Integrated Pest & Crop Management

Early Season Leaf Spots and Blights of Corn

By Laura Sweets

There are several leaf spot and leaf blight diseases which can develop on young corn plants-anthracnose, holcus leaf spot and Stewart's bacterial wilt. There have been a few questions about distinguishing between these diseases so a review of their symptoms and disease cycles seems appropriate.

Anthracnose leaf blight, caused by the fungus *Colletotrichum graminicola*, usually occurs early in the season on the lower leaves of young corn plants. Anthracnose lesions tend to be brown, oval to spindle-shaped lesions with yellow to pinkish to reddish-brown borders. Lesions may be 0.2 to 0.6 inch in length. Lesions may merge or coalesce to kill larger areas of leaf tissue. Concentric rings or zones are sometimes apparent within the diseased areas of leaf tissue. Lesions may be concentrated towards the leaf tip (or portion of the leaf that was emerged when rain occurred) giving the leaves a fired appearance that might be mistaken for nutrient deficiency or herbicide injury.

The fungus which causes anthracnose leaf blight produces fruiting bodies in the dead leaf tissue. Dark, hairlike structures called setae are produced in association with the fruiting bodies. It is possible to see the setae on infected plant material in the field if a hand lens is used.

Anthracnose tends to be most common early in the season on the lower leaves of young corn plants. These leaves may be severely affected, yellow and die prematurely. Generally the disease stops at this point because of drier, warmer weather conditions and is not considered a significant problem. Under favorable weather conditions, the fungus may move up the plant causing foliage symptoms on higher leaves. If favorable weather conditions occur mid-season (especially wet), anthracnose may actually move up to the ear leaf. The anthracnose fungus can also cause top dieback and stalk rot later in the season. High temperatures and extended periods of wet weather favor anthracnose. Anthracnose leaf blight is more likely to occur if corn is planted following corn.

In a normal year anthracnose leaf blight in Missouri is not serious and would not warrant a fungicide application. It is a little too early in the season to know how severe anthracnose will be or to know if it might spread beyond the very lowest leaves on the plants. Following the weather patterns over the next several weeks and keeping an eye on disease development or lack of development will be important.

Holcus leaf spot is caused by the bacterium *Pseudomonas syringae* pv. *syringae*. Lesions are usually oval to elliptical and range in size from 0.25 to 1.0 inch. Initially they are dark green and water-soaked. Later they become dry and turn light brown with a reddish margin.

The bacteria that cause holcus leaf spot are spread by wind-driven rain or splashing rain, so outbreaks frequently occur several days after a rainstorm or storm with strong wind-driven rains. Since holcus leaf spot is caused by a bacterium, common corn fungicides will have little effect on this disease.

Holcus leaf spot might be confused with herbicide injury such as that caused by paraquat or other contact herbicides. Holcus leaf spot might also be confused with anthracnose leaf blight. Holcus leaf spot lesions tend to be a little more oval to elliptical or even circular in shape while anthracnose tends to

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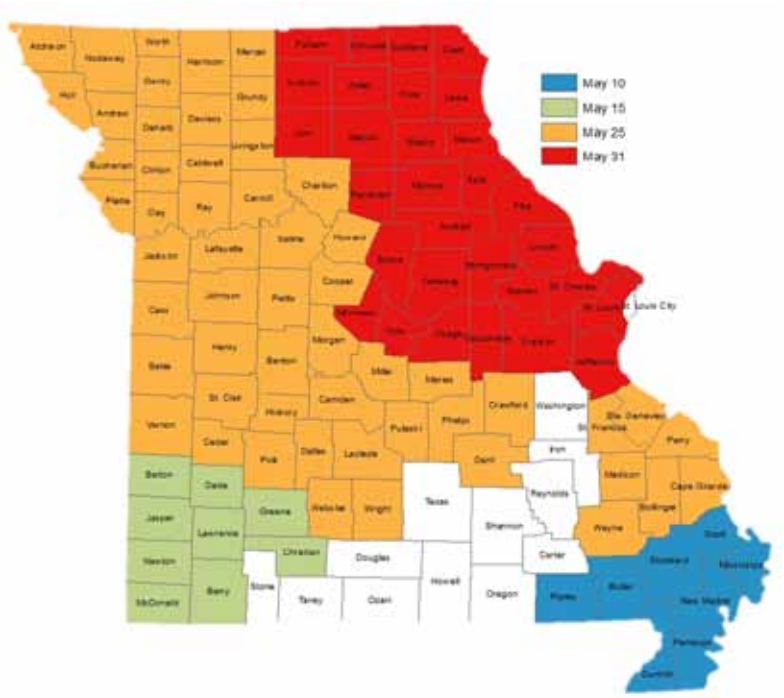
Flooding and Crop Insurance

By Ray Massey and David Reinbott

Fifty four counties have had major crop damage due to rain, flooding and cold this year. One of the keys to understanding how crop insurance will treat the crops adversely affected by weather is to know the final planting date and late planting period for each crop. The maps below show the final planting dates for corn and soybeans. For rice production in Missouri the final planting date is May 25; for cotton, it is May 20. The late planting period begins the day after the final planting date and lasts 20 days for corn; 25 days for soybeans; 15 days for both rice and cotton.

Figure 1. Corn Final Planting Date



Flooded fields of insured crops are treated differently depending on whether the crop was never planted (prevented planting) or planted and subsequently damaged. To illustrate the options available to farmers, we will use the following illustration. Corn is the original crop that was planted or intended to be planted on the field. Revenue Protection was purchased at the 75% coverage level on land with a 150 bushel/acre production history (APH). Under this crop insurance the revenue guarantee is $676/acre ($676 = 150 bushel APH X $6.01 corn insurance price X 75% coverage level).

Prevented Planting is when the crop cannot be initially planted before the final planting date. Options that exist are:

Option 1. Corn is declared prevented planting and field is left idle. If nothing is planted, a prevented planting indemnity will be made of 60% of the Revenue Guarantee, or $406 ($406 = $676/acre X 60%). Your APH yield for the next crop year does not change. (Note: prevented planting payment is 60% of revenue guarantee for soybeans; 50% for cotton; 45% for rice.)

Option 2. Corn is initially planted after the final planting date and before the end of the late planting period. Any acres initially planted during the late planting period will receive a lower revenue guarantee than those acres planted earlier. The coverage is reduced 1 percent per day for each of the next 20 days. There is no prevented planting payment under this option.

In the bootheel, where the final planting date is May 10, if corn is initially planted on May 20, the revenue guarantee will be reduced 10% to $608 ($608 = $676/acre - 10 days X 1% per day).

Option 3. Corn is initially planted after the last day of the late planting period. The Revenue Guarantee is reduced to 60%, or $406 ($406 = $676/acre X 60%) of the initial revenue guarantee. There is no prevented planting payment under this option.

Option 4. Corn is declared prevented planting but another crop is planted after the last day of the late planting period. An indemnity payment for the corn will be made equal to 35% of the prevented planting payment, or $142 ($142 = $676/acre X 60% X 35%) in this example. This indemnity is the final payment from crop insurance for that crop. A yield equal to 60% of the approved yield for the prevented planting corn acreage would be entered into the 2012 APH.

Option 5. Corn is declared prevented planting but a cover crop is planted after the Final Planting Date. A prevented planting payment of 60% of the Revenue Guarantee, or $406 ($406 = $676/acre X 60%) will be paid to the producer. Your APH yield for the next crop year does not change.

Damaged Crop is when the crop was planted but is severely damaged by the flooding. Options that exist are:

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Flooding and Crop Insurance

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Figure 2. Soybean Final Planting Date

Option 1. The corn crop is destroyed or released and nothing is planted back. In this situation the crop insurance company projects a 100% loss, that it is not practical to replant and allows the corn crop to be destroyed. A 100% indemnity payment will be made of $676/acre (150 bushel APH X $6.01 corn price X 75% coverage level).

Option 2. Leave the crop and harvest as is. The Revenue Guarantee will be $676/acre ($676 = 150 bushel APH X $6.01 corn price X 75% coverage level). If the yield is severely damaged, an indemnity payment will be made if the fall harvest revenue is below $676/acre.

Option 3. Replant the crop and collect a replant payment after your insurance company has determined it practical to replant. If the corn crop is projected to produce less than 90% of the guarantee yield, the producer can receive a payment equal to the projected price of $6.01 X 8 bushels of corn, or $48.08. (Note: the 2011 replanting payment for soybeans is 3 bushels x $13.49; for grain sorghum, 7 bushels x $5.87; for rice, 400 lbs. x $.161. There is no cotton replant payment.) In this example with a 150 APH and 75% coverage level, the projected corn yield would need to be less than 101 bu/acre (101 bu/acre = 150 bu X 75% X 90%) to receive a replant payment.

Option 4. Plant a second uninsured crop. In this situation the crop insurance company projects a substantial loss and allows the corn crop to be destroyed. A 100% indemnity payment will be made based on the estimated yield loss on the corn. If corn is estimated as a 100% loss, indemnity payment is $676/acre ($676 = 150 bushel APH X $6.01 corn price X 75% coverage level).

Option 5. Plant a second insured crop. In this situation the crop insurance company projects a substantial loss and allows the corn crop to be destroyed. The producer will first receive 35% of loss payment of the corn, or $237 ($237 = 150 bushel APH X $6.01 corn price X 75% coverage level X 35%). If the second insured crop planted does not have a loss, the other 65% of the indemnity, or $439 acre ($439 = 150 bushel APH X $6.01 corn price X 75% coverage level X 65%) will be paid at harvest. If the second insured crop does have a revenue loss, the producer can choose to take the second 65% corn payment or the second insured crop indemnity, whichever is greater.

Whatever happens, do not make decisions on the planting, replanting or abandoning of crops without first consulting your crop insurance agent. There are many rules and regulations that need to be followed so it is important that you stay in close contact with your crop insurance agent. Each crop and insurance product has its own special rules and regulations that need to be followed.

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be oval to spindle-shaped or even diamond-shaped. Both types of lesions may have darker borders but anthracnose tends to have larger borders, lesions may coalesce to kill larger areas of leaf tissue and discoloration surrounding the lesions may be more extensive. Holcus leaf spot tends to remain as discrete spots on the leaf surface. Finally, the holcus leaf spot pathogen does not produce fruiting bodies or the hairlike setae which the anthracnose pathogen produces in the dead leaf tissue of the lesions. Checking the centers of the lesions with a hand lens for the presence of fruiting bodies or setae will help distinguish which pathogen is present.

On young corn plants the symptoms of **Stewart's bacterial wilt include** linear, pale green to yellow streaks that tend to follow the veins of leaves and originate from feeding marks of the corn flea beetle. Lesions may extend the length of the leaf. Plants may appear stunted or somewhat distorted. If the bacteria become systemic within the plant, the entire plant wilts and may die prematurely. Cavities of a brown, soft rot can develop in the stalk pith.

The variations in weather conditions this spring have put stress on young corn plants. In some fields seedlings have been showing yellowing and/or stunting from cool, wet soils immediately after planting and saturated soils since planting. However, with the more recent warm weather, corn in many parts of the state has really taken off and is now 12 to 18 inches tall. So symptoms of Stewart's bacterial wilt are beginning to develop on these rapidly growing young corn plants.

On field corn the disease tends to be limited to the leaf blight phase of the disease in which foliage symptoms develop but the pathogen does not become systemic within the plant. With the leaf blight phase of Stewart's bacterial wilt, the linear, pale green to yellow lesions develop on the leaves. These lesions tend to parallel the leaf veins and to have wavy, irregular margins. These streaks soon become dry and brown.

The bacterium which causes Stewart's bacterial wilt overwinters in the guts of some species of adult corn flea beetles. Adult beetles feeding on corn seedlings in late spring and early summer can contaminate the feeding wounds with the causal bacterium. Flea beetles can continue to spread the bacterium throughout the season by feeding on infected plants and then healthy plants. The potential for Stewart's bacterial wilt to develop on young corn plants is greater after mild winters when higher levels of the corn flea beetle may be present.

Most field corn hybrids have enough resistance to Stewart's bacterial wilt that additional management is not necessary.

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Weather Data for the Week Ending May 24, 2011

By Pat Guinan

Station	County	Weekly Temperature (ºF)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	May 1 - May 24	Departure from long term avg.	Accumulated Since Apr. 1	Departure from long term avg.
Corning	Atchison	76	59	86	49	67	+2	3.23	-0.30	491	+99
St. Joseph	Buchanan	73	57	83	46	66	+1	2.34	-1.60	464	+55
Brunswick	Carroll	73	57	84	42	66	+1	3.43	-0.69	469	+39
Albany	Gentry	76	57	84	41	66	+2	2.51	-1.25	438	+62
Auxvasse	Audrain	75	57	86	44	66	+1	3.80	-0.37	493	+56
Vandalia	Audrain	76	57	85	41	66	+1	1.64	-2.32	469	+67
Columbia-Bradford Research and Extension Center	Boone	75	56	85	42	65	-1	3.87	-0.27	482	+14
Columbia-Jefferson Farm and Gardens	Boone	74	57	84	43	66	0	4.20	+0.07	506	+37
Columbia-Sanborn Field	Boone	75	58	85	44	66	0	4.56	+0.40	552	+57
Columbia-South Farms	Boone	74	57	84	43	66	0	4.46	+0.32	505	+36
Williamsburg	Callaway	75	57	84	43	65	0	3.44	-0.38	511	+90
Novelty	Knox	76	56	83	42	66	+2	3.25	-0.76	409	+7
Linneus	Linn	75	56	83	40	66	+2	2.47	-1.67	431	+43
Monroe City	Monroe	76	57	84	42	66	+1	1.78	-1.92	450	+21
Versailles	Morgan	76	56	86	43	66	0	6.98	+2.63	575	+57
Green Ridge	Pettis	74	57	84	43	65	-1	3.36	-0.41	505	+56
Lamar	Barton	75	59	83	48	66	-1	4.33	-0.50	573	+41
Cook Station	Crawford	77	56	85	37	66	0	4.78	+0.91	581	+53
Round Spring	Shannon	78	54	85	37	65	0	6.14	+1.92	542	+53
Mountain Grove	Wright	74	55	80	40	65	0	5.96	+1.99	518	+66
Delta	Cape Girardeau	80	60	86	47	69	0	7.06	+2.88	648	+18
Cardwell	Dunklin	81	60	87	48	70	-1	9.81	+6.03	770	+29
Clarkton	Dunklin	80	60	89	47	70	0	7.42	+4.36	727	+17
Glennonville	Dunklin	80	60	86	46	70	0	8.55	+5.44	730	+18
Charleston	Mississippi	78	60	85	47	69	0	5.80	+2.12	694	+64
Portageville-Delta Center	Pemiscot	81	61	87	48	71	0	8.72	+5.16	782	+53
Portageville-Lee Farm	Pemiscot	81	61	87	47	71	0	8.86	+5.25	780	+61
Steele	Pemiscot	82	62	90	48	71	0	8.49	+4.38	805	+69

* 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.

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