Integrated Pest & Crop Management

Horizon Point Weather Advisory Program

By Ray Massey

Wishing that you had weather information that is not for the city 30 miles away but for your particular farm? Wishing that the information was presented in a way that highlights the way the forecasted weather would impact your production activities? Wishing that the information would be easy to access via email? If you are interested in these abilities, consider signing up (or encouraging your clients to sign up) for the University of Missouri's free weather advisory program called Horizon Point.

Horizon Point can deliver site-specific weather information and advisories because when farmers signup, they provide the exact latitude and longitude for which they want to receive a report. By supplying their email address, it gets delivered directly to them free of charge.

Currently Horizon Point contains site specific weather information and weather dependent decision models. The basic weather information contained in a Horizon Point report includes rainfall amounts and probability, minimum and maximum daily temperatures, soil temperatures at various depths, and wind speed and direction forecasts in 3-hour increments.

Horizon Point's weather advisories cover crop and grain management, pest management and livestock management.

The rainfall needed for runoff advisory automatically enters your soil type and past rainfall events into the NRCS runoff model to estimate of the amount of rain it would take to have a runoff event for various types of ground cover. The in-bin grain drying advisory uses 3-hour increments of forecasted temperature and humidity to estimate the equilibrium moisture content of grain in a bin using natural air drying fans.

Historical and predicted growing degree days are used to estimate weed emergence. The weed emergence alerts are hyperlinked to pictures of the emerging weed to assist users in identifying weeds in their fields as they emerge.

Growing degree day estimates are also used to forecast alfalfa weevil problems. Location specific capture reports provide alerts on the probable presence of black cutworm, European corn borer, Japanese beetle, stickbug, western bean cutworm and true army worms.

For livestock producers the Horizon Point report contains cattle and poultry stress indexes that use temperature, wind speed and humidity to animal comfort (stress) thresholds.

While the basic weather information is on all reports all the time, the other advisories are dependent on the time of the year. For example, the weed emergence alerts will be on the report soon. But when all the weed species have emerged, the report ceases to contain this alert so as not to clutter up the report. In addition, if you don't want a particular advisory to ever show up on your report you can specify that you don't get it. For example, if you don't have poultry, at signup just select not to receive the poultry stress index.

To sign up for the free Horizon Point weather advisory service, go to www.agebb.missouri.edu/horizonpoint. You will need to have your email address, latitude and longitude for your farm (links are provided to web pages that can help you find them if you don't already know them) and predominate soil type for your fields. You also specify your user name and password that allows you to manage such things as when you get the report and what advisories you want to have sent to you.

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Rotation is Key to Managing Diplodia Ear Rot of Corn

By Laura Sweets

Diplodia ear rot of corn was unusually widespread and severe on corn throughout most of Missouri during the 2009 season. Since the primary source of inoculum for the disease is diseased corn debris left in the field, planting corn in a field which had high levels of Diplodia ear rot in 2009 greatly increases the risk of the disease occurring in 2010 corn. The risk for Diplodia ear rot will also be influenced by weather conditions after silking with the risk being greatest if wet weather occurs after silking. The following article covers symptoms, factors favoring disease development and management options for Diplodia ear rot of corn.

Pathogens: Diplodia ear rot may actually be caused by two different species of the fungus *Diplodia*: i.e. *Diplodia maydis* and *Diplodia macrospora*. Although the genus name of the fungus has recently been changed from *Diplodia* to *Stenocarpella*, the disease is still commonly referred to as Diplodia ear rot.

Symptoms: If infection occurs soon after pollination, Diplodia ear rot may be evident as a bleaching or light straw coloration of the ear leaf and husks on the ears of infected plants (Figure 1). The bleached ear leaf and husks stand out against the green leaves on the rest of the plant making these symptoms obvious even from a distance.

The most characteristic symptom of Diplodia ear rot is seen when the husks are peeled back revealing a dense white to grayish-white mold growth matted between the husks and the ear and between the rows of kernels. Symptoms often start at the base of the ear. Severely infected ears may be shrunken, light weight and completely covered with grayish-white to grayish-brown mold growth. These ears may be completely rotted. Figure 2 shows four ears with symptoms ranging from a very light infection on the ear on the left to a completely rotted ear on the right.

Figure 1. Diplodia ear rot may be evident as bleaching or light straw coloration of the ear leaf and husks on plants.

Figure 2. Four ears with ranging symptoms of Diplodia ear rot of corn.

Individual kernels may appear normal, may have some mold growth adhering to the kernel or may be dull gray to brown in color, rotted and very light weight.

Small, black fungal fruiting bodies (pycnidia) of the fungus may be scattered on husks or embedded in kernels and cob tissues.

Diplodia can also cause a stalk rot of corn. Several weeks after silking, leaves on plants affected with Diplodia stalk rot may wilt, become dry and appear grayish green as though damaged by frost. Plants may die suddenly. Diplodia stalk rot may begin as a brown to tan discoloration of the lower internodes (Figure 3). Stalks become spongy and are easily crushed. The pith disintegrates, leaving only the vascular bundles. Mats of white fungal growth may be evident on affected tissues. The small, black fungal fruiting bodies (pycnidia) may be embedded in the mold growth or stalk tissues.

Factors Favoring Disease Development: The primary source of inoculum is diseased corn debris left in the field. The small, black fungal fruiting

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bodies embedded in stalk, cob and kernels left in the field contain spores of the fungus and these spores can be released the following season to cause infection of the current season's corn crop. Wet weather favors spore release and spread. Splashing water may spread the spores to silks where the spores germinate and the fungus grows down the silks into the ears. The fungus may also penetrate the husk at the base of the ear. With husk infection, the fungus appears to grow between the ear shoot and the stalk or between the ear shoot and the sheath of the ear leaf.

Ears are most susceptible for three weeks after silking as silks start to senesce. Wet weather after silking favors the development of Diplodia ear rot. Bird and insect damage to the ear tips may also predispose plants to infection.

Management Options for Diplodia Ear Rot:

Crop rotation is extremely important in attempting to lower the risk of Diplodia ear rot. Because of the high level of fungal fruiting bodies which may remain in infested corn debris left in the field, the disease may be much more severe if corn follows corn which had Diplodia ear rot.

Figure 3. Diplodia stalk rot

Hybrids differ in their susceptibility to Diplodia ear rot. Few companies publish Diplodia ear rot ratings but after 2009, most companies should have a good idea of susceptible and more resistant hybrids. Visit with your seed dealer about the reaction of their hybrids to Diplodia ear rot, especially if it is necessary to plant corn on corn in 2010.

Diplodia ear rot is listed on some fungicide labels but timing of application in relation to stage or growth and weather conditions would be crucial for fungicides to provide any control.

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Time to Check Stored Grain for Insect Infestations

By Wayne Bailey

Just a reminder that it is important check the condition of on-farm stored grain at this time. Differences in grain mass temperatures of several degrees may indicate that insect and mold problems are present. If the grain mass was properly dried this past fall, any insects present in the grain mass should be inactive if the temperature of the mass is 50-60 degrees Fahrenheit or lower. If the grain is to be held in storage into the summer months and no insecticide was applied in the fall, then the grain may be at risk from insect pests. To determine if insects are present at this time, you should do a visual inspection of the top of the bin to see if any insects or insect damage is present. A sour smell, grain clumped together, condensation present on the inside surface of the bin roof, webbing on the grain surface, or the presence of insect larvae, adult beetles or moths all suggest the presence of an insect infestation.

Scouting methods differ by location in the bin. Indian meal moth infestations can generally be seen by observing the top of the grain mass from the roof access door. If no webbing or foul grain odors are found, then it is unlikely that Indian meal moths are present in high numbers. If the grain was properly leveled and treated after filling of the storage structure the previous fall, it is best not to break or disturb the protective cap of insecticide applied at that time. Some probing of the grain surface from the access door may be necessary to determine level of insect infestations if found. Scouting for stored grain insects in the grain mass can be accomplished by using a grain probe to collect samples from the side access panel. Grain collected should be placed in a glass jar, plastic bag, or some other container through which insects can be seen if they are present in the grain. These containers of grain should be placed in a warm area to allow the grain to warm to at least 60 degrees F or higher in order to stimulate insect activity.

If an insect infestation is found on the surface of the grain mass and webbing is present, this usually indicates the presence of Indian mealmoth. As this insect only damages the upper 12-14 inches of the grain mass, removal of the webbing and damaged grain along with an application of a labeled insecticide are recommended. Pest strips hung above the grain mass inside the storage structure may help control the moth stage of this common pest. If an infestation of various flour beetles, grain weevils, or other stored grain beetles is found infesting the cold grain mass, then use of grain for livestock feed or some other use where the insects do not cause a problem in the end product is recommended. The grain should be fed to livestock prior to the arrival of summer temperatures when insect activity increases. If the grain is to be retained into the summer, then fumigation of the entire grain mass is a second, but less attractive

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management option. If fumigation is selected, a professional fumigator should be used as the poisonous gases associated with fumigation are extremely dangerous if used improperly. A third option would be to move the grain out of the storage facility to another storage structure with the grain being treated with a recommended insecticide as the grain is moved. When the grain is then warmed in the spring, the insecticide should provide substantial insect control. Of these three options, immediately use of the grain as livestock feed is generally the best option. Once the grain in removed from the bin, sanitation procedures should be implemented and the bin treated with an approved insecticide both inside and out.

All insecticides for stored grain insects have very specific labeled uses so special attention must be given when selecting an insecticide for these various uses. Some insecticides are label for use in empty grain bins, but are not labeled for use on grain. Some insecticides are labeled for wheat only or corn only, whereas others may be labeled for both. Be sure to read and follow all insecticide label instructions, restrictions, and precautions when using insecticides for management of stored grain insect pests.

Moisture in the grain mass is one very important factor which attracts insect pests to these structures. Charles Ellis, regional extension engineering specialist with the University of Missouri discussed the aeration and moisture zones in on-farm grain storage facilities in the January 15, 2009 issue of this newsletter (Volume 19, Number 1). Proper aeration of the grain mass to manage moisture and grain mass temperature is essential for good insect control. Note: it often requires a week or more of aeration to move a moisture layer through and out of a grain mass depending on several factors including the volume of air moved, the size of the storage structure, and the temperature of the air being moved into or out of the grain mass. A second article discussing moisture management in grain bins comes from Tom Dorn, a county extension educator associated with the University of Nebraska. His article can be found at http://cropwatch.unl.edu/web/cropwatch/archive?articleID=345002.

Color images and additional information concerning proper management of common stored grain insects can be found on the Commercial AG Electronic Bulletin Board at agebb.missouri.edu/storage/pests/insect.htm.

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Visit our Web site at ppp.missouri.edu

Revised for 2010

IPM1007 Practical Weed Science for the Field Scout: Corn and Soybean

+ new text
+ new images
+ 35 new weeds

Take a look at the newly revised IPM1007 and you'll see new content, new images related to herbicide symptomology, and a new winter annual weed section with 35 new weeds. For more information, visit:

http://extension.missouri.edu/publications/DisplayPub.aspx?P=IPM1007

New in Weed Science

Over 10 presentations available!

The Weed Science program now has a collection of slideshow presentations on a variety of topics, many with voice-over narration. To view them and learn more, visit: **http://weedscience.missouri.edu/extension/extension.html**

Weather Data for the Week Ending February 8, 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.	Feb 1-Feb 8	Departure from long term avg.	Accumulated Since Apr. 1	Departure from long term avg.
Corning	Atchison	35	21	40	0	29	+4	0.33	+0.11	*	*
St. Joseph	Buchanan	34	22	39	4	29	+3	0.31	+0.05	*	*
Brunswick	Carroll	34	20	39	9	29	+2	0.53	0.23	*	*
Albany	Gentry	34	18	38	-6	28	+3	0.19	-0.06	*	*
Auxvasse	Audrain	35	20	39	12	29	+2	0.63	+0.18	*	*
Vandalia	Audrain	36	20	40	12	29	+1	0.72	+0.39	*	*
Columbia-Bradford	Boone	36	21	44	12	29	0	0.63	+0.14	*	*
Columbia-Jefferson Farm	Boone	37	22	44	12	30	+1	0.56	+0.07	*	*
Columbia-South Farms	Boone	36	22	42	13	30	+1	0.64	+0.15	*	*
Williamsburg	Callaway	36	21	42	15	30	+2	0.46	-0.09	*	*
Novelty	Knox	33	17	35	8	27	+1	0.38	+0.05	*	*
Linneus	Linn	34	17	40	7	28	+2	0.49	+0.12	*	*
Monroe City	Monroe	35	18	38	11	28	0	0.40	+0.16	*	*
Versailles	Morgan	*	*	*	*	*	*	*	*	*	*
Green Ridge	Pettis	36	23	42	10	31	+2	0.60	+0.19	*	*
Lamar	Barton	36	26	38	15	32	-1	0.48	+0.05	*	*
Cook Station	Crawford	38	27	45	16	32	-1	1.08	+0.47	*	*
Round Spring	Shannon	41	28	48	19	33	0	1.00	+0.43	*	*
Mountain Grove	Wright	37	26	44	19	32	0	0.60	-0.04	*	*
Delta	Cape Girardeau	38	27	40	22	33	-1	1.12	+0.29	*	*
Cardwell	Dunklin	38	30	41	25	34	-3	0.77	-0.23	*	*
Clarkton	Dunklin	38	29	41	24	34	-2	0.88	+0.15	*	*
Glennonville	Dunklin	38	29	42	20	34	-2	0.88	+0.15	*	*
Charleston	Mississippi	38	29	42	24	33	-1	0.85	-0.10	*	*
Portageville-Delta Center	Pemiscot	39	30	43	27	35	-2	0.90	+0.03	*	*
Portageville-Lee Farm	Pemiscot	39	30	43	24	34	-2	0.87	0.00	*	*
Steele	Pemiscot	39	30	41	23	34	-3	0.76	-0.24	*	*

* 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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