



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetables

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

Beet Armyworm on Vegetables

With the continued dry weather, be sure to watch carefully for beet armyworm larvae on all vegetables. At this time of year they can attack peppers, beans, cole crops, spinach and melons. The first larvae have been detected -- especially in fields where pigweed is a problem. Young larvae will often web the leaves together and larger larvae can produce significant amounts of defoliation. In years past, the pyrethroids have not provided effective beet armyworm control. Lannate has only provided control of small larvae. Since labeled effective options vary with each crop, be sure to check for labeled options in the 2007 Commercial Vegetable Recommendations (<http://ag.udel.edu/extension/vegprogram/pdf/DEvegrecs2007.pdf>). In addition, be sure to read the label for rates, days to harvest and other restrictions.

Lima Beans

Continue to scout for spider mites, stink bugs and lygus bugs in seedling stage beans. Treatment for lygus and stinkbugs should be considered if you find 15 adults and/or nymphs per 50 sweeps. The higher labeled rates of insecticides will be needed if stinkbugs are the predominant insect present. Since earworm catches have started to increase, be sure to sample for larvae as soon as pin pods are

present. A treatment will be needed if you find one corn earworm larvae per 6 ft-of-row.

Melons

Be sure to scout carefully for spider mites and aphids, especially in your later planted fields. Economic levels of both can be found and populations will explode quickly during this hot weather. We are also starting to see an increase in cucumber beetle populations. As harvest continues, be sure to watch for cucumber beetles and beet armyworm larvae feeding on rinds.

Peppers

In areas where corn borers are being caught in local traps and pepper fruit is ¼ inch or more in diameter, fields should be sprayed on a 7-day schedule for corn borer control. Be sure to check local moth catches in your area at <http://ag.udel.edu/extension/IPM/traps/latestbit.html>. You will also need to consider a treatment for pepper maggot. In addition to beet armyworm feeding on leaves you should also watch for an increase in aphid populations. Aphid populations can explode quickly, especially where beneficial insect activity is low. As a general guideline, treatment may be needed if you find one or more aphids per leaf and beneficial activity is low.

Snap Beans

We are starting to see an increase in corn borer and corn earworm moth catches. As corn borer and corn earworm populations start to increase, you will need to consider treatments for both

insect pests. Sprays are needed at the bud and pin stages on processing beans for corn borer control. As earworm trap catches increase, an earworm spray may also be needed at the pin stage. You will need to check our website for the most recent trap catches to help decide on the spray interval between the pin stage and harvest for processing snap beans (<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, a 7 to 10-day schedule should be maintained for corn borer and corn earworm control.

Sweet Corn

In general, fresh market silking sweet corn should be sprayed on a 3-day schedule except in

the Dover, Milford and Wyoming areas where a 2-day schedule is needed (as of July 15th). However, be sure to check trap catches for the current spray schedule since trap catches quickly change. Trap catches are generally updated on Tuesday and Friday mornings. (<http://ag.udel.edu/extension/IPM/traps/latestblt.html> and <http://ag.udel.edu/extension/IPM/thresh/silksp raythresh.html>). You can also call the Crop Pest Hotline for current trap catches (in state: (800) 345-7544; out of state: (302) 831-8851). Also, continue to watch for FAW larvae in whorl stage corn. In addition, you may need to combine a fall armyworm material with a pyrethroid for the first 2-3 silk sprays if fall armyworm pressure was heavy in whorls.

Potato Disease Advisory July 19, 2007 - Bob Mulrooney, Extension Plant Pathologist

Disease Severity Value (DSV) Accumulation as of July 18, 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*
6/30- 7/2	0	19	10 days	497
7/2- 7/4	0	19	10 days	516
7/5- 7/6	1	20	10 days	531
7/7- 7/8	0	20	10 days	544
7/9-7/10	2	22	10 days	552
7/10- 7/11	0	22	10 days	558
7/11 - 7/15	0	22	10 days	589
7/15 -7/18	0	22	10 days	607

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, 589 P-days have accumulated at the site. Note: Once 500 P-days have accumulated susceptibility increases and early blight susceptible varieties will need to be covered.

There have been no reports of late blight in the region on potatoes or tomatoes. Continue preventative fungicide applications for early blight and late blight until vine kill.

For specific fungicide recommendations, see the 2007 Delaware Commercial Vegetable Production Recommendations Book.

Please note there will be no Disease Advisory next week. Many fields are maturing and harvest will begin soon or has already begun.

Cucurbit Downy Mildew Update -Bob Mulrooney; *Extension Plant Pathologist*; bobmul@udel.edu

There still are no reports of downy mildew in DE, MD or NJ. The PA find on watermelon has not been confirmed and I do not have any more information about it. Weather conditions from the infected areas to our south including eastern NC and Virginia Beach, VA are not favorable for spore dispersal and survival on Delmarva. The risk is low for now. The forecast is issued every Tuesday and Thursday so keep up by checking <http://www.ces.ncsu.edu/depts/pp/cucurbit/>

Pumpkin Spray Program - Kate Everts; *Vegetable Pathologist, University of Delaware and University of Maryland*; keverts@umd.edu

I frequently am asked for a "good" spray program for pumpkins. This is always a difficult program to design because it depends on field history (i.e. has *Phytophthora* crown rot occurred in the field), production practices (no-till vs. bare ground), and the grower's philosophy about control (Cadillac treatment program vs. minimal inputs). Keep the following in mind to design a good spray program:

- Know what diseases are the most common on your farm. Previous problems with black rot, *Phytophthora* blight, anthracnose, scab or other diseases may indicate that these diseases are likely to be problems again.
- Know if downy mildew is present on Delmarva. When downy mildew is present your spray program should include effective downy mildew materials. **Note: downy mildew is not known to be present on pumpkins as of July 19, 2007.**
- Scout 50 old leaves in your field for powdery mildew lesions. If powdery mildew is present in the field, apply materials that are targeted for it.
- Even after implementing a program, scout your fields frequently and modify your program if new disease problems occur.
- Familiarize yourself with the Commercial Vegetable Production Recommendations section on pumpkins. Many fungicides are available for controlling different diseases.

An example of a good spray program is to alternate chlorothalonil *plus* Nova 5 oz/A or Procure 8 oz/A *with* Pristine 12.5 oz/A *plus* copper *or* Micronized Wettable Sulfur 4 lb 80W/A (Beware that sulfur can injure plants when applied at high temperatures, so read the label carefully.) If downy mildew is present on pumpkins, an application of Previcur Flex 1.2 pt/A or Tanos 8 oz/A may be applied in rotation with chlorothalonil *plus* Nova or Procure. If conditions favor *Phytophthora* blight, apply Forum 6.0 fl oz/A *plus* copper, Ranman 2.75 fl oz/A or Tanos 10 oz/A.

A good fungicide spray program will increase yields and improve quality. The single best way to improve handle quality is to control foliar and fruit diseases in season.

Powdery Mildew on Watermelons and Muskmelons - Kate Everts; *Vegetable Pathologist, University of Delaware and University of Maryland*; keverts@umd.edu

Powdery mildew is here on Delmarva in some melon fields. To manage powdery mildew most effectively, always follow good resistance management guidelines. Apply fungicides at label rate (don't cut the rate), and be sure you are getting good fungicide coverage on your plants. Powdery mildew doesn't require wet leaves to infect so it may become severe, even in dry years like 2007.

Because resistance to group 11 fungicides (strobilurin fungicides such as Quadris, Cabrio, or Flint) is widespread around the U.S., do not rely on these materials. A good program for muskmelon (cantaloupe) or watermelon is to scout for powdery mildew and if it is present in the field, apply chlorothalonil *plus* Nova or Procure rotated with Quintec. Quintec is a newly registered (melons and watermelons, only) fungicide from Dow. It has performed well in most trials and is an excellent addition to our fungicide choices.

Low Soil pH Found in Some Delmarva Vegetable Fields - Jerry Brust, *IPM Vegetable Specialist, University of Maryland*; jbrust@umd.edu

When I receive calls to visit vegetable fields, it is invariably because the grower has a problem of some sort. It is easy to develop a skewed perspective of crop conditions when the only fields you see are those in trouble. So as I drive around the area I like to stop at random fields just to look around and see what is out there.

Last year, I tried out an in-field soil pH meter in a few fields, and I was surprised by the number of fields that had low pH (below 5.5). This year, I've been running a more thorough test of the meter. I'm taking 10-20 test readings in a field with the pH meter and at the same time taking soil samples from the same spots. I'm sending the soil samples off to be tested for pH. The in-field soil pH meter readings have been reasonably consistent with the soil analysis.

This year about one third of the fields I sampled were in good shape as far as pH is concerned (pH around 6) and one third of the fields had slightly low pH (5.6-5.8). Unfortunately, the remaining fields were low to very low in pH (4.0-5.5). One field had a pH below 4.0. In most of these low soil pH watermelon fields, the plants appeared normal. There usually are few symptoms of low soil pH problems in watermelon. When symptoms do occur they can include stunted growth and yellowish crinkled leaves with older plants developing brown spots on the oldest leaves that may be mistaken for symptoms of gummy stem blight or other foliar diseases. Other vegetable crops may just grow poorly in low pH soils, without any distinctive symptoms.

I saw an interesting phenomenon in some fields - low soil pH levels (less than 5.5) were found under the plastic, yet between rows the pH was around 6. This may be occurring because high levels of nitrogen in the form of ammonia or urea were being used under the plastic. These forms of nitrogen potentially can lower the pH of a soil rather quickly. Soil pH should be measured every year because our soils have little buffering capacity and the pH can change drastically over the course of a season. If your watermelon or

vegetable crops are not doing well and you are not sure why, you might want to check your soil pH.



In-field soil pH meter with carrying case

Agronomic Crops

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

Soybeans

Unfortunately, spider mites continue to cause significant problems. In drought stressed fields, we continue to see poor control, especially from dimethoate. Although Lorsban has provided better contact control, it will not provide residual control. We continue to search for a product that we can get labeled on soybeans.

Agronomic Crop Diseases - Bob Mulrooney; *Extension Plant Pathologist*; bobmul@udel.edu

Soybean Rust Update

Over the last couple of days soybean rust was reported in commercial fields in Texas (three new counties - Jackson, Fort Bend, Austin) and in Acadia Parish in Louisiana. In 2007, rust has been reported in five counties in Alabama (one soybean), 10 counties in Florida (one soybean), five counties in Georgia (all kudzu), six parishes in Louisiana (five soybean), one county in Mississippi (kudzu), and 10 counties in Texas (nine soybean). Weather conditions have been favorable for rust development in parts of the South and soybean rust monitoring continues throughout the soybean growing areas. Keep current on new developments by checking the IPM PIPE website www.sbrusa.net. Conditions in the Gulf States



are very favorable for soybean rust so the situation could change in the South very quickly, which would affect us eventually. The fact that there is so little rust in FL and none in GA or north is good for us here on Delmarva.

Other Soybean Diseases

Septoria brown spot and now **downy mildew** are being seen in the sentinel plots. Brown spot has declined in areas with no rain, while downy has appeared in one sentinel plot that is irrigated.

Drought Damaged Corn

There may be some corn that might be so drought stricken that it might be chopped as fodder, stover or grazed. If any of this corn was sprayed with fungicides there are some limitations for using the chopped corn. Fungicide labels indicate that the following products have these restrictions for use of corn not for grain:

Headline	No livestock feeding restrictions.
Quadris	Do not apply within 7 days of harvest (<i>for any of those uses</i>).
Quilt	Do not apply within 30 days of harvest for forage, grain, or stover.
Stratego	Do not graze or harvest for forage within 30 days of application.

Soybean Cyst Nematode

This pest will not go away and must be managed in the long term. We have had several samples of susceptible soybean cultivars this week with heavy SCN populations on the roots. The plants were stunted and the infested fields were very uneven. A preliminary check of the roots by the grower did not indicate that SCN was the problem because the plants were pulled from the ground and the roots that came with the plant did not have any cysts on them. Revisiting the field with a shovel in hand and carefully digging up the entire root system revealed very large numbers of white and yellow cysts just 3-4 inches deeper. Soil sampling for SCN before planting would have avoided this scenario.



Pulled roots versus dug roots



Soybean cyst nematode (SCN) females on roots.

Grain Marketing Highlights - Carl German, Extension Crops Marketing Specialist; clgerman@udel.edu

USDA Supply & Demand July Report Summary

U. S. Corn

U.S. ending stocks for the '06/'07 marketing year were raised by 150 million bushels due to a cut in export demand, now estimated at 1.137 billion bushels. '07/'08 corn ending stocks were increased by 505 million bushels due to an increase of 380 million bushels in production, the 150 million bushel increase in beginning stocks, and a 25 million bushel increase in exports. '07/'08 corn ending stocks are now placed at 1.502 billion bushels.

U.S. Soybeans

U.S. ending stocks for soybeans were decreased for both the '06/'07 and the '07/'08 marketing years. Current marketing year ending stocks, now estimated at 600 million bushels were decreased 10 million bushels from a month ago. '07/'08 ending stocks, now estimated at 245 million bushels, were reduced 75 million bushels from the June estimates due to a 10 million bushel decrease in beginning stocks, 120 million bushel decrease in production, and a 60 million bushel decrease in export projections.

U.S. Wheat

'07/'08 ending stocks for wheat were lowered 25 million bushels due to a 30 million bushel decrease in production, a 50 million bushel increase in exports, and a 39 million bushel increase in beginning stocks. '07/'08 ending stocks for wheat are now estimated at 418 million bushels.

World Ending Stocks

World ending stocks for corn were increased for both the '06/'07 and '07/'08 marketing years. World ending stocks for the '07/'08 marketing year, now estimated at 108.36 million metric tons (mmt) were increased 16.56 mmt from last month.

World ending stocks for soybeans were increased for the '06/'07 marketing year to 64.17 mmt. Ending stocks for the '07/'08 marketing year are projected to decrease to 51.87 mmt, a decrease of 2.13 mmt from the June estimate.

World ending stocks for wheat for the '07/'08 marketing year were increased from a month ago, due to projected increases in beginning stocks, world production (China and Australia), and a decrease in demand (particularly wheat used for feed). '07/'08 marketing year ending stocks for wheat are now estimated at 116.55 mmt as compared to 124.15 mmt in the '06/'07 marketing year.

Marketing Strategies

Considering the roller coaster ride that commodity prices have been on the last two weeks, current prices were still in line with the July 17th levels (Issue No. 24) in early trading today. However, the mid-day weather forecast

must have been crop friendly. Currently, Dec '07 corn futures are trading at \$3.38; Dec '08 at \$3.85; Nov '07 soybean futures at \$8.84; Nov '08 at \$8.99; and July '08 wheat futures at \$5.65 per bushel.

Time is running out on pre-harvest pricing opportunities for new crop corn. It is beginning to look like Dec '07 corn futures are not likely to retest the \$4.00 level prior to harvest, although rallies might be possible to the \$3.60 to \$3.80 level between now and harvest, depending upon crop development. In the event that the size of this year's corn crop keeps getting larger then consensus seems to be building that would take Dec '07 corn futures down to the \$2.80 to \$3.00 per bushel level at harvest. Now is the time to get remaining bushels of corn priced.

In the case of soybeans, one has to note that there is no shortage of soybeans in the current marketing year. It is also possible that the Southern Hemisphere would increase '08 soybean production in spite of the Brazilian Real. If not done so already, now is a good time to get initial '07 soybean production forward priced.

For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist

General

[Water and Heat Stress Interactions](#) - Gordon Johnson, Kent County Extension Agriculture Agent; gcjohn@udel.edu

With many areas of the state under drought conditions and temperatures in the 90s, a number of drought, heat stress, pest, nutrient, and crop interactions should be noted. One of these is nematodes. I have recently been in several vegetable and field crop plantings with dead or dying plants in areas of the field, most commonly in lighter soils and higher areas. In vegetables, there are a number of possible nematode species that may be the cause with root knot nematode being a likely candidate. We have found root knot nematodes in summer squash, cucumber, and snap bean plantings in

recent weeks. With soybeans under drought stress, don't assume dead areas are all due to lack of water. Dying soybeans may be due to high levels of soybean cyst nematodes as recent samples have confirmed in several fields.

Mite infestations are common in drought stressed soybeans and some vegetables such as vine crops. These often are most severe near field edges and in-crop windbreaks as the host plants they were feeding on die or become heat dormant. Grasshoppers also move into greener crops as grassy areas surrounding fields go heat dormant, small grains are harvested, or hay fields are cut. A number of soybean fields have already been sprayed 3 times for mites or for grasshoppers. Other insects are attracted to greener crops as surrounding host plants (weeds, grasses) senesce or go dormant.

Certain diseases can also be more severe in dry conditions. One common example in Delaware would be charcoal rot of soybean. Charcoal rot is caused by the fungus *Macrophomina phaseolina*, a disease that appears in hot and dry weather when soil temperatures are 80-95°F for 2 to 3 weeks. Drought stressed plants are also more susceptible to other diseases when rains return (due to limited plant defenses).

Weed infestations are often more damaging during droughts due to the increased stress placed on crops and the inability of crops to produce a full canopy. In addition, preemergence and postemergence herbicides are often less effective during drought conditions: preemergence herbicides need rain to activate them and stressed weeds are not controlled as well by postemergence herbicides. Certain weeds such as crabgrass, wiregrass (bermudagrass), and pigweed (all C-4 plants) can out-compete crops due to their ability to grow rapidly at higher temperatures.

Soil conditions also interact with drought and heat. Many of the most stressed areas of crop fields are those where soils have been compacted or there is a restrictive soil layer. This limits water uptake by the lack of effective rooting. Mineral nutrient availability is also severely restricted by the lack of root development. This effect is further enhanced by

drought and heat. Low pH spots in fields react similarly as root development is restricted and plants are more susceptible to stress.

In grass crops harvested for forage (grass hay species, sorghum species, corn, millets, etc.) that received significant nitrogen fertilization, droughted plants can accumulate nitrates and caution must be used when harvesting and feeding these crops to avoid nitrate poisoning of livestock.

Air pollution effects are often associated with hot weather and temperature inversions. Many crops such as potatoes, beans, and watermelons can be severely impacted by air pollution (bronzing of leaves). For example, the higher the temperature and the more direct the sunlight, the more ozone is produced (ozone is severely damaging to crops). Hot weather, humid conditions, still winds, and air inversions can raise the level of pollutants and trap them near the surface causing toxic levels that affect plants.

Heat and drought affect pollination, fruiting, and seed set in many crops by different mechanisms: asynchrony of pollen shed and silking in corn (delayed silking), reduction of bee flights in insect pollinated crops, reduction in viable pollen due to heat/drying out in many crops, flower and young pod abscission (abortion) in beans, and reduction in fruit carrying capacity due to lack of photosynthates (causing fruit/seed abortion) in many crops.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of July 12 to July 18, 2007

Readings Taken from Midnight to Midnight

Rainfall:

no rainfall recorded

Air Temperature:

Highs Ranged from 93°F on July 17 to 83°F on July 13.

Lows Ranged from 74°F on July 18 to 60°F on July 14.

Soil Temperature:

87°F average.

(Soil temperature taken at a 2" depth, under sod)

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

*Weekly Crop Update is compiled and edited by
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