Plant Protection Programs University of Missouri

Integrated Pest & Crop Management

Soybean Rust Sentinel Plot Monitoring As of October 9, 2007

By Laura E. Sweets

Missouri has been participating in the Soybean Rust Sentinel Plot Program for the 2007 season. The 26 soybean sentinel plots located throughout the state have been monitored by Extension Regional Personnel and University Research Center Personnel. Four of the sentinel plot sites are on University Research Centers (Southwest Center, Hundley-Whaley Research Center, Greenley Memorial Research Center and Bradford Research and Extension Center). Three different maturity group soybean varieties were planted at each of the Research Centers. The remaining 22 soybean sentinel plots are in commercial fields and are being monitored by Extension Regional Personnel. In addition two Extension Regional Agronomists are submitting kudzu samples.

Samples of 100 leaflets per plot were collected every other week through the vegetative stages of growth. As plants moved into reproductive stages of growth sampling has been on a weekly basis. In addition to the soybean sentinel plots this year several kudzu patches are also being scouted on a regular basis. Kudzu leaf samples have been submitted from 2 counties on a regular basis since the kudzu greened up in the spring. See the USDA Web site at www.sbrusa.net for up-to-date information on sentinel plot results from Missouri and the rest of United States.

Sentinel plot scouts are continuing to send in samples from sentinel plots. If the original sentinel plots have progressed beyond R6, sentinel plots are being switched to fields in an earlier growth stage. Individuals in the southwestern and southeastern parts of the state have been sending in multiple samples from commercial fields as well as their sentinel plots in an effort to determine if soybean rust is present in a county and if so how widespread and severe soybean rust is.

On September 25, soybean samples from Pemiscot and Scott Counties (both in southeastern Missouri) were confirmed positive for soybean rust. Incidence and severity were low in both samples (three infected leaflets out of 100 and two infected leaflets out of 100).

On September 28, soybean samples from Lawrence and Vernon Counties (both in southwestern Missouri) were confirmed positive for soybean rust. Incidence and severity were low in both samples with only a few pustules present on a few leaflets in each sample.

Since September 28, soybean rust has been confirmed in Jasper and Barton Counties in southwestern Missouri and in Dunklin, New Madrid, Mississippi, Stoddard and Butler Counties in southeastern Missouri. Incidence ranged from quite low to moderate in one Stoddard County field. Growth stage varies from R4/R5 in southwestern Missouri to R6 and beginning to drop leaves in southeastern Missouri.

Over the last few days there have been reports of soybean rust in counties in Nebraska, Kansas, Kentucky, Tennessee and Illinois as well as additional counties in Arkansas, Oklahoma and Louisiana. Incidence and severity appears to be low at most

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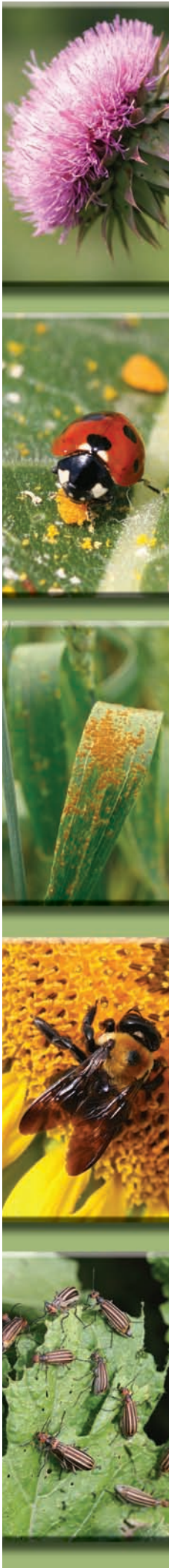

Aeration Dynamics - Cooling for Long-term Grain Storage

By Bill Casady

If you have been following the SLAM strategy this fall, then you know that we are ready to address 'A' – aeration. Having sanitized (S) bins and loaded (L) bins with quality grain, some of that grain went into bins at some pretty warm temperatures. I know some of my grain went into the bin at between 70 degrees to about 98.6 degrees and at various moisture contents, but all fairly dry.

Yield monitor information for loads throughout the day has provided me with an excellent chance for recording just what was going into bins. Grain moisture for corn varies very little throughout the day, but temperatures can change by 20 to 30 degrees. Early morning corn was running toward the lower end of the temperature scale at about 70 degrees while midday and afternoon corn registered temperatures well above 90 degrees.

Those layers of slightly wetter and cooler corn layered with warmer drier corn are both a potential problem and a blessing. The drier warmer corn contains some built in heat for drying the wetter grain, while the wetter cooler corn provides the ability to cool the warmer grain. While warm moist grain is a haven for fungi, running the fans to redistribute moisture and to cool the grain can leave a relatively uniform grain mass with excellent storage properties.

As the weather finally turns more "fall-like", whole bins are ready for cooling with aeration. Aeration for cooling should be performed by monitoring grain temperatures if possible. Short of a fully instrumented bin, aeration can be monitored by measuring the temperature of the air at the top of the grain mass. Initial temperature readings should be recorded at startup. Run fans continuously until a temperature drop of about 10 to 15 degrees has occurred. Repeat as need several weeks later until grain is cooled to 35 to 40 degrees.

It is important to take advantage of the earliest cool weather to extend the life of stored grain. Warm grain has a shorter shelf life (see table of equilibrium moisture contents) and some of that life will be used quickly until grain is cooled. Assuming moisture content is already approximately correct for long term storage, run fans continuously during cooler weather to cool the grain. However, if you have harvested some drier than market moisture content grain, you may wish to run fans selectively from about dusk until dawn to cool the grain. Very little or no increase in moisture content will occur, but the grain will cool to more acceptable levels quickly.

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Cotton Producers, Prepare Now for Your 2008 Crop

By Allen Wrather

I realize that harvest of the 2007 Missouri cotton crop is not yet finished and few are concerned about anything but getting this crop out of the field. However, producers should now start preparations for the 2008 cotton crop. The following is a check list of items to consider.

- Dig cotton roots after harvest this fall in areas of the field where nematode problems are suspected and examine them for root-knot nematode (RKN) galls. University of Missouri research shows that root gall severity due to RKN is a reliable indicator of the presence of this nematode and the severity of RKN damage to cotton. Producers should do this soon because December is too late. Contact me for more information about this method. If RKN is a problem, producers should make decisions this winter about how to manage it in 2008.
- Select the fields you intend to plant to cotton in 2008, sample the soil in each field and test it for pH and nutrients if this has not been done since 2005.
- Apply needed lime this fall and needed P and K fertilizer this fall or early next spring.
- Break hardpans by subsoiling this fall or early next spring.
- Improve drainage of the fields this fall or next spring to reduce wet soil problems for the 2008 crop.
- Select varieties for planting in 2008 based on University of Missouri cotton variety yield trials and the yields of varieties in your own and your neighbor's fields. The University of Missouri cotton variety yield trial results for 2006 are available on the Web at http://aes.missouri.edu/delta/cotton/index.stm, and the 2007 data will be available at this site by mid-November.
- Hire a cotton scout or consultant to weekly inspect your 2008 crop for pests.

Following these suggested procedures will give Missouri cotton producers a better chance of producing higher yields and greater profits in 2008. For more information contact Allen Wrather at the University of Missouri Delta Center (Phone: 573-379-5431, E-mail: wratherj@missouri.edu) or check the Delta Center Web site (aes.missouri.edu/delta).

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Insect Monitoring Highlights: 2007 Season

By Steven Kirk

The 2007 insect monitoring season has come to a close for this year. Pest monitoring is an essential part of a successful Integrated Pest Management program and is the first line of defense in determining the populations of potential insect problems that can have a serious impact on Missouri's agriculture.

This past season has seen an increase in trapping participants with nearly thirty trappers helping us monitor insect populations throughout the state. Currently we are trapping five moths and one beetle using pheromone lures and a variety of insect traps.

The following table highlights the total number of insect pests trapped and reported during the 2007 trapping season, along with the location (extension region, county and closest town or landmark) of each trap, the number of times the trap was monitored and the average number of days the trap was checked between each count.

Region	Trap Location: (County / City)	Total # caught:	Times trap monitored:	Average # of days between count:
Black Cutworm				
C	Audrain County Mexico, MO	349	17	6.1
C	Boone County (Bradford Farm) Columbia, MO	135	23	3.8
C	Boone County (South Farm) Columbia, MO	213	24	4.8
C	Callaway County Fulton, MO	44	21	2.6
C	Chariton County Keytesville, MO	10	7	2.6
C	Morgan County Versailles, MO	372	18	3.1
C	Saline County Saline County, MO	6	6	1.8
EC	Franklin County Union, MO	5	4	3.5
EC	St. Charles County St. Peters, MO	298	12	5.4
EC	Ste.Genevieve County Ste. Genevieve, MO	6	7	5.3
NE	Knox County Edina, MO	696	38	2.3
NE	Linn County Linneus, MO	80	13	2.1
NE	Marion County Palmyra, MO	0	0	0.0
NW	Buchanan County, MO	374	11	2.5
NW	Holt County Oregon, MO	119	16	2.3
NW	Worth County Albany, MO	31	4	2.6
SW	Barton County Lamar, MO	961	19	3.8
WC	Henry County Clinton, MO	2410	15	2.4
WC	Ray County Orrick, MO	1701	11	2.0
WC	Vernon County Nevada, MO	2	7	11.0
Southwestern Corn Borer				
SE	Stoddard County Bloomfield, MO	263	9	5.1
SE	Mississippi County Charleston, MO	188	8	6.9
SE	Scott County Benton, MO	417	24	4.0
SE	New Madrid County Portageville, MO	79	21	3.0
True Armyworm				
C	Audrain County Mexico, MO	19	39	3.1
C	Boone County (South Farm) Columbia, MO	67	44	2.8
C	Boone County Ashland, MO	34	41	2.8
C	Callaway County Fulton, MO	19	41	2.6
C	Chariton County Keytesville, MO	0	0	0.0
C	Morgan County Versailles, MO	4	19	4.3
C	Saline County, MO	0	0	0.0
EC	Franklin County Union, MO	0	0	0.0
EC	St. Charles County St. Peters, MO	14	12	2.5
EC	Ste.Genevieve County Ste. Genevieve, MO	0	3	3.0
NE	Knox County Edina, MO	905	21	1.9
NW	Buchanan County St. Joseph, MO	1266	20	4.5
NW	Holt County Oregon, MO	152	31	3.4
SC	Miller County Tuscumbia, MO	13	6	5.7
SC	Ozark County Gainesville, MO	0	0	0.0
SE	Mississippi County Charleston, MO	14	2	4.0
SE	New Madrid County Portageville, MO	239	22	2.0
SE	Scott County Benton, MO	0	0	0.0
SW	Barton County Lamar, MO	1471	26	4.6
SW	McDonald County Pineville, MO	0	4	3.0
SW	Stone County Galena, MO	0	0	0.0
WC	Henry County Clinton, MO	4	15	3.9
WC	Ray County Orrick, MO	0	0	0.0
WC	Vernon County Nevada, MO	23	7	2.4

Automatic Aeration Assistance by E-mail

By Bill Casady

Unless you harvested all of your corn in just a few days early in the season, you probably have some corn that reached market moisture content and even lower. Let's assume for a minute that you have a bin or two that meets this description.

Horizon Point weather forecasts http://agebb.missouri.edu/horizonpoint/ provide daily predictions for temperature, humidity and equilibrium moisture contents for corn and soybean at three-hour intervals. These predicted conditions allow you to plan how to best take advantage of the natural cooling of the air and potentially leave you with the choice to allow further drying or not.

Cooling grain that has already reached ideal moisture content can further dry grain that is already too dry. Horizon Point e-mails provide a means to run fans selectively by the condition of the air. The typical pattern is that the air will have considerable drying potential from mid to late morning through the early evening hours. From about dusk to a little past dawn, the fan will deliver cooler air with essentially no drying capacity.

Your personalized weather information will look a little bit like that shown below. However, there is no typical day. In this case, I can see the cold front that is approaching in the next couple of days. Along with it is some very dry air. I would probably wait until very late in the evening of 10/8/07 to turn on the fans and let them run through the night until about 7:00 a.m. the next morning on 10/9/07. I will repeat the process daily until the grain cools by about 10 to 15 degrees. This means getting up in the bin and checking temperatures unless I have an already instrumented bin.

The equilibrium moisture contents (EMC) for corn and soybean are highlighted in boldface type for each entry in the table. Remember that the equilibrium moisture content is just the moisture content that the grain will reach if left at those conditions for a long period of time. However, grain moisture changes relatively slowly. The values in the table allow you to determine if the air has significant capacity to dry the grain or not. Re-wetting is much less likely and is not recommended.

For my already dry grain, I can maximize cooling without further drying the grain by running the fan only at night for several days. The potential savings are significant. Any moisture I save can be worth several cents per bushel. For example at typical corn prices this fall a point of moisture can cost between 3 and 4 cents per bushel. For a whole bin between 10,000 bushel and 40,000 bushel, I can profit by about $500 to $2000 by avoiding that extra point of over-dried corn.

Bin temperatures are running about 75 degrees right now, so several nights of cool weather dipping down to 60 degrees will achieve the desired result and extend the life of my grain by more than doubling the time it can be stored before significant spoilage occurs (see table of equilibrium moisture contents).

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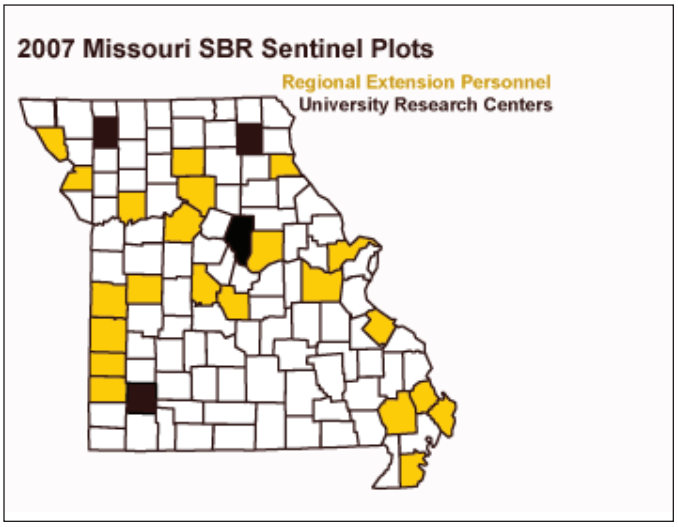

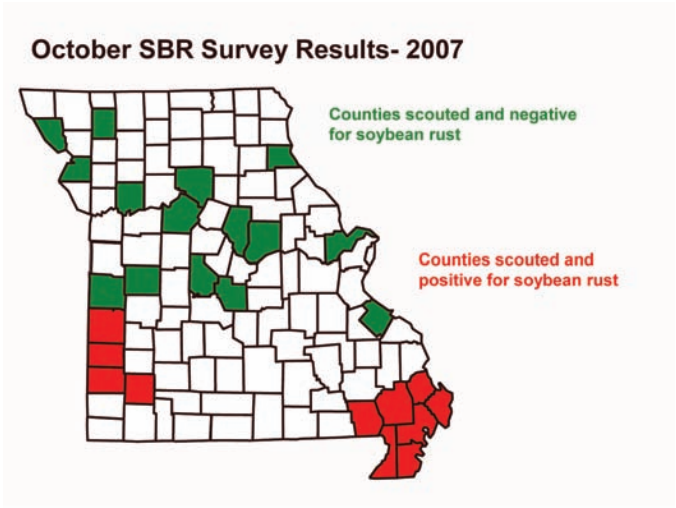

of these sites although some sites have reported active sporulation on infected plants. Current model forecasts show a risk for soybean rust throughout much of the Midwest.

Bottom-line: Soybean rust has now been confirmed in eleven counties in southeastern and southwestern Missouri. Continued scouting may result in additional positive finds. However, at the slow rate that the disease appears to be moving and building up, the risk of significant losses from soybean rust decreases each day.

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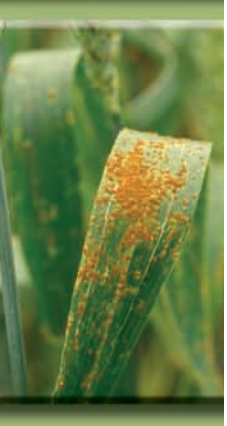
Commercial Pesticide Applicator Training

Coming January 2008

Pesticide applicator training helps reduce the harmful effects of improper pesticide use. The University of Missouri Extension Commercial Pesticide Program provides educational outreach for individuals who wish to become licensed commercial pesticide applicators. Licensed applicators must pass an exam and participate in continuing education courses on environmentally sound uses of pesticides.

For more information on training dates and registration, visit us on the Web at http://ppp.missouri.edu/pat





Weather Data for the Week Ending October 8, 2007

By Pat Guinan

Station	County	Weekly Temperature (Degrees Fahrenheit)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	Oct 1-8-Oct	Departure from long term avg.	Accumulated Since Apr. 1	Departure from long term avg.
Corning	Atchison	85	59	90	44	71	13	1.27	0.58	4000	697
St. Joseph	Buchanan	80	61	86	49	70	11	1.05	0.22	3886	521
Brunswick	Chariton	83	59	89	46	71	12	0.94	0.03	3908	491
Albany	Gentry	82	57	87	41	70	12	1.04	0.33	3776	437
Auxvasse	Audrain	85	61	89	50	72	13	0.5	-0.51	3983	547
Columbia	Boone	84	62	88	52	72	13	0.56	-0.46	4087	510
Sanborn Field	Boone	84	63	89	52	73	13	0.72	-0.35	4279	613
Williamsburg	Callaway	86	60	90	50	72	13	0.61	-0.44	4025	632
Novelty	Knox	83	59	88	48	70	12	0.68	-0.43	3675	315
Linneus	Linn	82	59	88	46	70	12	1.41	0.51	3779	511
Monroe City	Monroe	84	59	89	47	72	13	1.5	0.54	3831	406
Versailles	Morgan	85	62	88	52	72	11	0.86	-0.44	4179	546
Green Ridge	Pettis	83	61	88	48	72	13	1.31	0.08	4009	617
Lamar	Barton	82	63	86	53	72	10	1.77	0.52	4055	240
Cook Station	Crawford	85	58	88	49	70	10	0.38	-0.39	3835	173
Alley Spring	Shannon	85	60	88	53	71	11	0.54	-0.28	3791	300
Round Spring	Shannon	*	*	*	*	*	*	*	*	*	*
Delta	Cape Girardeau	88	62	90	55	74	13	0.09	-0.66	4253	231
Cardwell	Dunklin	89	65	91	61	75	11	0.4	-0.55	4588	245
Clarkton	Dunklin	89	65	91	61	76	13	0.15	-0.55	4588	287
Glennonville	Dunklin	89	66	91	61	77	14	0.3	-0.39	4567	294
Charleston	Mississippi	88	66	90	60	76	15	0.1	-0.76	4506	524
Portageville-Delta Center	Pemiscot	88	67	92	64	76	12	1.18	0.19	4758	483
Portageville-Lee Farm	Pemiscot	88	66	90	63	76	12	0.13	-0.85	4741	494
Steele	Pemiscot	90	67	92	63	77	13	0.22	-0.65	4851	580

** 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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