves, appear shaped as an inverted V with yellow to orange coloration, and in severe deficiencies symptoms can include necrosis that begins at the leaf tip and mid-rib.



R. Taylor

Photo 2. Nitrogen deficiency on corn. Note that deficiency symptoms appear on the oldest leaves, appear in the shape of an inverted yellow V in mild deficiencies.

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Magnesium Deficiency in Corn - Gordon Johnson, Kent County Extension Agriculture Agent; [gcjohn@udel.edu](mailto:gcjohn@udel.edu) and Richard Taylor, Extension Agronomy Specialist; [rtaylor@udel.edu](mailto:rtaylor@udel.edu)

I have recently looked at a field of corn with extensive areas showing symptoms of magnesium deficiency. Magnesium (Mg) is considered a secondary macroelement and is essential for plant growth. It is a component of chlorophyll, the green pigment that captures light energy in photosynthesis. The chlorophyll molecule has a porphyrin ring with a magnesium atom at the center. Therefore, deficiencies of magnesium will result in reduced chlorophyll production and yellowing of plants.

In corn, magnesium deficiency commonly first appears as yellow or white stripes between the veins of lower corn leaves. As the deficiency progresses, the striping may turn into dead, round spots appearing as beaded streaks. Lower leaves may also be purple in color and leaf tips and margins may brown and die. The plants may be stunted and have an overall yellow appearance. Symptoms are most severe on older leaves because magnesium is a mobile element

in plants and will be scavenged from older leaves and transported to new growth.

In Delaware, magnesium deficiencies are most commonly found in sandy, acid soils (pH below 5.4). Excessive levels of potassium can also induce magnesium deficiency where available magnesium levels are low to moderate to begin with.

Commonly, magnesium is applied to soils with dolomitic limestone (Hi-Mag lime). Sulfate of potash and magnesia (K-Mag, Sul-Po-Mag) are naturally mined mineral deposits that can also be applied to add magnesium to soils. Other magnesium sources include magnesium sulfate (same as Epsom Salts), magnesium oxide (basic slag), and magnesium chloride.

To correct a deficiency in growing corn, soluble sources should be used. Foliar applications are effective but must be applied in a dilute solution to avoid salt injury. Spray 20 lbs of a soluble magnesium source (20 lbs of magnesium sulfate for example) in 100 gallons of water per acre. Dry broadcasts of 15-25 lbs of actual magnesium per acre, irrigated in, or fertigation with similar amounts from soluble sources will also be effective. Sidedress applications may also be effective at 15-20 lbs of actual magnesium per acre.

If pH is below 5.2 and corn is still small, dolomitic limestone may be broadcast over the top and cultivated in to correct pH related problems. This should be coupled with a foliar magnesium application to more quickly address the magnesium deficiency.

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**Grain Marketing Highlights** - *Carl German, Extension Crops Marketing Specialist;*  
[clgerman@udel.edu](mailto:clgerman@udel.edu)

#### **Market News Brief**

The commodities market never has to do what one thinks it must. Earlier, grain market analysts were pointing to the projected carry over for '06/'07 marketing year U.S. soybeans, currently forecast at 610 million bushels. Many analysts were of the firm opinion that old crop beans had

to bid lower in order to accommodate the huge carry. Yet, huge U.S. corn plantings that detracted from soybean acres has placed the '07/'08 soybean carry at 320 million bushels. Further, commodity traders and analysts now realize that U.S. soybean acres will need to be increased in the '08 crop year, otherwise the U.S. will run short of soybeans in the '08/'09 marketing year. To some degree this is what the recent bull market in the soybean pits has been about. Plus, commodity traders and analysts are beginning to think that the U.S. may have planted even more corn acres than the 90.45 million indicated in the March Planting Intentions report. An old adage suggests that once the planters began to roll, they didn't stop to change seed. It is thought that U.S. farmers planted corn until they either ran out of ground or seed to plant, as long as weather and ground conditions were good. It is possible that U.S. farmers planted more corn than the 90.45 million acres indicated in the March report and less than the 67.1 million acres of soybeans. Nevertheless, grain marketers can not take this information to the bank. Read the first sentence over.

Weather developments will ultimately determine whether we see \$9.00 to \$10.00 per bushel soybeans and \$4.50 to \$5.00 per bushel corn this summer. One would be remiss to not suggest that such levels are possible. However, the fact remains that individual farmers need to be vigilant in getting their marketing decisions up to date. Currently, Dec '07 corn futures are trading at \$3.81; Nov '07 soybean futures at \$8.37; and July '07 wheat futures at \$5.10 per bushel. One private marketing analyst refers to the current situation in the grains and oilseed markets as the 'perfect storm'.

Remember, options can be used for making sales decisions when production potential is 'iffy'. In other words, bushels contracted using options do not have to be delivered in the event of a production shortfall. For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist

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# General

## Using Brackish Water for Irrigation- Ed Kee, *Extension Vegetable Specialist*; [kee@udel.edu](mailto:kee@udel.edu)

There are portions of many tidal rivers, creeks and streams on the Delmarva Peninsula that may be used as a water supply for irrigation. The following are some things to consider when using brackish water for irrigation:

- Test salinity before using water from brackish sources. (Contact your county agent for information on where to have water tested.)
- Allow for changes in water salinity due to tides (salinity is lower at low tide than at high tide) and rainfall (salinity can increase during drought).
- Consider the salt tolerance of the crop to be irrigated (Table 1).
- Consider the stage of growth of the crop. Small or young plants tend to be more salt sensitive.
- Irrigate late in the afternoon, at night, or in the early morning to avoid accumulation of salt on the leaves of the crop and resultant leaf burn.
- Evaporation and plant use of soil water will cause the water remaining in the soil to have a higher salt concentration. So plants irrigated with brackish water will need more frequent irrigation.
- Limit the frequency of application and the total amount of brackish water used to that permitted by the internal drainage of the soil and the tolerance of the crop (Table 2).

Table 1. How much salt will crops tolerate?

Field Crops	Forage Crops	Vegetable Crops
<b>Good Salt Tolerance</b>		
Barley Beets Cotton	Saltgrass Birdsfoot trefoil Bermudagrass Barley hay	Garden beets Kale Asparagus Spinach
<b>Moderate Salt Tolerance</b>		
Rye Wheat Oats Sorghum Corn	Sweetclover Dallisgrass Sudangrass Alfalfa Smooth brome Tall fescue Wheat and oats hay Orchardgrass Ryegrass Vetch	Tomato Broccoli Cabbage Potato Lettuce Sweet Corn Pepper Squash Carrot Onion Peas Cucumber Cantaloupe Watermelon
<b>Poor Salt Tolerance</b>		
Field beans	White clover Red clover Ladino clover Alsike clover	Radish Celery Green beans Strawberries

Note: Crops in the above table are listed in descending order of salt tolerance i.e. tomatoes are more salt tolerant than cucumbers

Table 2. Permissible number of irrigations with brackish water between leaching rains for crops of different salt tolerance

Salinity of Irrigation Water		Maximum Number of Irrigations		
Total Salts <i>ppm</i>	Electrical Conductivity <i>millimhos/cm at 25° C</i>	Good Salt Tolerance	Moderate Salt Tolerance	Poor Salt Tolerance
650	1	No limit	15	7
1280	2	11	7	4
1920	3	7	5	2
2560	4	5	3	2
3200	5	4	2-3	1
3840	6	3	2	1
4480	7	2-3	1-2	-
5120	8	2	1	-

Note: From USDA Information Bulletin No. 213

*This article is based on "Using Brackish Water for Irrigation in Maryland" by C.P. Merrick and R.L. Green, Maryland Cooperative Extension FACTS#35.*

**Hot Weather and Volatility with Dicamba and 2,4-D** - Mark VanGessel, Extension Weed Specialist; [mjv@udel.edu](mailto:mjv@udel.edu)

Common sense is critical for spraying dicamba and 2,4-D. Both of these products are volatile and prone to move from the treated areas as vapors. Volatility can cause dicamba or 2,4-D to move up to a few miles. Spraying postemergence herbicides in early planted corn or burndowns in no-till fields that have not been treated yet may require additional consideration because of the temperature. Furthermore, many of the vegetables and fruits have been planted and they are often very sensitive to these herbicides. It is not recommended to spray dicamba or 2,4-D when the temperature is expected to be 85 degrees or hotter; or spray late in the day when temperatures drop below 85. A number of pre-mixes have dicamba (active ingredient in Banvel and Clarity) including, Distinct, Celebrity Plus, Marksman, Status, Yukon, and NorthStar so the temperature consideration applies to them as well. Shotgun is a pre-package mixture of 2,4-D and atrazine.

<h2>Weather Summary</h2>
Carvel Research and Education Center Georgetown, DE
<b>Week of May 24 to May 30, 2007</b>
<b>Readings Taken from Midnight to Midnight</b>
<b>Rainfall:</b>
no rainfall recorded
<b>Air Temperature:</b>
Highs Ranged from 90° on May 26 and May 27 to 80°F on May 24.
Lows Ranged from 64°F on May 26 and May 28 to 48°F on May 24.
<b>Soil Temperature:</b>
74°F average.
(Soil temperature taken at a 2" depth, under sod)
Additional Delaware weather data is available at <a href="http://www.rec.udel.edu/TopLevel/Weather.htm">http://www.rec.udel.edu/TopLevel/Weather.htm</a>

*Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Associate - Vegetable Crops*

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