Louisiana

SOYBEAN & FEED GRAIN REVIEW

Volume VIII, Issue V *August 2009*

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WHAT'S GOIN' ON...

NEW ASIAN SOYBEAN RUST FIND

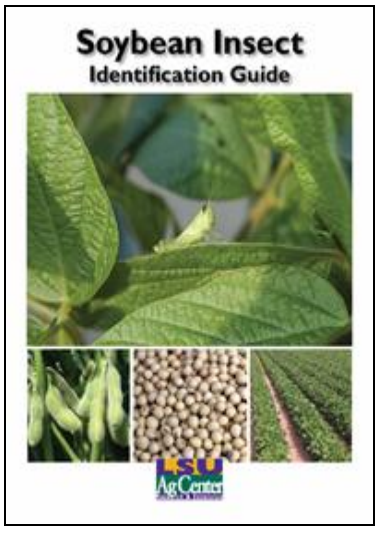
Dr. Clayton A. Hollier, Department of Plant Pathology and Crop Physiology

The first new observations of soybean rust in three weeks were confirmed on both Group IV's and V's today (Monday, 7.20.09) in Avoyelles Parish. Severity was 2% on the Group IV's (R8) and 3% on Group V's (R7). Incidence was 5%. Rainfall in the southern parishes has perked up some thirsty soybeans. Storms have moved primarily west to east so spread northward has not occurred as would be expected with tropical storms coming off the Gulf of Mexico.

SOYBEAN INSECT IDENTIFICATION GUIDE

A new soybean insect identification guide is available. You can pick up a copy at your local County Extension office. You can also view it, print it or order it free at the following link:

http://www.lsuagcenter.com/en/crops_livestock/crops/soybeans/Insects/Soybean+Insect+Identification+Guide.htm



View it now at:
http://www.lsuagcenter.com/NR/rdonlyres/70DFD838-CC1C-44B3-9A55-674F36F2DCED/60108/pub3127SoybeanInsectIDGuideLOWRES.pdf

SOYBEAN HARVEST AIDS

Joey Boudreaux and Dr. Jim Griffin School of Plant, Environmental, and Soil Sciences'

Procedure to determine when to apply a harvest aid to indeterminate and determinate soybeans

- Collect pods from the uppermost four nodes of plants at random across the field.
- Open pods and look for separation of beans from the white membrane inside the pod.

Beans should be easy to shell from the pods. If this is observed for all pods collected, then seed are at physiological maturity (around 50 percent moisture) and have reached maximum dry weight. Many leaves on plants have dropped by this time, and the remaining leaves are yellow. It is safe now to remove the remaining leaves chemically without affecting seed weight. Another sure-fire way to know that it is safe to apply a harvest aid is when one normal pod on a main stem has reached mature color. This growth stage is R7, and harvest should occur in about three weeks. If after opening the pods not all beans easily separate from the pod wall, application of harvest aid will result in some yield loss because of lower seed weight, and the effect will be greater for determinate varieties. Growers will need to decide if the yield loss can be offset by earlier harvest or improvement in grade. A reduction in price received per bushel because of dockage associated with foreign material may more than offset the cost of a harvest aid application.

SOYBEAN HARVEST AID			
	BROADCAST RATE/ACRE		
HERBICIDE	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	REMARKS AND PRECAUTIONS
carfentrazone (Aim 2EC)	1.0-2.0ozs	0.016-0.031	For the pre-harvest desiccation of broadleaf weeds. Better on morninglories than pigweed and sicklepod. Apply at least 3 days before harvest. Can be applied by ground or air. Use with a crop oil concentrate @ 1% v/v (1 gal/100 gal). Can be tank-mixed with glyphosate to improve the spectrum of control.
sodium chlorate 3 lb/gal 6 lb/gal	 2 gals 1 gal	6.0	Apply 7 to 10 days prior to harvest by aerial or ground equipment. Proper agitation is necessary. This treatment desiccates all green material present to aid in harvest.
Gramoxone Inteon	8 - 16 oz	Paraquat 0.12-0.25 lb	Indeterminate varieties: 65% of pods are mature or moisture content is 30% or less. Determinate varieties: 50% leaf drop and remaining leaves are yellow. Good control of grasses and broadleaves. Use a minimum of 20 gallons by ground or 5 gallons by air. Apply at least 15 days prior to harvest. Add nonionic surfactant at 0.25% (1 qt/100 gallons).
glyphosate (numerous trade names) 3.00 lb ae/gal	32 - 64 ozs	0.75 - 1.50 ae	Apply when grain moisture is 30% or less. Allow a minimum of 7 days between application and harvest. Not all formulations of glyphosate may be labeled for this use. Refer to specific product

3.73 lb ae/gal 4.00 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 5.00 lb ae/gal	26 - 52 ozs 24 - 48 ozs 23 - 46 ozs 21 - 42 ozs 19 - 38 ozs		label.
[1]Nitrogen solutions or complete fluid fertilizers may replace all or part of the water as a carrier for some preemergence herbicides. Proper agitation is necessary. Follow label instructions concerning tests for potential compatibility problems. Do not use fluid fertilizers with postemergence herbicides since possible crop injury may occur from the use of the fluid fertilizer.			

CORN AND GRAIN SORGHUM UPDATE

CORN HARVEST AID			
	BROADCAST RATE/ACRE		
HERBICIDE	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	REMARKS AND PRECAUTIONS
carfentrazone (Aim 2EC)	1.0-2.0ozs	0.016-0.031	For the pre-harvest desiccation of broadleaf weeds. Better on morninglories than pigweed and sicklepod. Apply at least 3 days before harvest. Can be applied by ground or air. Use with a crop oil concentrate @ 1% v/v (1 gal/100 gal) . Can be tank-mixed with glyphosate to improve the spectrum of control.
sodium chlorate 3 lb/gal 6 lb/gal	 2 gals 1 gal	6.0	Apply 7 to 10 days prior to harvest by aerial or ground equipment. Proper agitation is necessary. This treatment desiccates all green material present to aid in harvest.
Gramoxone Inteon	1.2 - 2 pts		After black layer has formed. Good control of grasses and broadleaves. Use a minimum of 20 gallons by ground or 5 gallons by air. Apply at least 7 days prior to harvest. Add nonionic surfactant at 0.25% (1 qt/100 gallons).
glyphosate (numerous trade names) 3.00 lb ae/gal 3.73 lb ae/gal 4.00 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 5.00 lb ae/gal	 32 - 64 ozs 26 - 52 ozs 24 - 48 ozs 23 - 46 ozs 21 - 42 ozs 19 - 38 ozs	0.75 - 1.50 ae	Apply when grain moisture is 35% or less and corn has reached black layer. Allow a minimum of 7 days between application and harvest. Not all formulations of glyphosate may be labeled for this use. Refer to specific product label.
[1]Nitrogen solutions or complete fluid fertilizers may replace all or part of the water as a carrier for some preemergence herbicides. Proper agitation is necessary. Follow label instructions concerning tests for potential compatibility problems. Do not use fluid fertilizers with postemergence herbicides since possible crop injury may occur from the use of the fluid fertilizer.			

GRAIN SORGHUM HARVEST AID			
USE STAGE AND HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
carfentrazone (Aim 2EC)	1 - 2 ozs	0.016 - 0.031	For the pre-harvest desiccation of pigweeds and morningglories. Apply at least 3 days before harvest. Can be applied by ground or air. Use with a crop oil concentrate @ 1% v/v (1 gal/100 gal) . Can be tank-mixed with glyphosate to improve the spectrum of control.
sodium chlorate 3 lb/gal 6 lb/gal	 2 gals 1 gal	6.0	Apply 7 to 10 days prior to harvest by aerial or ground equipment. Proper agitation is necessary. This treatment desiccates all green material present to aid in harvest.
glyphosate (numerous trade names) 3.00 lb ae/gal 3.73 lb ae/gal 4.00 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 5.00 lb ae/gal	 32 - 64 ozs 26 - 52 ozs 24 - 48 ozs 23 - 46 ozs 21 - 42 ozs 19 - 38 ozs	0.75 - 1.50 ae	Apply when grain moisture is 30% or less. Allow a minimum of 7 days between application and harvest. **Do not use on sorghum grown for seed** as a reduction in seed germination or vigor may occur. Not all formulations of glyphosate may be labeled for this use. Refer to specific product label.
[1]Nitrogen solutions or complete fluid fertilizers may replace all or part of the water as a carrier for some preemergence herbicides. Proper agitation is necessary. Follow label instructions concerning tests for potential compatibility problems. Do not use fluid fertilizers with postemergence herbicides since possible crop injury may occur from the use of the fluid fertilizer.			

AFLATOXIN IN CORN

Dr. Clayton A. Hollier, Department of Plant Pathology and Crop Physiology

Introduction

Aflatoxins are a group of chemicals produced by certain mold fungi. These fungi, *Aspergillus flavus* and *Aspergillus parasiticus,* can be recognized by yellow-green or gray-green, respectively, on corn kernels, in the field or in storage. Although aflatoxins are not automatically produced whenever grain becomes moldy, the risk of aflatoxin contamination is greater in damaged, moldy corn than in corn with little mold. Aflatoxins are harmful or fatal to livestock and are considered carcinogenic (cancer-causing) to animals and humans. In the South, aflatoxin levels are highest during hot, dry summers. The prime conditions for the fungus to produce toxin are warm summer nights in a period of drought.

In high-risk years, aflatoxin screening may be done at the elevator or where the corn is marketed. Rapid, on-site tests can determine the possible presence of aflatoxin, but they do not provide specific quantitative results. The toxins are produced **inside** the corn kernels and their presence can be determined only by specific analytical tests. Because aflatoxin levels can vary greatly from kernel to kernel, sampling the load, bin, or unit of grain is the most critical step in determining actual levels of aflatoxin.

Disease Cycle

The fungi *Aspergillus flavus* and *Aspergillus parasiticus* are widely distributed in nature. *Aspergillus flavus* has been reported to occur on many types of organic material including forages, cereal grains, food and feed products and decaying vegetation in cultivated soils. *Aspergillus flavus* can also produce specialized survival structures which allow it to survive in the soil for extended periods of time.

In the field: Initially, it was believed that *Aspergillus flavus* was only a problem on corn in storage. But it has since been shown that *Aspergillus flavus* can also attack corn in the field. Field infection of corn by *Aspergillus flavus* can result in aflatoxin production in the corn prior to harvest. The fungus is able to invade through the corn silks or in association with insect damage to kernels and ears.

Temperatures ranging from 80 degrees F to 100 degrees F and a relative humidity of 85% are optimum for *Aspergillus flavus* growth and aflatoxin production. Periods of drought and heat stress during the growing season, especially during pollination and as kernels mature, favor *Aspergillus flavus* infection. Corn damaged by insects or weather factors such as hail that cracks the pericarp and wind storms, may also be predisposed to infection by *Aspergillus flavus*.

On corn in the field *Aspergillus flavus* is evident as a greenish-yellow to yellowish-brown, felt-like or powdery mold growth on or between the corn kernels. Mold growth is more likely to develop adjacent to or in insect damaged kernels on ears (see figures 1 and 2).

Figure 1. *Aspergillus flavus* in standing corn.

Figure 2. Close up of *Aspergillus flavus* on corn.

In storage: *Aspergillus flavus* can also develop or continue to develop on corn in storage (see figure 3). The extent and severity of both invasion by *Aspergillus flavus* and the production of aflatoxin in the stored grain are influenced by several factors including moisture content and temperature of stored grain, condition of grain going into storage and length of storage.

Figure 3. *Aspergillus flavus* in stored corn.

Aspergillus flavus grows best on corn at 18.0-18.5 % moisture. Moisture content below 13% prevents invasion by *Aspergillus flavus*. Fungal growth may begin on corn at a moisture content lower than 18.0%. Then as the fungus grows, respiration occurs releasing heat and

moisture into the surrounding environment in the grain mass. This results in an increase in the moisture content and temperature of the surrounding corn, causing a hot spot. If moisture content and temperature continue to rise, the environment for *Aspergillus flavus* becomes more favorable. Fungal growth is best at 18% moisture. At 20% moisture content and above, other fungi grow better and crowd out *Aspergillus flavus*.

Aspergillus flavus grows best at high temperatures. The fungus will grow slowly in grain between 40-50 degrees F but will grow rapidly in grain at 80-90 degrees F.

Corn contaminated with *Aspergillus flavus* going into storage will deteriorate at a lower moisture content, at a lower temperature and in a shorter time than grain that is free or almost free of *Aspergillus flavus* as it goes into storage. Corn with cracks or breaks in the pericarps or seed coats, broken kernels or other physical damage is more subject to invasion by *Aspergillus flavus*.

It is important to note that the presence of *Aspergillus flavus* on corn does not necessarily mean that aflatoxin is also present in that corn. Circumstances that favor mold growth may also favor mycotoxin production but mold growth may also occur with little or no mycotoxin production.

Aflatoxin

Aflatoxin is a term generally used for a group of toxins produced by *Aspergillus flavus* and *Aspergillus parasiticus*. These toxins are named for the fungus producing them, e.g. "A" from the genus name *Aspergillus*, "fla" from the species name *flavus* added to toxin to give the name aflatoxin. There are several different toxins in the aflatoxin group. They are designated aflatoxin B_1 and aflatoxin B_2 (because they are blue under UV light), aflatoxin G_1 and G_2 (because they are green under UV light) and aflatoxin M_1 which may be found in milk of cows fed aflatoxin contaminated feed.

Although it has been known for more than 100 years that some kinds of moldy grains when eaten by animals or humans could cause illness, intensive study of mycotoxins and the illnesses caused by mycotoxins only dates from the 1960's. In 1960 scientists determined that the deaths of more than 100,000 turkeys in England were due to a toxic substance in the peanut meal ration fed to the birds. The toxin was a product of the mold *Aspergillus flavus* growing in the meal. The toxin was soon purified, chemically characterized and named aflatoxin. Feeding tests with laboratory animals showed that aflatoxin in amounts of a few parts of toxin per billion (ppb) parts of feed could cause serious injury, including fatal liver cancer, to animals.

Aflatoxin is extremely durable under most conditions of storage, handling and processing of seeds or in foods or feeds made from contaminated seeds. It is very heat stable and will withstand temperatures up to boiling. Toxin levels in corn may decline in storage, but may still be present after 7 years.

Aflatoxin becomes more prevalent, and therefore more of a food safety concern, during a drought because low rainfall and high temperatures encourage the growth and survival of the molds that produce the toxins. Also, crops stressed by drought and high temperatures and/or weakened by insect or other damage, (i.e. hail or frost) are more susceptible to mold growth and subsequent aflatoxin contamination. The aflatoxin-producing molds can grow on crops in the field, poorly dried harvested crops in storage and processed food and feed products.

Management Practice to Minimize Aflatoxin Problems in Field Corn

1. Plant regionally adapted hybrids.
2. Use a balanced fertility program designed for optimum yields.
3. Select planting dates appropriate for your area.
4. Follow recommended management practices to limit damage by ear feeding insects.
5. Attempt to best utilize your irrigation practices to deliver optimum water from silking stage to late dough stage.
6. Make adjustments in combine ground speed and cylinder speed to minimize trash and broken kernels in hopper. Aflatoxin is often associated with broken or light weight kernels.
7. If drought has occurred during the season, consider harvesting irrigated or high yielding fields separately from dryland or poor yielding fields.
8. Begin corn harvest when grain moisture is about 24% and dry the grain to 15% moisture within 24 hours or as soon as possible.
9. Corn which collects in auger wells and pits around dump stations frequently contains the mold or aflatoxin. Thoroughly clean all such areas before and after use. Remove leftover grain from trucks, trailers, holding bins, drying facilities and storage bins before beginning a new lot of grain.

Management Practices to Minimize Aflatoxin Problems in Stored Corn

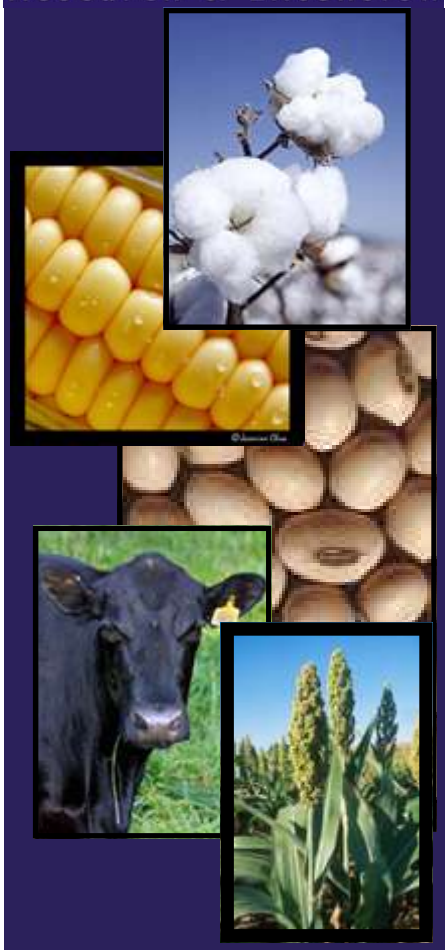
1. Thoroughly clean bins, areas around bins and all grain handling equipment before putting any grain in storage.
2. Clean grain going into storage to remove light weight and broken kernels as well as foreign material and fines.
3. Moisture content is by far the most important factor affecting the growth of microorganisms in stored corn. After harvest, corn should be dried to 15% moisture content within 24 hours. Grain going into long term storage should be dried to 13% moisture.
4. Aerate grain to safe and equalized temperatures through the grain mass.
5. Protect grain from insects.
6. Check stored grain on regular basis and aerate as needed to maintain low moisture and proper temperature.

FDA guidelines for acceptable aflatoxin level in corn based on intended use.

Intended use	**Aflatoxin level (ppb)**
Milk (Dairy Feed)	None detected
Corn of unknown destination	<20
Corn for young animals	<20
Corn for dairy cattle	<20
Corn for breeding beef cattle, swine, and mature poultry	<100
Corn for finishing swine	<200
Corn for finishing cattle	<300

7TH ANNUAL DEAN LEE RESEARCH AND EXTENSION FIELD DAY

LSU AgCenter
Research & Extension



August 20, 2009

8:30am Registration
Dewitt Livestock Facility
9:00am Field Tours
Dean Lee Research Farm
11:30am Program
State Evacuation Shelter
12:30pm Lunch
State Evacuation Shelter

2009 Dean Lee Field Day Program

Tour Stops and Speakers:

Cotton:	Don Boquet/Boyd Padget/Brenda Tubana
Soybeans:	Ronnie Levy/Rob Ferguson
Weed Science:	Daniel Stephenson/Bill Williams
Soil Fertility/Master Farmer:	Donna Morgan/J Stevens
Defoliation/Pest Management:	Daniel Stephenson/Donnie Miller/Roger Leonard

For Information regarding field day

Contact:
Dr. John Barnett
LSU AgCenter
318-427-4424

Louisiana Soybean Association (LSA)

LSA is a producer-based soybean organization affiliated with the American Soybean Association (ASA) and the United Soybean Board (USB). This organization has many roles, including updating statewide soybean producers on current legislative and environmental issues. The LSA has representatives on the ASA and USB boards. This allows Louisiana issues to be brought to a national audience. As a member of LSA, you support local, state, national and international promotion and use of soybeans. Membership is available to anyone involved in production agriculture. Agribusiness personnel are strongly encouraged to join.

When you join the LSA, you become a member of ASA, which is the collective voice of 25,000 U.S. soybean producers and other agbusiness personnel that are members of the association. By making the choice to become a member of ASA you make that collective voice even more powerful.

ASA is your advocate in Washington D.C., on issues like biodiesel legislation, the Farm Bill, transportation infrastructure and market access. This important policy work is paid for by your voluntary membership in ASA, and cannot come from checkoff dollars. As your number one advocate, ASA testifies before Congress, lobbies Congress and the Administration, provides written comments on key issues, helps develop key legislative language on soybean initiatives and relays information about the importance of ASA issues to the media.

ASA's commitment to policy development begins with the grower-members. They elect state Board members and voting delegates who establish the policy goals for ASA. For more than 85 years, ASA has been working on behalf of its members to build demand, enhance profit opportunities and protect the soybean industry. ASA is proud to represent its soybean grower members, and is looking forward to another 85 years of success.

To increase its representation on the national level, the LSA is seeking new members to be a part of their organization. By purchasing a three year membership to the LSA for $155.00 the new or renewing member will receive credit for four bags of seed at their respective seed dealership. After paying for a three year membership and purchasing your seed as you normally do, send in a copy of the receipt and where you purchased your seed back to LSA by June 30th, 2009. Your account at that seed dealership that you choose will then be credited for four bags by the respective seed representative.

The seed companies participating in the LSA membership drive are: Asgrow/DeKalb/DPL, Croplan Genetics, Delta Grow, NK/Syngenta Seed, Pioneer and Terral. If you have any questions on joining LSA call Charles Cannatella 337-207-4730 or go online at www.SoyGrowers.com.

UPCOMING EVENTS

August

08/20 Dean Lee Research and Extension Center Field Day – Alexandria
for details contact Dr. John Barnett
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PERSONNEL

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Dr. Clayton Hollier, Professor, Plant Pathology, Baton Rouge
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Visit our Web site: www.lsuagcenter.com

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Paul D. Coreil, Vice Chancellor and Director

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.