Plant Protection Programs University of Missouri

Integrated Pest & Crop Management

Field Crop Disease Update - July 19, 2010

By Wayne Bailey

Corn

Although environmental conditions have been favorable for the development of **crazy top**, no cases of symptom development in the field have been reported. This disease causes deformation of plant tissues including excessive tillering, rolling of leaves, proliferation of the tassel until it resembles a mass of leafy structures and stunting of corn plants. The causal fungus is a soilborne fungus which causes infection when young plants are subjected to saturated soil conditions for 24-48 hours from planting to about the five-leaf stage of growth. Accumulation of soil and water in the whorls of small plants may also result in infection.

Descriptions of the **corn foliage diseases** were given in the June 21, 2010 issue of the *Integrated Pest & Crop Management Newsletter*. Although much of the state has been unusually wet this spring and summer, the development of corn foliage diseases has been sporadic. There have been a few reports of moderate levels of gray leaf spot and common rust. There are also fields in which it is difficult to find either disease. There have been some reports and confirmations of southern rust in the southwest and western parts of the state. Anthracnose leaf blight was prevalent and in some fields severe early in the season. At that time it was very evident on the first 3-5 leaves on the young corn plants. Most of the leaves have been sloughed off and anthracnose leaf blight may be difficult to find at this point in the season in many fields. Very little Stewart's bacterial wilt has shown up so far this year. If making a decision on whether or not to apply a foliar fungicide for disease control this year, it would certainly be prudent to scout fields for presence and severity of diseases first.

It is early for obvious symptoms of most **corn stalk rots** to be evident. However, discoloration of corn stalks especially at or just below nodes may be evident. Some of this discoloration, especially if it is a brown to black discoloration bleeding down from the junction of the leaf sheath with the stalk may be due to water, pollen and other materials collecting in the "cup" where the leaf sheath joins the stalk. Fungi and bacteria may develop in this area and can cause discoloration of the base of the leaf sheath and the stalk. This is more common in years with frequent rains, heavy rains and heavy dews. There has been some discussion of anthracnose causing a top dieback in corn. This has been reported in parts of Iowa in recent years. Although it has not been confirmed in Missouri as far as I am aware, it could be another cause of black discoloration on stalks near nodal areas. Generally with anthracnose top dieback the ear leaf and then the upper portion of the plant bleaches out and has brown to golden bleached appearance.

Last year **Diplodia ear rot** of corn was usually widespread and severe. Wet conditions through much of the season and corn on corn fields contributed to this situation. It is a little early for symptoms to be showing up in many fields, especially late planted fields but there has been at least one report of ear leaf bleaching typical of Diplodia ear rot from west central Missouri.

Both *Diplodia maydis* and *Diplodia macrospora* can cause **Diplodia ear rot** of corn. The ear leaf and husks on the ear may appear prematurely bleached or straw-colored.

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Grasshopper Management

By Wayne Bailey

As mentioned in a previous newsletter, grasshopper populations are increasing in several regions of the state. Insecticides recommended and economic threshholds for grasshopper management on a variety of crops are listed in the following tables. Be sure to follow label instruction for specific crops being managed.

Wayne Bailey
BaileyW@missouri.edu
(573) 864-9905

Table 1. Grasshoppers in Alfalfa

Comments: *Control grasshoppers when they are small by applying spot treatments to hatching sites in non-cropland areas. Treatment in these areas is justified when grasshopper numbers reach or exceed 15 grasshippers per square yard.*

Common Name	*Trade Name*	*Rate of Formulated Material per acre*	*Placement*
beta-cyhalothrin	***Baythroid XL**	2.0 to 2.8 fl oz	broadcast
chlorpyrifos + gamma-cyhalothrin	***Cobalt**	7 to 13 fl oz	
dimethoate	**Dimethoate**	see product label	
chlorpyrifos	***Lorsban Advanced**	1/2 to 1 pt	
gamma-cyhalothrin	***Proaxis**	2.56 to 3.84 fl oz	
zeta-cypermethrin	***Mustang Max**	2.8 to 4.0 fl oz	
carbaryl	**Sevin XLR Plus**	1 to 3 pt	
cyfluthrin	***Tombstone**	2.8 to 4.0 fl oz	
lambda-cyhalothrin	***Warrior**	2.56 fl oz, see dealer for rates	

Table 2. Grasshoppers in Field Corn

Comments: *Control grasshoppers when they are small by applying spot treatments to hatching sites in field borders and grass waterways. Treatment is justified in corn field when 7 or more grasshoppers per square yard are present and foliage is being severely damaged. After pollen shed, control may be necessary if grasshoppers are damaging foliage above ear zone. Dimethoate should not be applied to corn during pollen-shed.*

Common Name	*Trade Name*	*Rate of Formulated Material per acre*	*Placement*
esfenvalerate	***Asana XL**	5.8 to 9.6 fl oz	Broadcast
cyfluthrin	***Baythroid XL**	2.1 to 2.8 fl oz	Broadcast
bifenthrin	***Brigade 2EC**	2.1 to 6.4 fl oz	Broadcast
chlorpyrifos + gamma-cyhalothrin	***Cobalt**	7 to 13 fl oz	Broadcast
dimethoate	**Dimethoate 4EC**	1 pt	Broadcast
bifenthrin	***Fanfare 2EC**	2.1 to 6.4 fl oz	Broadcast
zeta-cypermethrin + bifenthrin	***Hero**	2.6 to 6.1 fl oz	Broadcast
chlorpyrifos	***Lorsban Advanced**	1/2 to 1 pt	Broadcast
zeta-cypermethrin	***Mustang Max**	2.72 to 4.0 fl oz	Broadcast
chlorpyrifos	***Nufos 4E**	1/2 to 1 pt	Broadcast
microencapsulated methyl parathion	***Penncap-M**	2 to 3 pt	Broadcast
gamma-cyhalothrin	***Proaxis**	2.56 to 3.84 fl oz	Broadcast
carbaryl	**Sevin XLR Plus**	1 to 3 pt	Broadcast
cyfluthrin	***Tombstone**	2.1 to 2.8 fl oz	Broadcast
lambda-cyhalothrin	***Warrior**	2.56 to 3.84 fl oz	Broadcast

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Table 3. Grasshoppers in Grass Pastures

Comments: *Control grasshoppers when they are small by applying spot treatments to hatching sites or in grass pastures. Treatment in these areas is justified when grasshopper numbers reach or exceed 7 grasshoppers per square yard.*			
Common Name	***Trade Name***	***Rate of Formulated Material per acre***	***Placement***
zeta-cypermethrin	***Mustang Max**	3.2 to 4.0 fl oz	Broadcast
carbaryl	**Sevin XLR Plus**	1 to 4 pt	Broadcast
lambda-cyhalothrin	***Warrior**	2.56 to 3.84 fl oz	Broadcast

Table 3. Grasshoppers in Non-Cropland Areas

Comments: *Control grasshoppers when they are small by applying spot treatments to hatching sites in non-cropland areas. Treatment in these areas is justified when grasshopper numbers reach or exceed 15 grasshoppers per square yard.*			
Common Name	***Trade Name***	***Rate of Formulated Material per acre***	***Placement***
esfenvalerate	***Asana XL**	2.9 to 5.8 fl oz	Broadcast
zeta-cypermethrin	***Mustang Max**	3.2 to 4.0 fl oz	Broadcast**
acephate	**Orthene 75S**	2 oz to 2 2/3 oz of soluable powder	Broadcast
carbaryl	**Sevin XLR Plus**	1 to 3 pt	Broadcast
lambda-cyhalothrin	***Warrior**	2.56 fl oz, see dealer for rates	Broadcast

Table 4. Grasshoppers in Sorghum (milo)

Comments: *Control grasshoppers when they are small by applying spot treatments to hatchingn sites in field borders and grass waterways. Treatment in field is justified when 7 or more grasshoppers per square yard are present*			
Common Name	***Trade Name***	***Rate of Formulated Material per acre***	***Placement***
cyfluthrin	***Baythroid XL**	2.0 to 2.8 fl oz	Broadcast
chlorpyrifos + gamma-cyhalothrin	***Cobalt**	7 to 13 fl oz	
dimethoate	**Dimethoate 4EC**	1/2 to 1 pt	
lambda-cyhalothrin	**Karate w Zeon Tech**	1.28 to 1.92 fl oz	
chlorpyrifos	***Lorsban Advanced**	1 to 2 pt	
zeta-cypermethrin	***Mustang Max**	3.2 to 4.0 fl oz	
chlorpyrifos	***Nufos 4E**	1 to 2 pt	
gamma-cyhalothrin	***Proaxis**	2.56 to 3.84 fl oz	
carbaryl	**Sevin XLR Plus**	1 to 3 pt	
cyfluthrin	***Tombstone**	2.0 to 2.8 fl oz	
lambda-cyhalothrin	***Warrior**	2.56 to 3.84 fl oz	

Table 5. Grasshoppers in Soybean

Comments: *Treat when defoliation reaches 30% before bloom, 20% bloom to pod fill, or when 5% to 10% of pods are damaged.*			
Common Name	***Trade Name***	***Rate of Formulated Material per acre***	***Placement***
esfenvalerate	***Asana XL**	5.8 to 9.6 fl oz	Broadcast
cyfluthrin	***Baythroid XL**	2.0 to 2.8 fl oz	
bifenthrin	***Brigade 2EC**	2.1 to 6.4 fl oz	
chlorpyrifos +	***Cobalt**	7 to13 fl oz	
gamma-cyhalothrin			
dimethoate	**Dimethoate 4EC**	1 pt	
lambda-cyhalothrin + thiamethoxam	***Endigo ZC**	3.5 to 4.5 fl oz	
zeta-cypermethrin	***Hero**	2.6 to 4.0 fl oz	
imadacloprid + cyfluthrin	***Leverage 2.7**	3.8 fl oz	
chlorpyrifos	***Lorsban Advanced**	1/2 to 1 pt	
zeta-cypermethrin	***Mustang Max**	3.2 to 4.0 fl oz	
chlorpyrifos	***Nufos 4E**	1/2 to 1 pt	
acephate	**Orthene 97**	1/4 to 1/2 lb	
microencapsulated methyl parathion	***Penncap-M**	2 to 3 pt	
gamma-cyhalothrin	***Proaxis**	3.2 to 3.84 fl oz	
carbaryl	**Sevin XLR Plus**	1 to 3 pt	
cyfluthrin	***Tombstone**	2.0 to 2.8 fl oz	
lambda-cyhalothrin	***Warrior**	3.2 to 3.84 fl oz	

Table 6. Grasshoppers in Wheat

Comments: *Treat when defoliation reaches 30% before bloom, 20% bloom to pod fill, or when 5% to 10% of pods are damaged.*			
Common Name	***Trade Name***	***Rate of Formulated Material per acre***	***Placement***
cyfluthrin	***Baythroid XL**	1.8 to 2.4 fl oz	On foliage
chlorpyrifos +	***Cobalt**	7 to 13 fl oz	
dimethoate	**Dimethoate 4EC**	3/4 pt	
lambda-cyhalothrin	***Karate**	1.28 to 1.92 fl oz	
zeta-cypermethrin	***Mustang Max**	3.2 to 4.0 fl oz	
microencapsulated methyl parathion	***Penncap-M**	2 to 3 pt	
gamma-cyhalothrin	***Proaxis**	2.56 to 3.84 fl oz	
carbaryl	**Sevin XLR Plus**	1 to 3 pt	
lambda-cyhalothrin	***Warrior**	2.56 to 3.84 fl oz	
Seed Treatments	**Check with seed dealers**		
Seed Treatments			
lambda-cyhalothrin	***Proaxis**	3.2 to 3.84 fl oz	
carbaryl	**Sevin XLR Plus**	1 to 3 pt	
lambda-cyhalothrin	***Warrior**	3.2 to 3.84 fl oz	

IPM Publications, Information You Can Use!
IPM1002: Soybean Diseases

By Steven Kirk

Losses from soybean diseases can be costly for Missouri's farmers, resulting in problems with germination, stand establishment, and the quality and size of the harvest.'*IPM1002: Soybean Diseases*' authored by Dr. Laura Sweets, Field Crop Disease Specialist; Dr. Allen Wrather Field Crop Disease Management; and Simeon Wright, MU Plant Diagnostic Clinic, is designed to help farmers and pest managers identify a variety of diseases that can impact soybean production. It also offers management strategies to help treat infected fields, as well as tips to help prevent disease outbreaks.

More than 60 color photos will aid in the identification of soybean diseases such as seed and seedling diseases, foliage diseases, virus diseases, root and lower stem diseases, and stem, pod and seed diseases. Because soybean diseases can and do occur each year in Missouri, this publication should be a must in every farmer's arsenal to help reduce crop losses.

The MU Plant Protection Programs publishes a series of IPM manuals and guide sheets that focus on a wide variety of topics important to individuals engaged in making sound pest management decisions. IPM publications are free to view online: (http://ppp.missouri.edu/ipm/pubs.htm) and copies can be printed for your convenience. Print copies of most IPM publications can be purchased for a nominal fee. To order copies of our IPM publications online go to: (http://extension.missouri.edu/publications/order.aspx). To order print copies by phone with a credit card, call: 573-882-7216 or 800-292-0969.

Because Missouri's citizens are concerned about pesticide use, pest managers need to put social and environmental considerations at the forefront of their decision making process. IPM strives to safeguard our natural resources, and protect our environment by reducing pollution that can affect human health, non-target organisms and food safety.

Steven Kirk
KirkS@missouri.edu
(573) 882-5612

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on the ear may appear prematurely bleached or straw-colored. When the husk is peeled back, dense white to grayish-white mold growth will be matted between the kernels and between the ear and the husks. Small, black fungal fruiting bodies may be scattered on husks or embedded in cob tissues and kernels. The entire ear may be grayish-brown, shrunken, very lightweight and completely rotted. Diplodia ear rot is favored by wet weather just after silking and is more severe when corn is planted following corn.

Soybean

Descriptions of the **soybean foliage diseases** were given in the June 21, 2010 issue of the *Integrated Pest & Crop Management Newsletter*. Thus far there have been few reports of problems with soybean foliage diseases. Septoria brown spot may be evident on lowest leaves in the canopy but doesn't seem to be moving up in the canopy. With the heavy rains and wind driven rains, bacterial blight could be showing up. Generally symptoms of bacterial blight are evident 3-5 days after wind-driven rains, hail storms, etc.

Fields which received significant rain during the several weeks after planting may be more prone to **Phytophthora root rot** and to **sudden death syndrome** (SDS). Phytophthora root rot could have been evident as a seedling blight but may also show up later in the season as plants move into reproductive stages of growth. Individual plants may turn off-color, yellow and die prematurely. Foliage symptoms of SDS tend to show up in August but in some years could appear by mid-July. Initial symptoms would be the development of yellow blotches between the veins of the leaves. Yellowing of the interveinal tissue with the yellow tissue turning brown follows. There are no rescue treatments for these diseases.

Laura Sweets
SweetsL@missouri.edu
(573) 884-7307

Weather Data for the Week Ending July 19, 2010

By Pat Guinan

Station	County	Weekly Temperature (°F)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	July 1 - July 19	Departure from long term avg.	Accumulated Since Apr. 1	Departure from long term avg.
Corning	Atchison	91	71	94	68	81	+3	3.88	+0.69	2029	+341
St. Joseph	Buchanan	89	71	92	69	80	+2	3.73	+1.01	1960	+271
Brunswick	Carroll	91	73	93	69	82	+4	2.52	+0.02	2077	+347
Albany	Gentry	90	70	95	67	81	+3	2.31	-0.84	1939	+270
Auxvasse	Audrain	91	70	95	66	80	+2	4.78	+2.31	2066	+326
Vandalia	Audrain	90	69	95	65	80	+2	3.95	+1.12	2059	+355
Columbia-Bradford Research and Extension Center	Boone	92	71	94	65	81	+3	4.74	+2.12	2027	+229
Columbia-Sanborn Field	Boone	92	73	95	68	82	+3	6.74	+4.09	2210	+355
Williamsburg	Callaway	91	70	95	66	80	+3	3.62	+0.66	2101	+407
Novelty	Knox	89	69	95	66	80	+3	6.14	+3.74	1909	+228
Linneus	Linn	90	69	95	65	80	+3	3.55	+0.64	1931	+291
Monroe City	Monroe	90	70	94	67	80	+3	3.68	+1.38	2011	+288
Versailles	Morgan	95	73	95	67	83	+5	4.97	+2.46	2203	+364
Green Ridge	Pettis	92	74	93	68	83	+7	4.51	+1.97	2104	+371
Lamar	Barton	92	74	94	70	82	+3	4.61	+1.69	2202	+292
Cook Station	Crawford	93	69	95	66	81	+3	6.99	+5.24	2081	+225
Round Spring	Shannon	94	70	96	67	80	+3	4.50	+2.45	2104	+336
Mountain Grove	Wright	93	71	95	67	80	+3	3.57	+1.47	2095	+374
Delta	Cape Girardeau	90	72	93	70	81	+1	2.18	+0.26	2413	+313
Cardwell	Dunklin	90	74	92	71	81	0	3.92	+2.29	2653	+351
Clarkton	Dunklin	90	72	94	69	81	+1	3.39	+1.61	2579	+316
Glennonville	Dunklin	91	73	94	70	82	+2	1.86	-0.01	2602	+348
Charleston	Mississippi	92	73	95	71	82	+3	1.80	-0.54	2544	+453
Portageville-Delta Center	Pemiscot	91	74	95	70	82	+1	1.91	+0.28	2685	+410
Portageville-Lee Farm	Pemiscot	92	74	95	70	82	+2	2.52	+0.74	2705	+448
Steele	Pemiscot	91	75	94	70	82	+1	3.00	+1.19	2774	+490

* Complete data not available for report

‡Growing degree days are calculated by subtracting a 50 degree (Fahrenheit) base temperature from the average daily temperature. Thus, if the average temperature for the day is 75 degrees, then 25 growing degree days will have been accumulated.

Weather Data provided by ***Pat Guinan***
GuinanP@missouri.edu
(573) 882-5908