k-state extension AGRONOMY e-Updates

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1. Nitrogen fertilization of bromegrass this spring

With nitrogen (N) fertilizer costs increasing dramatically, and hay prices remaining fairly constant, many farmers are questioning how much, if any, N fertilizer should be applied to brome this spring. To answer that question, we summarized the results of more than 100 experiments conducted in Kansas since 1975, and looked closely at the response of brome to spring-applied N fertilizer.

The summary gives a nice response curve, with average yields ranging from an unfertilized check yield of 1.35 tons of hay per acre, to a maximum yield of 3.15 tons of hay with 140 pounds of N. Doing some simple cost-and-return calculations, using $60 per ton as the value of the hay produced and $0.55 per pound for the N, the following table was generated:

N Rate (lbs N/acre)	Hay Yield (tons dry matter/acre)	Hay Yield Increase From 20 pounds N (tons dry matter/acre)	Return to an additional 20 pounds of N fertilizer (tons dry matter/acre)
0	1.35	-------	------
20	1.80	0.45	$16
40	2.20	0.40	$13
60	2.52	0.32	$8.20
80	2.78	0.26	$4.60
100	2.97	0.19	$0.40

120	3.10	0.13	-$3.20
140	3.15	0.05	-$8.00
160	3.14	-0.01	-$11.00

From these calculations, the appropriate N rate this spring to maximize profit is between 80 and 100 pounds of N per acre -- not the 140 pounds of N which gives maximum yield. One issue these calculations don't consider, however, is hay quality. Protein levels will be increased at the higher N fertilizer rates. So in cases where producers are relying on high-quality hay as their primary protein source, they may want to push N rates a little higher, or add supplemental protein to rations.

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2. Spring wheat in Kansas

The high market price for spring wheat has raised some questions about whether this crop can be successfully grown in Kansas. There have been occasional performance tests at K-State on spring small grains. The most recent test report was in 2004, which includes data from Colby (2001 and 2004) and Hutchinson (2003 and 2004).
http://www.oznet.ksu.edu/library/crpsl2/samplers/SRP931.asp

Over all locations and years, yields of spring wheat planted in late February averaged 22 bushels per acre. The test weight averaged 50 lbs per bushel. The standard test weight for No. 1 hard red spring wheat is 58 pounds per bushel, so the low test weight of spring wheat grown in Kansas is a major concern.

Some of the performance tests on spring cereals also included spring-planted winter wheat. Yields and test weights of winter wheat planted in the spring were even less than that of spring wheat. In some cases, winter wheat (even Jagger) yielded 0 when planted in the spring. If producers do want to grow spring wheat, they should choose a variety with early maturity. Resistance to leaf diseases would also be important.

Protein quality of spring wheat grown in Kansas may also be less than the protein quality of spring wheat grown in the Northern Plains.

The problem with either spring or winter wheat planted in the spring in Kansas is that the weather almost always turns hot and dry by the time this wheat is filling grain. That results in low test weight, shriveled grain, and low yields.

If spring wheat is grown in Kansas, producers should be aware that it will typically mature a week or two later than winter wheat. This may affect harvesting decisions. If spring wheat is used to thicken a poor stand of winter wheat, the winter wheat will mature first and may start to shatter before the spring wheat is ready to harvest. It is also

important to keep spring wheat and winter wheat separate, unless the wheat will be used as livestock feed. If the two classes are mixed, the wheat will be discounted heavily. The best approach would be to plant spring wheat on a whole-field basis, not interspersed with winter wheat in the same field.

Marketing spring wheat in Kansas may be especially difficult. Local markets are hard to find. If the spring wheat is shipped directly from the farm to northern locations, the normally low quality of spring wheat produced in Kansas may result in lower prices than producers expect. Low test weight and poor protein quality are two of the major concerns.

To summarize, producing spring wheat in Kansas may be tempting this year because of high prices, but there are significant obstacles to overcome: low yields, low test weights, poor protein quality, and a lack of local markets. To think that hard red spring wheat grown in Kansas will bring the kind of high prices currently posted on the Minneapolis Grain Exchange is not realistic.

-- Jim Shroyer, Extension Agronomy State Leader
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3. No-till, continuous wheat and tan spot research

One of the main problems in continuous, no-till wheat production is tan spot disease. This disease organism lives on wheat residue. If the residue is not incorporated into the soil with tillage, tan spot can re-infect subsequent wheat crops grown on the same field and cause significant yield loss.

That does not mean that continuous, no-till wheat is not possible, however. By using varieties with resistance to tan spot, or by applying foliar fungicides, producers can effectively control this problem

Recent research at K-State by agronomy graduate student Mauro Carignano has proven the effectiveness of these two practices.

Effect of Variety and Fungicide on Tan Spot in Continuous, No-Till Wheat		
	% Tan Spot Severity	
Variety	No Fungicide	Fungicide
2145 (susceptible)	30	3
Overley (moderately resistant)	11	0

The results above are an average of results from Marshall, Riley, and Saline counties in 2005-2006. 2145 is susceptible to tan spot, while Overley is moderately resistant. The plots were all second-year wheat. The first year wheat in all plots was either 2145 or

Jagalene. For fungicide treatments, Quilt was applied at 14 oz per acre at boot stage, Feekes 10.

With continuous wheat, tan spot is most severe on susceptible varieties grown under no-till conditions. Fungicide applications under these conditions controlled tan spot and improved no-till yields to levels similar to those in the tilled treatments. When infections were less severe, the combination of a resistant variety and no-till resulted in yields similar to plots under tilled or burned treatments.

This research demonstrates the use of a variety resistant to tan spot under high-residue conditions is the producer's most important decision. The research also found that fungicide applications can improve wheat yields when tan spot infections are severe to very severe, as they often can be in second0year wheat grown under no-till.

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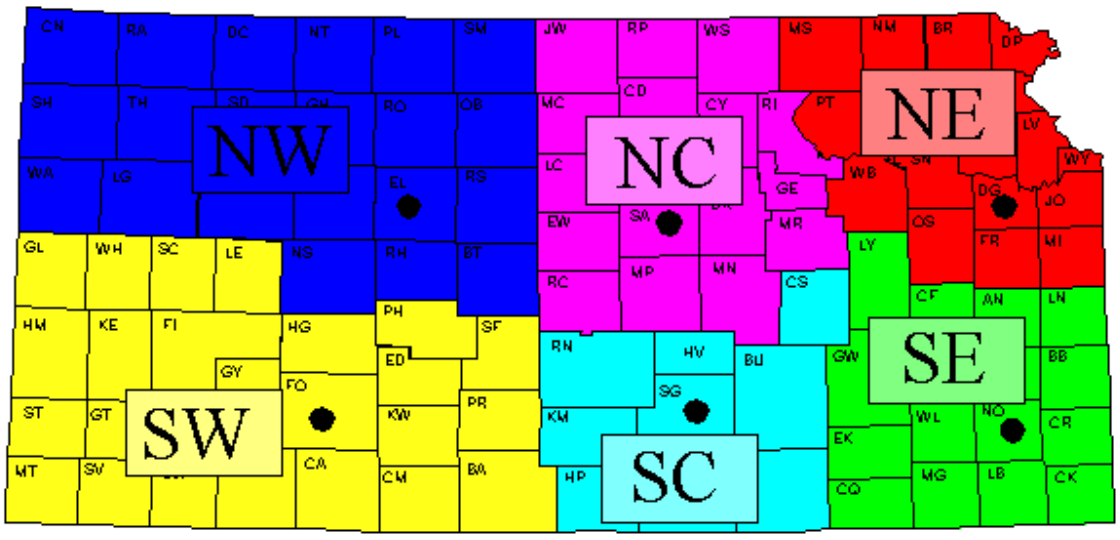
4. Where to send possible contaminated soil for analysis

A Kansas family reported a potential environmental concern to their local Extension agent last September. While tilling a garden site and watching their children play in the soil, they found a black substance that smelled like a petroleum product. The substance was brought in to the local Extension office with questions about what the substance was, if it was hazardous, and what the family should do about the situation. The question is: Where should such samples be sent for analysis?

When homeowners find a suspicious substance on their property, they need to contact their Kansas Department of Health and Environment (KDHE) district office. KDHE has the ability to quickly respond and assess many types of situations. People can also notify the district KDHE office if an area outside their property looks like it needs investigation, including reporting spills.

In this particular Kansas family's situation, the investigation revealed high levels of the carcinogen benzene on the property. This site will be remediated this spring. It is important to note that each environmental situation is unique, and is handled on a case-by-case basis.

This map shows the locations of the district offices:



http://www.kdheks.gov/directions/index.html

Contact information for KDHE:

District Office	Phone
North Central	(785) 827-9639
Northeast	(785) 842-4600
Northwest	(785) 625-5663
South Central	(316) 337-6021
Southeast	(620) 431-2390
Southwest	(620) 225-0596

To inform people about similar issues, KDHE is sponsoring "Reclaiming our Communities – the Kansas Brownfields Program." This is a series of four workshops in April that deal with Brownfield sites, which are contaminated areas that were once industrial or commercial properties. More information about the workshops can be found at http://www.kdheks.gov/brownfields/download/2008Workshop.pdf

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5. New, quicker method of measuring lagoon seepage being developed

Seepage from animal waste lagoons must be minimized to protect groundwater and surrounding natural systems. In 1999, a method was developed to measure lagoon seepage rates. With that technology, environmental consulting firms are able to test the lagoon seepage rate over a 5-day period, as long as the animal waste can be held back from entering the lagoon for that amount of time. The Kansas Department of Health and

the Environment sometimes requires data from these tests to meet water quality standards in Kansas.

Problems sometimes arise during the 5-day testing period. Animal facility operators may have a hard time holding the waste from emptying into the lagoon for that long, unexpected weather events may interfere or prolong the testing period, and the consultants' travel expenses during the time it takes to conduct the test are high. Also, there is a waiting list for lagoon seepage testing – consulting firms cannot keep up with the amount of sites to be tested because of the time it takes to finish a test.

To solve these issues, we are developing a more efficient way to measure lagoon seepage. The "overnight method" is now being tested at two different swine sites in Kansas. This new seepage test takes 24 hours instead of 5 days. So far, the results are encouraging. We are now refining the details and making it more user-friendly. The new technology was developed in 2007, and hopefully by this spring, we will have an accurate technology that can be passed on to consulting firms.

This quicker measuring method would make it easier for packing plants, municipal lagoons, processing plants, and other industrial sites that utilize lagoons to measure their seepage rates.

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These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, or Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader 785-532-0397 jshroyer@ksu.edu