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Louisiana Crops NEWSLETTER

LSU AgCenter
Research · Extension · Teaching

CORN • COTTON • GRAIN SORGHUM • SOYBEANS • WHEAT

ISSUE HIGHLIGHTS

Updates from the field

Looking ahead

Numerous factors can cause soybean seed damage

BY SEBE BROWN

Louisiana farmers often harvest soybeans with a high percentage of damaged seed, resulting in significant marketing discounts and reduced yields. Louisiana's climatic conditions encourage high levels of insect infestations and disease presence in soybean fields. Add to this the unpredictable nature of the weather, and you have optimum conditions for seed and pod deterioration.

Seed quality is at its highest as soon as crop development is completed and before any weather-related events cause seed degradation. Seed quality is a function of initial quality at maturity, which is the cumulative effect of a variety's exposure to season-long growing conditions, including insects, diseases and the varieties' genetics. It's also a function of harvest quality, which includes effects of field weathering after maturity.

Quality differences initially originate from the producer's management practices, maturity date and the varieties' ability to protect from opportunistic diseases and fungi. Some varieties have physical and chemical attributes that allow their pod wall to maintain integrity longer than other varieties, thus protecting seeds from the effects of weathering and possibly insects and diseases. However, with enough time and moisture, all pods will deteriorate.

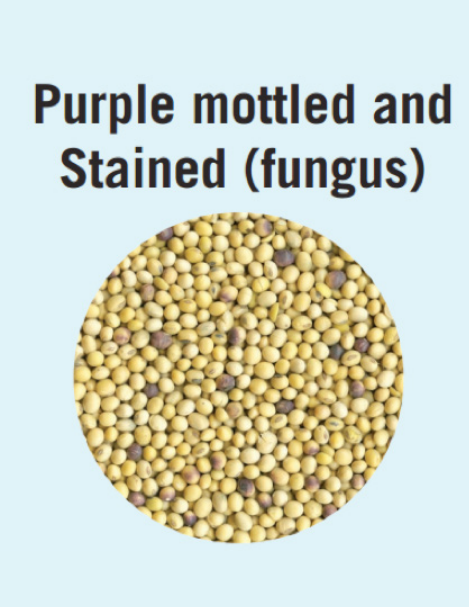
Not all seed injury is weather related, and not all seed injury is insect or disease related. Many soybean plants have combinations of injuries that usually are not caused by a single agent. Furthermore, injury to soybean seed can be very difficult to classify. Stinkbug injury can be misidentified as weathering and vice versa.

Soybeans have a remarkable ability to tolerate high levels of stress throughout the growing season and still produce a marketable, high-yielding crop. In 2017, Louisiana producers faced a wet spring followed by a dry July, then torrential rainfall in August. Aside from environmental factors, insect pressure was extremely high, with a 6-week-long corn earworm flight followed by unrelenting redbanded stinkbug pressure and substantial soybean looper and velvetbean caterpillar infestations.

All of these issues, over time, impact final yield and quality. Louisiana experiences the brunt of environmental stress in the late season, when soybean stems fail to dry down and develop green stem syndrome. Although the exact cause is unknown, soybean stems that fail to dry down typically have experienced some form of stress during the season.

With the 2017 growing season being marked with so many production challenges, it is very difficult to pin an exact cause of seed and plant injury on one factor. Louisiana's dynamic climate and diverse insect and disease spectrum makes producing soybeans or any agronomic crop a difficult endeavor.

Below are images courtesy of Mississippi State University that you can use to help identify causes of soybean seed injury. §



AgCenter corn hybrid trial data available online

BY DAN FROMME

This year, commercial corn seed companies provided 40 hybrids that were entered in the official variety trials. Five hybrid trials were conducted at four LSU AgCenter research stations located throughout the state. The seed companies voluntarily entered and selected the hybrids they wanted the AgCenter to evaluate.

In addition to the research station tests, on-farm core block demonstrations were conducted with 10 hybrids planted in 17 locations throughout the corn-growing areas of Louisiana. AgCenter extension agents coordinated these demonstrations.

The official corn hybrid trials were conducted according to AgCenter best management practices. The on-farm core block demonstrations were placed with corn producers and subjected to their standard production practices.

On-farm core block demonstration results are presented to provide yield results by trial as well as trend comparisons from the compiled data. As opposed to the official variety trial research, core block demonstrations sometimes are not replicated in the field, and a rigorous statistical analysis is not possible. However, sufficient trials were conducted at a variety of locations; therefore, meaningful and relevant observations can be made that will be useful to Louisiana producers as they make hybrid selection decisions.

The AgCenter corn hybrid trials provide the most complete and unbiased source of information on yield comparisons. This data should help you make more informed decisions about which hybrids will perform best for your production area.

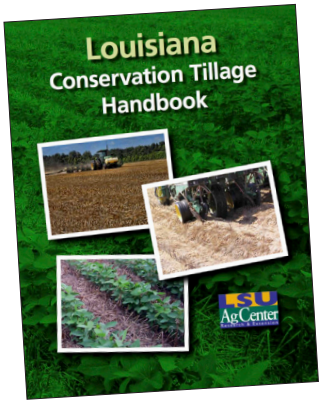
Results can found by clicking here. §

Cover crops offer many potential benefits

BY DAN FROMME

There are many reasons to plant a cover crop in the off-season. Aside from the obvious benefit of soil cover and reduced erosion, cover crops may provide a number of other advantages.

Click here to see a document that provides information from the Natural Resources Conservation Service (NRCS) on cover crop species, planting, cultural traits, and potential advantages and disadvantages.



More information on cover crops can be found in Chapter 2 of the LSU AgCenter Louisiana Conservation Tillage Handbook. Click here to access the handbook. §

Why plant cover crops?

They can potentially:

✓ Scavenge nutrients

✓ Increase water infiltration

✓ Increase plant root diversity and soil microbial diversity

✓ Fix atmospheric nitrogen

✓ Suppress weeds

✓ Minimize soil compaction

✓ Increase organic matter and improve overall soil health

Get ahead of nematode problems this fall

BY CHARLES OVERSTREET

Fall is a good time to take a look at your fields to determine if nematodes are a problem. This gives you time to deal with them before next year. The Southern root-knot and reniform nematodes, our two most important nematodes in the state, can cause considerable damage to many crops.

The Southern root-knot nematode is particularly damaging to soybeans, cotton and sweet potatoes. Although it can reproduce and develop well on corn and grain sorghum, damage to these two crops seems to be minimal. Because Southern root-knot attacks just about every field crop that we grow, it is very difficult to manage.

Reniform nematode is a major problem on soybeans, cotton and sweet potatoes, but it doesn't do very well on corn or grain sorghum. These two crops are excellent rotation crops to help control this nematode.

During this past growing season and particularly at harvest, producers should have been watching for indications that nematodes were present. Stunted plants, slow development, delayed fruiting and early senescence and death were symptoms that I observed in a number of fields this past year. These are clear signs of serious injury. The root-knot nematode produces galling on the roots, which can be striking on soybeans. Galls may be much smaller on other plants, such as cotton and especially corn and grain sorghum.

One of the best ways a producer can find out if nematodes are a problem is through soil samples that are analyzed for plant-parasitic nematodes. If you are not sure if nematodes are a problem or you want to find out what kinds of population levels are present in a field, soil sampling is a great way to get information.

After harvest is usually a good time to collect soil samples for nematode analysis. I recommend there be sufficient moisture present to get a sample from at least 6 to 8 inches deep. If it is too dry, simply wait for adequate rainfall to moisten the soil.

There are several ways a producer or consultant can go about collecting soil samples.

The **first method** is called traditional sampling and consists of dividing a field into 15- to 20-acre plots and collecting soil cores in a zig-zag pattern in each plot. This type of sampling would work best if the soil types are very similar in the field.

Figure 1. Stunted plants showing visible symptoms in the growing season. LSU AGCENTER PHOTO

Figure 2. Late-season damage showing up on soybeans. Early senescence and death of the plants. LSU AGCENTER PHOTO

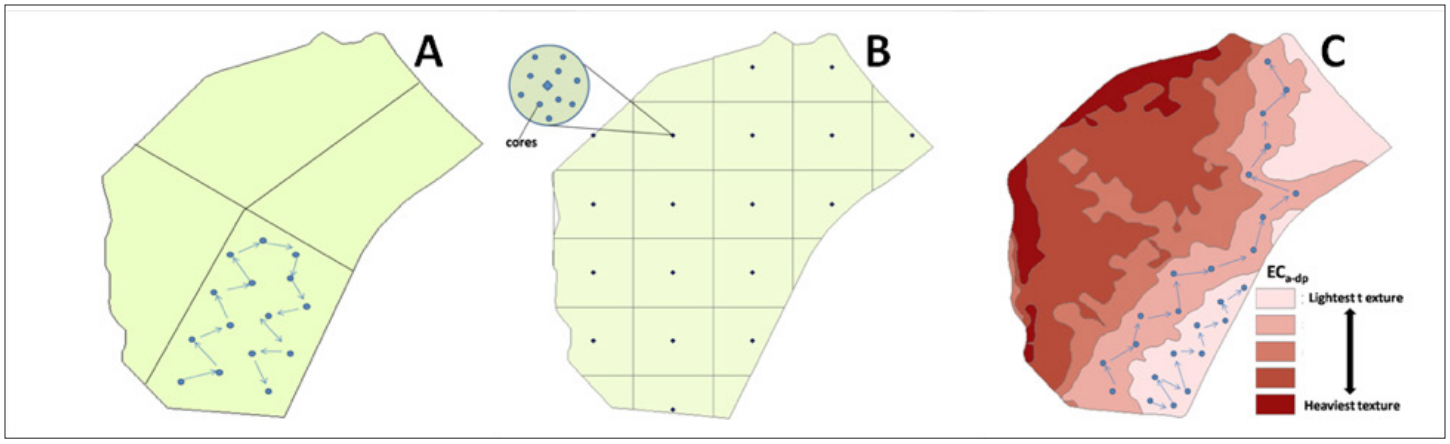


Figure 3. These are the different methods that may be used to collect nematode samples in a field.
A. Classical method done by dividing field into large areas and zig-zag soil cores for sample
B. Grid sampling into smaller units and sampling around a center point
C. Zone sampling into similar areas. This is based on VERIS data (EC_a) that can be used to divide a field into similar soils.
LSU AGCENTER GRAPHIC

The **second method** is called grid sampling. The field is divided into 2.5- to 5-acre plots using a grid. Grid sampling usually requires some type of handheld GPS device with a mapping program that can import the boundary of the field and divide it using the different grids. There is a center point in each grid, and a series of probes are collected from 10 to 25 feet around that point.

The **third method** is zone sampling, which requires the field to be divided in zones that are usually developed from apparent electrical conductivity (EC_a) or soil types. Like the grid sampling, this method requires a GPS device with a program that can show the field divided into the various zones. Soil samples are collected from each zone by pulling soil cores in a method that represents the area. Zone sampling may be very useful when various soil textures are present in the same field.

A **fourth method** is to simply collect a sample from an area where you detected a problem during the growing season or an area that showed up as weak on a yield monitor. You will need to collect 10 to 15 soil cores from the suspected area for nematode analysis. This method should be used only if you have not experienced serious problems.

Nematode samples always should be placed in a plastic bag to keep the soil from drying out. Nematodes require some moisture to stay alive, so don't let them dry out. Also, nematodes don't like it too hot or too cold. Keep samples in a cool, room temperature environment until you can mail them in. The extraction process requires about half a pint of soil, so be sure to send at least a pint for each sample.

Information on how to submit a sample to the LSU AgCenter is available here. Be sure to fill out the Nematode Assay Form with sufficient information so a proper recommendation can be made. It is helpful to know what options you have when it comes to different crops that could be planted. When you send your nematode samples, be sure to include the $10 fee that is charged per sample.

If nematodes are found to be a problem in production fields, management plans can be developed for next year. When high levels of nematodes such as root-knot or reniform are present, I usually recommend rotation to a less susceptible crop. Some cotton, soybean and sweet potato varieties are resistant to these nematodes. Resistant varieties may be all that is needed.

Nematicides also are available to help manage nematodes. Nematicides include seed treatment and in-furrow sprays, which are best for low to moderate levels of the nematodes, and fumigants, which are best for high populations.

Following some of these management strategies can ensure that nematodes are not a serious problem for our producers. §

Now is a good time to test your soil

BY DAN FROMME

Soil testing is a best management practice that can help farmers make agronomically sound, economically profitable and environmentally responsible decisions. If no nutrients are applied in a corn-soybean rotation with high or very high soil tests, phosphorus levels will typically drop 5 to 6 pounds per acre per year and potassium levels will decline about 10 to 15 pounds per acre per year.

In 2010, 87 percent of soil samples in Louisiana tested below the critical level for phosphorus and 76 percent were below the critical level for potassium, according to the International Plant Nutrition Institute. The critical level is the soil test level below which nutrient inputs are required to meet soil fertility management objectives. If you continue to mine the soil, it could take several years of higher fertilizer rates to restore optimum productivity.

Basically, soil tests serve two functions: indicating the nutrient levels in the soil and where to start in developing a fertilizer or lime program. A sound program can be prescribed by combining this information with cropping history and the overall soil productivity potential of the field.

Also, soil tests can be used on a regular basis to monitor the production system and to measure trends and changes. This helps maintain the overall fertility program on the same level with other production inputs.

After you have selected a soil laboratory to do the testing, stay with that one. Switching from lab to lab creates confusion in monitoring nutrient availability because of differences in analytical procedures.

Fertilizer and lime inputs represent a significant portion of production costs. Their efficient use is critical to farm profits and environmental protection. Before you apply your fertilizer this fall, soil test and see how much you have in the bank. §

A group of soil samples is dried, ground and prepared for further testing at the LSU AgCenter Soil Testing and Plant Analysis Lab in Sturgis Hall at LSU. You can read a recent feature about the AgCenter lab by clicking here.
LSU AGCENTER PHOTO

LSU AGCENTER SPECIALISTS

SPECIALTY	CROP RESPONSIBILITIES	NAME	PHONE	EMAIL
Corn	Agronomic	Dan Fromme	318-880-8079	DFromme@agcenter.lsu.edu
Cotton	Agronomic	Dan Fromme	318-880-8079	DFromme@agcenter.lsu.edu
Grain sorghum	Agronomic	Dan Fromme	318-880-8079	DFromme@agcenter.lsu.edu
Soybeans	Agronomic	Todd Spivey	919-725-1359	TSpivey@agcenter.lsu.edu
Wheat	Agronomic	Boyd Padgett	318-614-4354	BPadgett@agcenter.lsu.edu
Entomology	Corn, cotton, grain sorghum, soybeans, wheat	Sebe Brown	318-498-1283	SBrown@agcenter.lsu.edu
Weed science	Corn, cotton, grain sorghum, soybeans	Daniel Stephenson	318-308-7225	DStephenson@agcenter.lsu.edu
Nematodes	Agronomic	Charlie Overstreet	225-578-2186	COverstreet@agcenter.lsu.edu
Pathology	Corn, cotton, grain sorghum, soybeans, wheat	Trey Price	318-235-9805	PPrice@agcenter.lsu.edu
Pathology	Cotton, grain sorghum, soybeans	Clayton Hollier	225-578-4487	CHollier@agcenter.lsu.edu
Irrigation	Corn, cotton, grain sorghum, soybeans	Stacia Davis	904-891-1103	SDavis@agcenter.lsu.edu
Ag economics	Cotton, feed grains, soybeans	Kurt Guidry	225-578-3282	KMGuidry@agcenter.lsu.edu

Distribution of the Louisiana Crops newsletter is coordinated by

Dan Fromme

Dean Lee Research and Extension Center

8105 Tom Bowman Drive

Alexandria, LA 71302

Phone: 318-473-6522

Fax: 318-473-6503

We're on the web.

www.lsuagcenter.com/topics/crops

www.louisianacrops.com

William B. Richardson, LSU Vice President for Agriculture

Louisiana State University Agricultural Center

Louisiana Agricultural Experiment Station

Louisiana Cooperative Extension Service

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