WEEKLY CROP UPDATE
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Vegetables

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

Cucumbers
Continue to scout all fields for cucumber beetles and aphids. Cucumber beetle populations have exploded this past week. 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. With the predicted increase in temperature, you should watch carefully for an increase in aphid activity. 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 scout all melons for aphids, cucumber beetles, and spider mites. The treatment threshold for aphids is 20% infested plants with at least 5 aphids per leaf. Be sure to also watch for beneficials. We are starting to find the first spider mites in commercial fields. The threshold for mites is 20-30% infested crowns with 1-2 mites per leaf. Acramite, Agri-Mek, bifenthrin, Danitol, and Oberon are labeled on melons for mite control. We also saw a significant increase in cucumber beetle activity this past week. Since beetles can continue to re-infest fields as well as hide under the plastic, multiple applications are often needed. Foliar products labeled for cucumber beetle control on melons include a number of pyrethroids, Assail, Lannate, Sevin, and Thionex. Venom 70SG also has a 2ee label for cucumber beetle control on cucurbits (http://www.cdms.net/LDat/ld76N019.pdf). Be sure to check all labels for rates, precautions and restrictions, especially as they apply to pollinators.

Peppers
Continue to sample for thrips. We continue to hear reports of high thrips activity on crops in Virginia. You should also 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 — in state: 1-800-345-7544; out of state: (302) 831-8851; or visiting our website at (http://ag.udel.edu/extension/IPM/traps/latestblt.html). 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
Fields should be scouted for Colorado potato beetle (CPB), corn borers (ECB) and leafhoppers. Adult CPB and small larvae can now be found. A treatment should be considered for adults when

you find 25 beetles per 50 plants and defoliation has reached the 10% level. Once larvae are detected, the threshold is 4 small larvae per plant or 1.5 large larvae per plant. A corn borer spray may be needed 3-5 days after an increase in trap catches (http://ag.udel.edu/extension/IPM/traps/latestblt.html) or when we reach 700-degree days (base 50). If you are scouting for infested terminals, the first treatment should be applied when 10% (fresh market) or 20-25 % (processing) of the terminals are infested. 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 sample all seedling stage fields for leafhopper and thrips activity. Both insects can be found in seedling stage snap beans. The thrips threshold is 5-6 per leaflet and the leafhopper threshold is 5 per sweep. If both insects are present, the threshold for each should be reduced by $^1/_3$. If both insects are present, Lannate, bifenthrin, Proaxis and Warrior (lambda-cyhalothrin) are labeled for both insect pests on snap beans. In addition, continue to watch for bean leaf beetle. As a general guideline, a treatment should be considered if defoliation exceeds 20% prebloom. A pyrethroid, dimethoate or Sevin are labeled for control. 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 to 10-day schedule should be maintained for corn borer control. (http://ag.udel.edu/extension/IPM/traps/latestblt.html)

Sweet Corn

Continue to sample seedling stage fields for cutworms and flea beetles. You should also sample all fields from the whorl through pre-tassel stage for corn borers and corn earworms. Both species can now be found feeding in whorls and tassels of sweet corn. A treatment should be applied if 15% of the plants are infested with larvae. We have also seen high earworm catches in a number of locations, especially the Bridgeville and Laurel areas. Virginia is also reporting high earworm catches. The first silk sprays will be needed for corn earworm as soon as ear shanks are visible. On silking sweet corn, sprays are needed on a 3-day schedule. Blacklight trap catches in the Bridgeville and Laurel areas indicate that a 2 to 3-day schedule is needed on silking sweet corn. Let's hope these trap catches drop soon! Be sure to check trap catches since the spray schedules can quickly change. You can call the Crop Pest Hotline for the most recent trap catches — in state: 1-800-345-7544; out of state: 302-831-8851 or check our website at http://ag.udel.edu/extension/IPM/traps/latestblt.html.

MELCAST for Cantaloupes and TOMCAST for Tomatoes

– *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland*; keverts@umd.edu

In addition to MELCAST for Watermelon, we have two models that are designed to help you make spray-timing decisions on diseases of cantaloupe and tomato. MELCAST for Cantaloupes is a fungicide application program for Alternaria leaf blight. It can be used by anyone growing a powdery mildew resistant variety, such as Athena. To use MELCAST for Cantaloupe, apply the first fungicide spray when the cantaloupe vines meet within the row. Additional sprays should be applied using MELCAST. Accumulate EFI (environmental favorability index) values beginning the day after your first fungicide spray. Apply a fungicide spray when **20 EFI values** have accumulated by the weather station nearest your fields. Add 2 points for each overhead irrigation. After a fungicide spray, reset your counter to 0 and start over. If a spray has not been applied in 14 days, apply a fungicide and reset the counter to 0 and start over.

TOMCAST is a spray forecaster for leaf blights and fruit diseases of **processing** tomato. However, it does not work for bacterial diseases or for late blight. In fields that were not rotated away from tomatoes and in late-planted fields

begin sprays shortly after transplanting. In all other areas begin sprays when crown fruit are a third their final size. Additional sprays can be scheduled using TOMCAST. Sprays should be applied after accumulating 18 DSVs (disease severity values) since the last fungicide application. Scout fields for bacterial diseases and late blight. If bacterial speck or spot or late blight occurs additional sprays are warranted (see Delaware Extension Bulletin 137 or Maryland Extension Bulletin 236: Commercial Vegetable Production Recommendations).

These disease models are available at http://mdvegdisease.umd.edu/forecasting/index.cfm. In addition you can receive the models by e-mail or fax. Everyone who received the models last year is automatically signed up. To change the way you receive the information or to sign up, please call Jeri Cook at (410) 742-8788.

Potato Disease Advisory #7 – June 5, 2008

– *Bob Mulrooney, Extension Plant Pathologist*; bobmul@udel.edu

Disease Severity Value (DSV) Accumulation as of June 4, 2008 is as follows:
Location: Broad Acres, Zimmerman Farm, Rt. 9, Kent County
Greenrow: April 27

	LATE BLIGHT			EARLY BLIGHT
Date	**Daily DSV**	**Total DSV**	**Spray Recs**	**Accumulated P days***
4/27 - 5/6	7	7	none	64
5/8 - 5/10	9	16	none	95
5/11 - 5/12	5	21	5-day interval	102
5/12 - 5/14	0	21	5-day interval	117
5/16 - 5/17	6	27	7-day interval	141
5/18 - 5/21	5	32	5-day interval	166
5/22 - 5/26	0	32	7-day interval	203
5/30 - 6/1	3	35	10-day interval	252
6/2 - 6/4	1	36	10-day interval	279

*** 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, **279 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.

The **Spray Recs** column in the table is also generated by the WISDOM software program. This recommendation combines the DSV accumulation for late blight as well as the P-day accumulations for early blight and computes a spray recommendation. This is presented as a guide only. Spray decisions should be made with local conditions in mind and this information can help to determine if disease conditions are favorable.

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. If Platinum/Ridomil Gold was applied at planting the label allows **one** foliar application of one of those products at tuber initiation if conditions warrant.

For specific fungicide recommendations, see the 2008 Delaware Commercial Vegetable Production Recommendations Book.

Using Tissue Testing, Sap Testing and the Pre-Sidedress Soil Nitrate Test (PSNT) to Assess Nitrogen Needs in Vegetable Crops

– *Gordon Johnson, Extension Ag Agent, Kent Co.*; gcjohn@udel.edu

Nitrogen management in vegetable crops has often not been given the priority it deserves. Growers have fertilized according to crop needs using recommendations from published sources and from experience. However, as nitrogen (N) prices increase and as there is continued concern on reducing nitrogen losses to the environment (ground and surface waters), growers should consider using other tools to determine nitrogen needs for vegetable crops.

Nitrogen is a difficult nutrient to manage because it is in a constant state of change and is mobile and subject to losses. Nitrogen exists in both organic and inorganic forms. It is added to the soil with fertilizers, manures, crop residues, and cover crops (particularly legumes). Plants take up N as nitrate (NO_3) or ammonium (NH_4) but this is only a portion of what is removed from soils. Nitrate is very subject to loss by leaching with heavy rains and N can also be lost as a gas by volatilization of ammonia from the surface and denitrification (loss as N_2 gas or oxide forms), most commonly with soils that are saturated with water.

To complicate matters, nitrogen undergoes many transformations in soils. Nitrogen is released as ammonium through mineralization of organic matter as it is decomposed by soil microbes. Ammonium is then transformed to nitrate by nitrifying bacteria. Soil microbes can also take up nitrogen making it immobile and temporarily unavailable. These cycles in the soil are influenced by temperature, moisture, soil chemical properties such as pH, and the composition of organic materials from crop residues.

The amount of nitrogen available at any particular time from fertilizer and organic matter will affect vegetable growth. Several tools and techniques are available to assess the nitrogen status of vegetable crops and then adjust nitrogen fertilization accordingly.

Quick tests for nitrogen status of vegetables have been developed using sap expressed from vegetable plants. Petioles, midribs, or stems will be used depending on the crop. Sap is analyzed with a portable nitrate tester (Cardy nitrate meter). This technique is especially useful in drip irrigated vegetables where nutrients can be added through the irrigation water. Guidelines have been developed for different crops and are given in Table 1.

Plant tissue testing is another alternative to assess the nitrogen status of soils. Recently matured leaves are sampled and sent to a laboratory for analysis. The University of Florida lists the critical values at this site http://edis.ifas.ufl.edu/EP081. Examples using sweet corn and watermelon are given in Table 2 and Table 3.

The Presidedress Soil Nitrate Test (PSNT) has been developed to assess the nitrate levels in soils just prior to sidedressing in field corn and relate that to expected crop response to nitrogen fertilizer. As soils warm, mineralization of organic matter increases along with nitrification. By measuring nitrate levels prior to sidedressing a "snapshot" of N available from organic sources is obtained. Therefore, the PSNT is used where manures have been applied or leguminous cover crops have been grown and limited fertilizer N has been applied preplant or at planting. This test has been adapted to several vegetable crops such as sweet corn, peppers, and pumpkins. Soil samples are taken about a week prior to normal sidedressing at a depth of 12 inches. They are dried and then tested for nitrate at a laboratory or using a quick testing kit (available from several sources). There is an example for sweet corn from Rutgers University in Table 4.

Other PSNT recommendations for vegetable crops can be found at the Spectrum Analytical website: http://www.spectrumanalytic.com/support/library/ff/Presidedress_Soil_Nitrate_Test_Corn.htm.

Table 1. Guidelines for Plant Fresh Sap Nitrate-Nitrogen-and-Potassium-Testing.
(Petioles from recently matured leaves are used unless otherwise indicated)

Crop	Crop Developmental Stage	Fresh Petiole Sap Concentration (ppm)	
		NO_3-N	K
Cabbage (midrib)	Cupping	1200 - 1500	
	Early heading	1000 - 1200	
	Mid heading	700 - 900	
Sweet Corn (lower stem)	All stages	600-700	
Broccoli and Collard	Six-leaf stage	800-1000	
	One week prior to first harvest	500-800	NR*
	First harvest	300-500	
Cucumber	First blossom	800-1000	
	Fruits three-inches long	600-800	NR
	First harvest	400-600	
Eggplant	First fruit (two-inches long)	1200-1600	4500-5000
	First harvest	1000-1200	4000-5000
	Mid harvest	800-1000	3500-4000
Muskmelon	First blossom	1100-1200	
	Fruit two-inches long	800-1000	NR
	First harvest	700-800	
Pepper	First flower buds	1400-1600	3200-3500
	First open flowers	1400-1600	3000-3200
	Fruits half-grown	1200-1400	3000-3200
	First harvest	800-1000	2400-3000
	Second harvest	500-800	2000-2400
Potato	Plants eight-inches tall	1200-1400	4500-5000
	First open flowers	1000-1400	4500-5000
	50% flowers open	1000-1200	4000-4500
	100% flowers open	900-1200	3500-4000
	Tops falling over	600-900	2500-3000
Squash	First blossom	900-1000	NR
	First harvest	800-900	
Strawberry	November	800-900	3000-3500
	December	600-800	3000-3500
	January	600-800	2500-3000
	February	300-500	2000-2500
	March	200-500	1800-2500
	April	200-500	1500-2000
Tomato (Field)	First buds	1000-1200	3500-4000
	First open flowers	600-800	3500-4000
	Fruits one-inch diameter	400-600	3000-3500
	Fruits two-inch diameter	400-600	3000-3500
	First harvest	300-400	2500-3000
	Second harvest	200-400	2000-2500
Tomato (Greenhouse)	Transplant to second fruit cluster	1000-1200	4500-5000
	Second cluster to fifth fruit cluster	800-1000	4000-5000
	Harvest season	700-900	3500-4000
Watermelon	Vines 6-inches in length	1200-1500	4000-5000
	Fruits 2-inches in length	1000-1200	4000-5000
	Fruits one-half mature	800-1000	3500-4000
	At first harvest	600-800	3000-3500

*NR-No recommended ranges have been developed
Information from University of Florida and UC-Davis

Table 2. Critical (deficiency) values, adequate ranges, and high values for macronutrients for sweet corn

Plant Part*	Time of Sampling	Status	- - - - - - - - - - - - % - - - - - - - - - - -					
			N	P	K	Ca	Mg	S
Whole seedlings	3 leaf stage	Deficient	<3.0	0.4	2.5	0.6	0.25	0.4
		Adequate Range	3.0	0.4	2.5	0.6	0.25	0.4
			4.0	0.5	4.0	0.8	0.5	0.6
		High	>4.0	0.5	4.0	0.8	0.5	0.6
Whole seedlings	6 leaf stage	Deficient	<3.0	0.3	2.5	0.5	0.25	0.4
		Adequate Range	3.0	0.3	2.5	0.5	0.25	0.4
			4.0	0.5	4.0	0.8	0.5	0.6
		High	>4.0	0.5	4.0	0.8	0.5	0.6
MRM leaf	30 inches tall	Deficient	<2.5	0.2	2.5	0.5	0.2	0.2
		Adequate Range	2.5	0.2	2.5	0.5	0.2	0.2
			4.0	0.4	4.0	0.8	0.4	0.4
		High	>4.0	0.4	4.0	0.8	0.4	0.4
MRM leaf	Just prior to tassel	Deficient	<2.5	0.2	2.0	0.3	0.15	0.2
		Adequate Range	2.5	0.2	2.0	0.3	0.15	0.2
			4.0	0.4	3.5	0.6	0.4	0.4
		High	>4.0	0.4	3.5	0.6	0.4	0.4
MRM leaf (ear leaf)	Tasseling	Deficient	<1.5	0.2	1.2	0.3	0.15	0.2
		Adequate Range	1.5	0.2	1.2	0.3	0.15	0.2
			2.5	0.4	2.0	0.6	0.4	0.4
		High	>2.5	0.4	2.0	0.6	0.4	0.4

*most-recently-matured whole leaf plus petiole (MRM leaf) unless otherwise noted

Table 3. Critical (deficiency) values, adequate ranges, and high values for macronutrients for watermelon

Plant Part*	Time of Sampling	Status	- - - - - - - - - - - - % - - - - - - - - - - -					
			N	P	K	Ca	Mg	S
MRM leaf	Layby (last cultivation)	Deficient	<3.0	0.3	3.0	1.0	0.25	0.2
		Adequate Range	3.0	0.3	3.0	1.0	0.25	0.2
			4.0	0.5	4.0	2.0	0.5	0.4
		High	>4.0	0.5	4.0	2.0	0.5	0.4
MRM leaf	First flower	Deficient	<2.5	0.3	2.7	1.0	0.25	0.2
		Adequate range	2.5	0.3	2.7	1.0	0.25	0.2
			3.5	0.5	3.5	2.0	0.5	0.4
		High	>3.5	0.5	3.5	2.0	0.5	0.4
MRM leaf	First fruit	Deficient	<2.0	0.3	2.3	1.0	0.25	0.2
		Adequate Range	2.0	0.3	2.3	1.0	0.25	0.2
			3.0	0.5	3.5	2.0	0.5	0.4
		High	>3.0	0.5	3.5	2.0	0.5	0.4
MRM leaf	Harvest period	Deficient	<2.0	0.3	2.0	1.0	0.25	0.2
		Adequate Range	2.0	0.3	2.0	1.0	0.25	0.2
			3.0	0.5	3.0	2.0	0.5	0.4
		High	>3.0	0.5	3.0	2.0	0.5	0.4

*most-recently-matured whole leaf plus petiole (MRM leaf)

Table 4. Sidedress Nitrogen Recommendations for Sweet Corn Based on the PSNT Soil Test Level and Manure History

PSNT Soil Test Level (ppm NO_3-N)	Sidedress N Recommendation (lbs/acre)*
Manured Soils	
0 to 10	160
11 to 15	120
16 to 20	80
21 to 25	40
greater than 25	0
Non-Manured Soils	
0 to 15	160
16 to 20	120
21 to 25	80
26 to 30	40
greater than 30	0

*When 100 lbs. or more of sidedress N are recommended on very light sandy soils, apply half of the sidedress when the corn is 12 inches tall and half when the corn is 18 to 24 inches tall.

Agronomic Crops

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

Alfalfa

Continue to sample for potato leafhoppers on a weekly basis. Although adults are the main life stage present, we should start to see the first nymphs in the next week. Although both life stages can damage alfalfa, the nymphs can cause damage very quickly. Once plants are yellow, yield loss has already occurred. The treatment thresholds are 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.

Field Corn

Be sure to watch carefully for armyworms moving out of small grains and into adjacent field corn. In some cases larvae are large and are on the move out of small grain fields. Remember, worms must be less than 1 inch long to achieve effective control. The treatment threshold for armyworms in corn is 25% infested plants with larvae less than 1 inch long. Large larvae feeding deep in the whorls will be difficult to control.

Small Grains

ARMYWORM ALERT - We have received numerous reports this week of high levels of armyworms in both wheat and barley fields that did not receive an earlier insecticide treatment. As reported in previous newsletters, trap catches were unusually high this spring. *Just to review*: Young larvae (less than $^1/_2$ inch long) generally feed on the upper leaf surface. Larger larvae feed heavily on the leaf blades and weeds. The last instar (1.5 inches long and greater) will consume 80 percent of all the plant material eaten during their larval development. This stage lasts six to eight days before moving into the soil to pupate. Heavy defoliation of the flag level can result in significant economic loss. Armyworms generally begin head clipping in wheat when all vegetation is consumed and the last succulent part of the plant is the stem just below the grain head. Larvae can feed on the kernel tips of wheat, resulting in premature ripening and lower test weight. On barley, head clipping occurs sooner and significant clipping can occur in a short time.

In some cases worms, the worms are large and may pupate soon – however, this can be hard to judge. We are receiving reports of armyworms moving out of fields and into neighboring homeowner yards. *However, in many cases there is a mixture of worm sizes so the*

potential for head clipping is high, especially in barley. Although beneficial insects and pathogens can help to reduce populations, it is unlikely that the recent rains will result in a crash in populations. Be sure to scout all fields carefully and watch for head clipping. The treatment threshold in barley is one per linear foot of row and in wheat it is one to two per linear foot of row.

Since barley is close to harvest, the only available control option for barley at this point is Lannate which has a 7-day pre-harvest interval (PHI) between application and harvest (http://www.cdms.net/LDat/ld183010.pdf).

As far as wheat, Lannate (7 day PHI) or Mustang MAX (14-day PHI - http://www.cdms.net/LDat/ld8G1002.pdf) will be the only available control options at this time due to the PHI of the other products.

As a reminder, the preharvest interval for Warrior is 30 days between application and harvest. Baythroid, which is only labeled on wheat, also has a 30-day PHI and the label lists armyworm (first and second instars). Be sure to check all labels before spraying for rates, restrictions and days between last application and harvest.

Soybeans
Continue to sample for bean leaf beetles and grasshoppers. We continue to see an increase in activity for both insects. In general, the treatment threshold for grasshoppers is one per sweep and 30% defoliation. Sprays may be needed sooner if stand loss is occurring. Early detection and control of small grasshoppers is necessary to achieve control. Numerous products are labeled for grasshopper control including a number of pyrethroids, dimethoate, Furadan (currently under review by EPA for cancellation but FMC rep says it should be available this year), Lorsban, Orthene 97 and Sevin XLR. As far as bean leaf beetle, we are seeing high numbers in areas of the state where they were also present in previous years. In those same areas, bean pod mottle virus was also detected for the first time in 2007. Even though the feeding by first-generation beetles on soybean leaves has seldom resulted in economic yield losses (except if virus is vectored), fields should be scouted carefully to assess the damage. There are numerous treatment guidelines available. However, as a general guideline, a treatment may be needed if you observe a 20 to 25% stand reduction and/or 2 beetles per plant from cotyledon to the second trifoliate stages. The Iowa State economic threshold for cotyledon stage is 4 beetles per plant. Once plants reach the V1 and V2 stages, their thresholds increase to 6.2 (V1 stage) and 9.8 (V2 stage) beetles/plant. These treatment thresholds should be reduced if virus is present or you suspected virus the previous season.

Grass Hay Fields
If you have not done so already, be sure to also check grass hay fields for true armyworm larvae. During the last outbreak, high populations could be found in grass hay fields and economic losses occurred in a number of fields. Although no thresholds are available, Mustang Max and Warrior are now labeled for armyworm control in grass hay fields. Be sure to check the labels for use rates and restrictions (including days to harvest) — Mustang MAX - http://www.cdms.net/LDat/ld8G1002.pdf and Warrior - http://www.cdms.net/LDat/ld5JH041.pdf.

Wheat Diseases – *Bob Mulrooney, Extension Plant Pathologist*; bobmul@udel.edu

The wet weather and the warmer temperatures will accelerate the development of scab if it is present and the symptoms will become more evident as the temperatures get warmer this weekend. Some scab is present on Delmarva. The first symptoms of Fusarium head blight include a tan or brown discoloration at the base of a floret within the spikelets of the head. As the infection progresses, the diseased spikelets become light tan or bleached in appearance. The infection may be limited to one spikelet, but if the fungus invades the rachis the entire head may develop symptoms of the disease. The base of the infected spikelets and portions of the rachis often develop a dark brown color. When weather conditions have been favorable for pathogen reproduction, the fungus may produce small orange clusters of spores or black

reproductive structures called perithecia on the surface of the glumes. Infected kernels are often shriveled, white, and chalky in appearance. In some cases, the diseased kernels may develop a red or pink discoloration.

Fusarium head blight or scab on wheat.

Fusarium head blight or scab on wheat head.

Grain produced in heads damaged by Fusarium head blight is often shriveled, white, and chalky in appearance.

Fusarium graminearum is known to produce two important mycotoxins, deoxynivalenol (DON) and zearalenone, which can contaminate the diseased grain. The mycotoxin DON can cause reduced feed intake and lower weight gain in animals at levels as low as 1–3 ppm, especially in swine. Vomiting and feed refusal can occur when levels of DON exceed 10 ppm. Humans are also sensitive to DON, and the FDA has recommended that DON levels not exceed 1 ppm in human food. Ruminant animals, including dairy cows and beef cattle, are less sensitive to the toxin. The fungal toxin zearalenone has estrogenic properties and produces many reproductive disorders in animals. Swine are the most sensitive to the toxin, but cattle and sheep may also be affected. Zearalenone concentrations of 1–5 ppm can result in negative effects in animals and humans. Producers concerned about these mycotoxins should have grain tested prior to feeding to animals. Contact the state department of agriculture or local extension office for more information about testing for mycotoxins.

When high levels of Fusarium head blight are present in fields, precautions can be taken to reduce mycotoxin contaminations of the grain. The mycotoxin contamination is often highest in the severely diseased kernels. **Adjusting the**

combine to blow out the small, shriveled kernels can help reduce mycotoxin levels. Harvested grain should be dried to 13.5% moisture as soon as possible to limit continued fungal growth. Grain suspected to have been damaged by Fusarium head blight should be tested for DON and zearalenone. Do not mix contaminated grain with good grain prior to a mycotoxin analysis. The mixing will result in more contaminated grain, which may be difficult to sell. *Edited from Penn State fact sheet on Head Blight authored by Eric DeWolf.* http://www.wheatscab.psu.edu/PDF/Fusarium_Head_Blight_.pdf

Other wheat diseases that we are seeing are take-all and, just recently, tan spot. **Take-all** is characterized by patches in the field that can vary in size but the wheat is generally stunted and the heads bleach out prematurely. Infected plants can be easily pulled out of the ground due to the extensive root rot that occurs. The other symptom is the dark streaking at the base of the stem (lowest node under the leaf sheaths). See picture. Take-all can be controlled by rotating out of wheat for a year. However planting wheat followed by double crop soybeans followed by wheat is not an effective rotation for take-all control. Manganese levels also interact with take-all. Be sure that soil levels of manganese are adequate for the crop and check pH so that the managanese is available. High pH makes manganese unavailable.

Take-all symptoms on the lower nodes. Note lack of roots as well.

Tan spot was identified in my wheat fungicide trials near Middletown. This foliar disease can look like Septoria (Stagnospora) leaf and glume blotch. It is caused by the fungus *Pyrenophora tritici-repentis*. It is too late for any control but this disease will be favored by the wet and warm weather. Most of the spots were in the lower canopy and may reach the flag leaf before the plants begin to dry down. Applications of foliar fungicides at heading or earlier should provide pretty good control of this disease. At present most of the infection is in the lower canopy and the effect on yield should be minimal if the disease does not move up to the flag leaf or the leaf below the flag leaf.

Tan spot symptoms on wheat.

Replanting Roundup Ready Corn – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

There have been a few places where replanting Roundup Ready corn is necessary and existing plants need to be killed. The difficulty is that the corn is Roundup Ready and how best to kill it. A project conducted in this area compared Select Max, Gramoxone alone, and Gramoxone with tankmix partners. Select Max at 6 fl oz/A was effective, but the label requires that the field can not be replanted for at least 6 days after application. The best treatments (95% control) were Gramoxone Inteon (at 1 qt/A) plus 2 oz of Sencor and Gramoxone (1 qt/A) plus Lorox (4 oz/A) applied to 5 inch corn. Applications to 2 to 3 inch corn averaged 80% control or less. Gramoxone Inteon alone was very inconsistent. No treatment consistently controlled all plants. If complete control is necessary, tillage will be required.

Postemergence Control For Perennial Weeds

– *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

A few questions have come in about controlling some perennial species in field corn; with pokeweed being the most common species. We had a trial 2 years ago with tall pokeweed (sprayed in late June) and had results similar to a study conducted at Southern Illinois University. Dicamba [Banvel, Clarity, Sterling]; also available in Distinct or Status; NorthStar or Callisto were the best treatments for conventional corn hybrids (over 90% control). Glyphosate was also effective if Roundup Ready corn was planted. Our trial did not include Lightning, but the SIU trial reported good control with Lightning with Clearfield corn. For soybeans, glyphosate is the best option. In non-Roundup Ready soybeans, Synchrony was fair (but requires STS-soybeans) or FirstRate which was only fair in the SIU trial.

Canada thistle control in corn is best with Stinger; Hornet contains Stinger and is much less expensive. In addition, the herbicides listed above will provide good control. Dewberry (wild blackberry) is difficult to control and Accent appears to provide the highest level of control.

Single active ingredient products	Canada thistle	Dandelion	Dewberry species	Dock species	Field bindweed	Groundcherry	Hemp dogbane	Honeyvine milkweed	Horsenettle	Common milkweed	Mugwort	Pokeweed	Trumpetcreeper
2,4-D	P-F	G	P	F-G	F-G	F-G	P-F	P-F	P	P	P	P-F	P-F
Accent	P-F	P	F-G	P	P-F[1]	-	P[1]	P[1,2]	P[1]	-	P[1]	P	-
Banvel / Clarity	P-F	F-G	P	G	F-G	F-G	P-F	P-F	P-F	F	F-G	F-G	P-F
Beacon	F [1]	P	N	-	P-F [1,2]	-	F[1,2]	P [1,2]	F [1,2]	F [1]	P [1]	F [1]	-
Callisto	G	F-G	-	-	-	-	-	-	G	-	-	F-G	-
Glyphosate products	G	F	F-G	G	F-G	F-G	F-G	F	F	F-G	F	F	F
Liberty	F	F-G	-	F-G	-	-	-	-	P-F	-	-	-	-
Stinger	E	G-E	N	-	-	-	-	-		-	G	-	-
Premixes													
Celebrity Plus	F	F-G	F-G	G	F-G	F-G	F	P-F	P-F	-	F-G	P-F	-
Distinct / Status	G	F-G	P	G	G	F-G	P-F	P-F	P-F	F	F-G	F-G	-
Hornet WDG	G-E	G	N	G	-	-	-	-	-	-	G	-	-
Lightning	-	-	-	-	F-G [1]	-	-	F-G		-	-	-	-
Marksman	F	F-G	P	G	F-G	F-G	P-F	P-F	P-F	F	F-G	P	P-F
NorthStar	F-G	F-G	P	F-G	F-G	F-G	F-G	P-F	F-G	F-G	F-G	F-G	P-F

[1]Control ratings will be higher if either Banvel or Clarity is included as a tank-mix.
[2]Control ratings will be higher if 2,4-D is included as a tank-mix.
G=good; F=fair; P=poor; N=no control; - = insufficient data or experience available

Corn Height Restrictions for Postemergence Herbicides – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

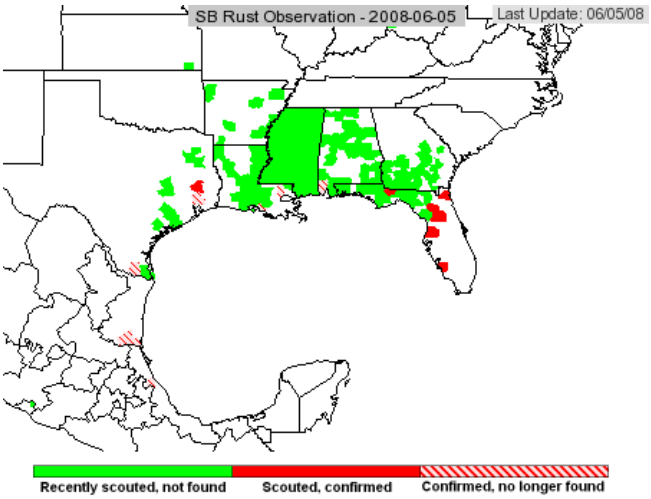
Corn herbicides need to be applied at the correct timing to avoid crop injury. Applications after this time can result in crop injury and possibly yield reduction. Refer to the table below for the corn height restrictions for common corn herbicides. "Broadcast" refers to an over the top application and "directed" refers to use of special spray equipment to direct the spray and avoid the spray coming in contact with the whorl of the corn. When corn height and collar number are given, base your decision on whichever feature is first attained.

Herbicides	**Maximum Corn Size**
Accent	broadcast: 6 collars or 20 in. directed: 10 collars or 36 in.
Aim	broadcast: up to 8 collars directed: when necessary
Atrazine	12 in. tall
Banvel Clarity	16 oz/A: 5 leaves or 8 in. 8 oz/A or less: 36 in. tall or 15 days pre-tassel
Beacon	broadcast: min- 4 in. tall; max- 20 in. tall or 6 collar directed: pre-tassel
Callisto	30 in. tall or 8 collars
2,4-D Amine 2,4-D Ester	broadcast: 8 in. tall directed: pre-tassel
Harmony GT	1 to 4 collars or 12 in. tall
Impact	broadcast: up to 45 day before harvest
Liberty	broadcast: 24 in. tall or 7 collars directed: 20 to 36 in. tall
Option	broadcast: 16 in. tall or V5 directed: 16 to 36 in. tall
Resolve	up to 12 in. or 6 leaf collars
Sandea	broadcast: 48 in. tall directed: when necessary
Roundup WeatherMax on "Roundup Ready Corn 2"	broadcast: up to 30 in. or 8 collars recommended directed: 24 to 30 in. directed: 30 to 48 in.
Touchdown	up to 8 collars
Premixes	
Distinct	6 oz rate: 4 to 10 in. tall 4 oz rate: up to 24 in. tall 4 oz directed up to 36 in. tall
Equip	broadcast: 12 in. or 4 collar directed: 12 to 36 in. or 4 to 8 collar
Exceed	broadcast: min- 4 in. tall; max- 20 in. tall or 6 collar directed: 20 to 30 in. tall
Hornet	broadcast: up to 6 collars directed: 20 to 36 in.
Lightning	broadcast: 12 in. tall directed: 20 in. tall
Marksman	broadcast: 5-leaf stage or 8 in. tall
Northstar	broadcast: min- 4 in. tall; max- 20 in. tall or 6 collar directed: 20 to 30 in. tall
Status	4 in. or 2 collar up to 36 in tall or 10 collar
Steadfast	less than 20 in. or up to 6 collars
Steadfast ATZ	up to 12 in. or 6 collars
Yukon	spike through 36 in. tall

Soybean Rust Update – *Bob Mulrooney, Extension Plant Pathologist*; bobmul@udel.edu

Rust was reported on Jicama (Yam Bean) from the state of Chiapas, Mexico in Mapastepec Municipality (county) on June 3rd. Since the beginning of 2008, soybean rust has been reported on kudzu in one county in Alabama; nine counties in Florida (two of these counties had reports on coral bean and snap bean); three counties in Louisiana; one county in Mississippi, and three counties in Texas. Reported infected kudzu sites in most states have been destroyed. Rust was also reported in three states (5 municipalities) in Mexico on yam bean and soybean. These too have been destroyed or are no longer active, except for the recent find in Chiapas. Soybean sentinel plots have been established throughout the Gulf Coast region, and in many parts of the lower Midwest. Additional rains throughout most of the soybean growing region could favor rust development, especially in locations in the South near sources of infected plants.

We are in the process of planting our sentinel plots in DE. This year a Group III and a Group VI are being planted in 7 locations throughout the state. Planting should be completed by next week if the weather cooperates. The plots will be visited every two weeks until flowering when they will be monitored weekly for the remainder of the season.



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

Planting Delays Boost Row Crop Prices

Dec '08 corn futures are trading at $6.67/bushel in this morning's trading, exceeding the previous life of contract high that occurred on May 9, 2008 at $6.55/bu. Nov '08 soybean futures, currently trading at $14.29 per bushel, are now within 37 cents per bushel of the life of contract high that occurred on March 4, 2008. The current surge in corn and soybean prices can be attributed to the lateness in U.S. row crop development and the continuing farmer strike in Argentina. Reports this week indicate that some of the U.S. corn crop, a small percentage, won't get planted; while a portion of the corn crop in the Corn Belt has been replanted as many as three times already. In some areas, the replant acres are running higher than normal. As of today's date (June 5th, 2008) decisions to plant will increasingly switch corn acres to soybeans. As a result two factors are currently impacting commodity trader's actions: first, we are not likely to see U.S. corn acres alleviate much from the March 31st Planting Intentions report that projected U.S. farmers would plant 86 million acres to corn this season. If anything, the actual corn planted acres could be less than that indicated in the planting intentions report. Actual plantings will be reported on June 30th. Second, unless growing conditions turn ideal in a hurry, there could be no chance of achieving trend line yields this growing season for U.S. corn and soybeans. Of primary concern right now are the oxygen levels in the wet soils that can impede corn plant development. Nevertheless, within a few days farmers will stop planting corn and switch to soybeans.

USDA will release the June Supply/Demand report on Tuesday, June 10th. We are likely to see reductions in the estimates for ending stock projections for corn and soybeans. Wheat production estimates and stock projections are likely to increase. Private forecasters have projected higher wheat production and ending wheat stocks this week and lower ending stocks projections for both U.S. corn and soybeans.

July crude oil is currently trading at $124.00 per barrel, $9.69 less than the recent high set on May 22nd, 2008. The U.S. dollar index is currently at 73.20, as compared to the low of 71.05 set on April 22, 2008.

A webinar entitled "How to Reduce Price Risk Through Options on Agricultural Futures" will be conducted on June 17th, 2008 in cooperation with Farm Journal Media. Details to follow. For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist.

Announcements

For Current Agricultural Information from the UD Kent Co. Extension Office Visit
www.kentagextension.blogspot.com

Recent Topics:

Armyworm Alert
Wheat Woes
Use Fungicides Properly
Wet Fields and Corn
Herbicide Options in Alfalfa after Cutting
Stand Problems from Seed Rots in Corn
Grinding a Poultry House
Dairy – Acidosis
Poultry – Good Neighbor Relations
Using Mushroom Soil as an Amendment in Crops
Using Poultry House Pad Soils as a Fertilizer
Grasshopper Watch, Keep Up Armyworm Patrols
Weed Control Updates in Vegetables
Summer Cover Crops
Hay Harvest and Cutting Height

Tractor Driving 101

Thursday, June 12, 2008 6:00 p.m.
DSU Smyrna Outreach and Research Center
884 Smyrna-Leipsic Rd, Smyrna, DE

Here is the opportunity to attend a hands-on training on how to safely operate and drive a compact tractor.

Light refreshments served.

Please call (302) 857-6462 to register.

This workshop is part of the 2008 Small/ Beginning Farm Workshop Series held by Delaware State University. For complete information on the workshops planned, see the brochure at http://www.rec.udel.edu/update08/announcements/smallfarmbrochure2008.pdf

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of May 29 to June 4, 2008

Readings Taken from Midnight to Midnight

Rainfall:

1.02 inch: May 31
0.68 inch: June 1
0.14 inch: June 3
1.08 inch: June 4

Air Temperature:

Highs ranged from 88°F on May 31 to 76°F on May 29.

Lows ranged from 65°F on June 1 to 43°F on May 29.

Soil Temperature:

73°F average.

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

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 Emmalea Ernest, Extension Associate – Vegetable Crops