

Corn and Wheat

by Dr. Erick Larson

Agronomy Notes

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Corn Hybrid Trials Available Online - The MSU Corn for Grain and Grain Sorghum Hybrid Trials are posted on the MSUcares.com Variety Testing website (under the link titled "Preliminary Yield Data.")

<http://msucares.com/crops/variety/index.html>

Later this month, after revisions are incorporated, the publication will be released. The publication will then be available in the "Published Trials" link or in a hardcopy format.

What Shall I Grow? – High fuel, fertilizer and seed prices will likely reduce Mississippi corn acreage next year. However, despite seasonal economics (which caused the dramatic recent Southern grain explosion), growers should try to integrate one of the most beneficial practices employed in the South into their cropping system – crop rotation. Crop rotation benefits are easy to overlook when comparing budgets of crop A vs. crop B, but if growers go back to monoculture systems, the numbers aren't going to pencil out nearly as well. The reason is relatively simple – crop rotation significantly increases productivity of all your crops, while reducing input costs. Reports consistently indicate 10-20% yield advantages for cotton or soybeans grown in rotation with corn on Mississippi farms. Crop rotations normally improve yields because many weed, insect, nematode and disease problems build up when using the same management program every year. Crop rotation systems effectively disrupt many of these cumulative effects, preventing problems, reducing input costs and increasing yields. Crop rotation allows the producer to attack predominant pest problems by altering tillage systems, changing chemistry, and disrupting life cycles. The primary long-term benefit of utilizing corn crop rotation is it improves soil physical properties by increasing organic matter, increasing the proportion of large soil aggregates, and increasing soil-water infiltration and water holding capacity. This reduces the need for expensive annual deep tillage operations and irrigation. Numerous other beneficial effects of rotation have been reported, including improvements in soil fertility, soil moisture, soil microbes, and phytotoxic compounds and/or growth promoting substances originating from crop residues. A crop rotation system also spreads risk in case of unpredictable problems. Growers can maintain these benefits by continuing to rotate crops on a yearly basis.

Delayed Wheat Planting - If rainfall delays wheat planting, wheat growers in the south may still achieve high yields if wheat meets vernalization requirements (accumulation of cold temperature needed to trigger head development the following spring) and tillering doesn't suffer. Optimum planting dates actually extend through mid-November for the northern part of the state and early December for south MS. Producers can compensate for problems associated with delayed planting by increasing seeding rate and planting varieties with a relatively short vernalization requirement. Fall or late winter nitrogen application (15-20 pounds per acre) can also be used to stimulate tillering of late-emerging wheat. Diammonium phosphate (DAP 18-46-0) is an excellent fall fertilizer source to broadcast on late-planted wheat because it supplies both nitrogen and phosphorus, which will promote vigorous growth and advance maturity - essentially serving as a "starter fertilizer."

Fall Weed Control in Wheat – Many winter weed species, including wild garlic, henbit, annual bluegrass, and ryegrass, and summer species are emerging, particularly in early-planted wheat fields. Do not be reluctant to control these weeds now, if they are thick, because heavy competition will rob nutrients and reduce wheat tillering. Thus, fewer wheat heads will be produced next spring. I believe late herbicide timing is one of the key management areas where we often leave a lot of wheat yield potential on the table. Uninhibited weed competition for the next 90 or more days, particularly in the South, where winter dormancy is slight and not lengthy, will reduce wheat yield potential. Dicamba and 2,4-D should not be applied postemergence to wheat in the fall, because wheat is intolerant during seedling and tillering stages.

Figure 1. Winter weeds, like annual bluegrass, can hamper wheat growth and reduce yield, if allowed to grow until spring.



Nutrient and Soil Management

by Dr. Larry Oldham

Lime materials and issues: Calcitic and dolomitic limestones are expensive in Mississippi because transportation costs, whether by truck, rail, or barge, from rock quarries usually located in Alabama, Tennessee, Kentucky, and Missouri are high. A 2005 survey found the cost per ton plus application of imported lime materials ranged from \$22 to \$33 per ton depending on the wholesale source and transportation mode. In some parts of the state, transportation costs between vendor and customers drive up lime costs even more. Recently, \$60 per ton spread has been charged in south Mississippi.

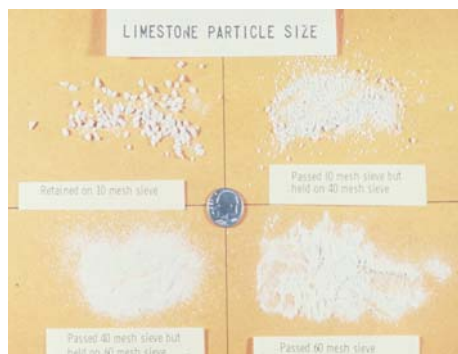
With this cost, it is important to maintain a steady soil testing program to determine lime needs, and then, if lime is required, invest in the best product available. Lime quality or value depends on three factors: purity, particle size, and moisture content:

- Purity. Calcium Carbonate Equivalent (CCE). It expresses the acid neutralizing capacity of the material as a weight percentage of pure calcium carbonate.
- Particle size. Calcitic and dolomitic lime sources are not very soluble; hence smaller lime particles have more reactive surface area to interact with soil and soil solution, therefore have more capability to neutralize soil acidity.
- Moisture. Dampness of liming materials affects handling and spreading ease, and influences the consumer perceived value of purchased lime.

Vendors of liming products are subject to the Mississippi Agricultural Liming Materials Act of 1993. These regulations state that marl which is a “softer” material than calcitic or dolomitic limestones, must have a CCE of 70% or higher, and 90% or more of the material must pass a 10-mesh screen. Calcite and dolomite sold in Mississippi must meet other criteria that use the quality factors to rate materials. Relative Neutralizing Value (RNV), alternatively known as Effective Calcium Carbonate Equivalent (ECCE), incorporates particle size and CCE to estimate lime value from required samples analyzed by the Mississippi State Chemical Laboratory.

The particle size analysis determines the percentage of lime that passes 10-mesh and 50-mesh sieves. That data is combined with the CCE analysis to determine the RNV using the assumption that particles larger than 10-mesh have no effectiveness in neutralizing soil

Figure 1. A classic photo (source unknown) of lime particle in one sample.



acidity in an agronomic timeframe. It is assumed all particles smaller than 50-mesh will dissolve to neutralize soil acidity, and half the particles in between these two sizes will react. This information is then used to calculate the RNV of that material. More information about this subject is available in MSU-ES Information Sheet 1587 [Limestone Relative Neutralizing Value](#). All agricultural liming materials, other than marl, sold in Mississippi must have a minimum RNV of 63. Twenty samples of hard rock agricultural liming materials available at Mississippi retail locations were analyzed by standard procedures in a 2005 survey. Since several retailers used the same wholesale supplier, the tests included materials from six quarries in four states. Two locations provided pelletized material obtained from one source. To maintain anonymity, means for sample sizes of 2 or less are not provided in Table 1.

Table 1. Means Relative Neutralizing Values of bulk agricultural liming materials available at retail locations in Mississippi in May, 2005. (means and standard deviations not given for means when sample size less than or equal to 2.)

	<u>Average RNV</u>	<u>Standard Deviation</u>
Overall	71.0	6.3
State 1	70.2	6.0
State 2	75.4	8.9
State 3	69.0	1.5
Quarry 2	66.7	0.6
Quarry 3	78.1	1.6
Quarry 4	75.4	8.9
Quarry 5	69.0	1.5

Fall is the best time to apply lime in Mississippi. However, if you really need it, anytime is a good time. Hopefully you can find good quality material nearby that will serve your needs.

Fertilizer costs: Fertilizer prices are rather volatile in recent weeks. Transportation issues (rail, barge, ship, diesel prices), increased southern hemisphere demand, and varying crop acreage forecasts are all influencing current prices. Develop good relationships with suppliers and stay in touch. Many MSU ES soil fertility recommendation Information Sheets are in differing revision phases with the Office of Agricultural Communications. As they are finalized, the updated versions can be found at:

<http://msucares.com/crops/fertilizer/index.html>, or the publications page.

Forages

by Dr. Rocky Lemus

Forage testing assesses the nutrient composition of forages and permits a producer to develop feeding programs and commercial hay producers develop marketing strategies. Drought conditions in Mississippi have increased the demand for hay, and prices throughout the state remain high. Since hay and other stored forages play a major role in winter feeding programs, having the hay tested now will provide producers with adequate time to design a good feeding program that improves hay utilization and optimizes livestock performance. Forage testing will provide more accurate information about the forage nutritive value and how to adjust the amount of protein and energy supplements necessary to meet animal requirements.

Forage quality is defined as the potential of forage to produce a desired animal response (consumption, nutrition value, and the resulting animal performance). Hay quality includes palatability, digestibility, intake, nutrient content, and anti-quality factors.

How to collect a hay sample? Producers should routinely get a representative hay analysis of all hay since forage quality can change based on forage species and mixtures, maturity, management, harvest and storage conditions, rain damage, and insect or disease damage. Every hay lot should be sampled separately. A hay lot is defined as hay from the same field, same cutting, harvested under the same environmental conditions, and having a uniform forage composition (grass or legume only, or grass/legume mixture).

To accurately determine the quality of the hay, a representative sample must be taken using a hay probe. Use a hay probe that is 12 to 24 inches long and 3/8 to 5/8 inches in diameter. Grabbing and pulling hay from different bales is not the correct method, and it will not provide uniform samples for analysis. Producers should sample 15 to 20 round bales depending on the number of bales in the lot, and samples should be taken in the round edge of the bale. For example, a hay lot that contains 300 bales, sample every 15th bale to obtain a representative sample of the entire lot. If the outer layer of the bale has deteriorated, remove that layer before sampling to avoid collecting material that will skew the analysis.

Some producers might obtain samples directly for the standing forage in the field. These samples should be taken shortly before the livestock are turned into a pasture. The producers should walk over the entire field and collect 30 to 50 random small grab samples. The grab samples are taken by reaching down and grabbing a small section of forage between the thumb and first finger and at the same height that the livestock will graze the pasture. Avoid collecting samples in areas that have high weed

infestation or areas that have high concentration of legumes or grass.

Sample at least 10 square bales near the center of their ends to ensure a uniform distribution of leaves and stems in the sample. If square bales have been stacked in an open barn, collect samples in both sides of the barn in a zigzag pattern or at different heights. Once the samples are obtained from each lot, mix the samples thoroughly in a bucket and store in a quarter-size plastic zip-lock bag. Hay samples are perishable, so it is important to ship or deliver the samples to the lab as soon as possible to prevent moisture loss and microbial deterioration of the sample.

The most practical way to determine the quality of feed and forages is through chemical analysis. Submit hay samples in a quarter-size zip-lock bag. Label the bag with the all the necessary information using a permanent marker (producer's name, hay lot, forage species, hay cutting, weather conditions, etc). Sometimes information written on a plastic zip-lock bag could be erased, so make sure that a label with the same information is placed inside the bag as a preventive measure and for easy identification. Fill out the information sheet provided by the forage testing lab. If producers are working with Extension agents and livestock or forage Extension specialists, some laboratories will send copies of the report to them as well, so make sure their names and addresses are in the appropriate places on the form.

Depending on where the samples are sent for analysis, quality assessment and hay feeding adjustment results can take up to three weeks, depending on the time of year and the location of the forage lab. Mississippi State Chemical Lab can process forage samples for nutrient analysis, or send samples to a private certified forage testing lab of your choice. For more information on how to send samples to Mississippi State, visit <http://www.msucares.com> or contact your County Extension Office. The cost for analysis of CP, ADF, and NDF ranges from about \$15 to \$50, depending on labs. Once the results come back, use them to balance the forage-feeding program for the various groups of livestock on your farm.

Hay utilization by livestock can be improved by knowing the nutrient composition of the hay--especially crude protein, fiber, and total energy. The accuracy of forage analysis depends on the sample that you send to the lab. In many feeding programs, the sample is the weak link. The results of the lab tests will be useful only if the sample accurately represents what your animals will be eating. This information could decrease feed cost per animal,

Forages continued ...

by Dr. Rocky Lemus

maintaining or increasing production. Poor sampling will result in misleading values, higher feed costs, and reduced performance. Keep in mind that every field and every cutting will be different. Increasing profitability per animal will depend on forage quality and utilization. The results of forage tests may be compared to the requirements for TDN and protein of different classes of livestock. If you do not know how to use the results, contact your County Extension Office or livestock/forage specialists for guidance. It is important to balance hay nutrient composition from test results when possible with proper minerals and vitamins or appropriate additives.

Table 1. Forage Quality Standards.

Quality	Grass Hay		Legume Hay	
	TDN	CP	TDN	CP
----- Percent Dry Matter Basis -----				
Excellent	> 58	> 12	> 64	> 18
Good	55 – 57	10 – 11	60 – 63	16 – 17
Fair	52 – 54	8 – 9	57 – 59	14 – 15
Poor	< 52	< 8	< 57	< 14

Note: Determine hay quality by TDN rating. If hay does not meet CP requirements or is less than 83% DM, lower one grade. Source: www.msucare.com

Cotton

by Dr. Darrin Dodds

The 24th Annual Cotton Short Course will be held at the Bost Extension Center on the campus of Mississippi State University on December 11th and 12th 2007. We are currently working on finalizing the program for this years' short course. Pre-registration is available using the attached form or on-line at: <http://msucares.com/crops/cotton/short-course07/index.html>. Pre-registration \$80 and is available until November 30, 2007. Registration after November 30, 2007, including at the door, will be \$100.

The program will begin at 10 a.m. on December 11th, 2007 and will conclude at approximately 4:45 p.m. on December 12th. Topics covered at the 2007 Cotton Short Course include: tillage effects on cotton production, cotton fertility and soil sampling methods, agronomic aspects of cotton planting, disease and weed management, insect and nematode management, plant growth management, as well as marketing and emerging issues in cotton pest management. Certified Crop Adviser (CCA) continuing education units (CEU) will be available.

Additionally, a social event and steak dinner will be held at 6 p.m. at the Starkville Country Club on the evening of December 11th. Cost for the social event and steak dinner is \$10 per person. I would like to cordially invite everyone to attend the 24th Annual Cotton Short Course held at Mississippi State University on December 11th and 12th 2007.

Peanuts

by Mike Howell

The Peanut Short course will be held in Hattiesburg, Mississippi on January 22, 2008 at the Forrest County Extension Office.

The program will begin at 8:00 a.m. and end at approximately 4:00 p.m.

If you need additional information, please feel free to contact Mike Howell, Area Agronomist at (228) 865-4227.

Mississippi Crop College

The Mississippi Crop College
will be held at
Mississippi State University
Bost Extension Center

February 12 - 14

To receive Agronomy Notes via email, please contact Tammy Scott at (662) 325-2701.

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Michael Collins

PRE-REGISTRATION FORM



**December 11-12, 2007
Mississippi State University
Bost Extension Center**

Pre-registration and information available on line at:
<http://msucares.com/crops/cotton/short-course/07/index.html>

Please print or type

Name _____

Institution or Firm _____

Address _____

City _____ State _____ Zip Code _____

Phone Number _____ Fax Number _____

Social/Dinner on 11th at 6:00 p.m.

Will attend the social/dinner on the 11th (\$10.00 Fee).

Will not attend the social/dinner on the 11th.

**Pre-registration \$80
On-site registration \$100**

Pre-registration DEADLINE is November 30th.

Mail pre-registration form and payment to Cotton Short Course, Attention Tammy Scott, Box 9555, Mississippi State, MS 39762. Please make check payable to *MSU-ES Cotton Short Course*.

Send in your Pre-registration today!