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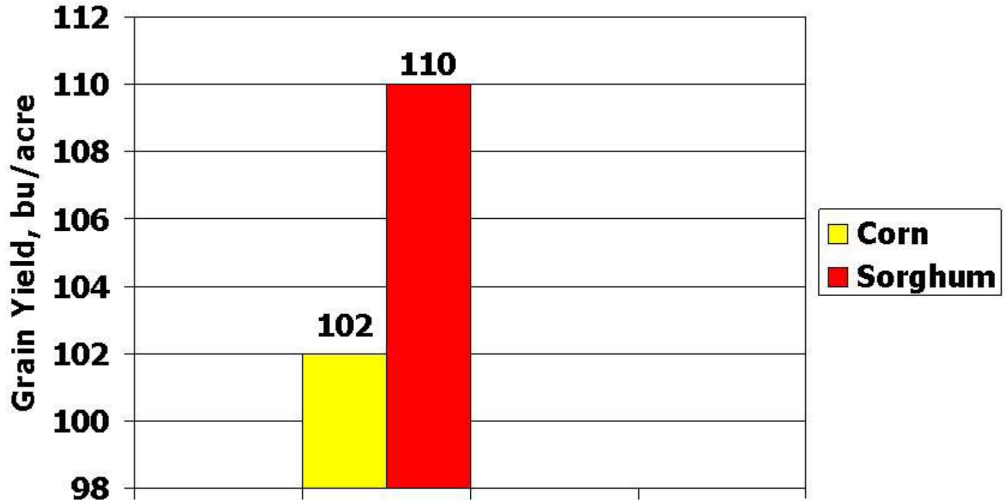
1. Comparing dryland grain sorghum and corn performance in NC Kansas

In northcentral Kansas, both grain sorghum and corn are commonly produced under dryland conditions. The potential yields of these two crops under dryland conditions depend on soil types and growing conditions.

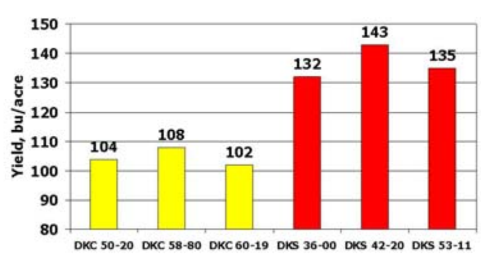
Comparing 36 site-years of tests from 1990-2004 in which grain sorghum and corn were grown side-by-side or nearby in controlled experiments in northcentral Kansas, and southcentral and southeast Nebraska, grain sorghum has shown a significant yield advantage of eight bushels per acre (bpa).

36 Site years (1990-2004) Belleville, Manhattan, South Central and Southeast, NE.

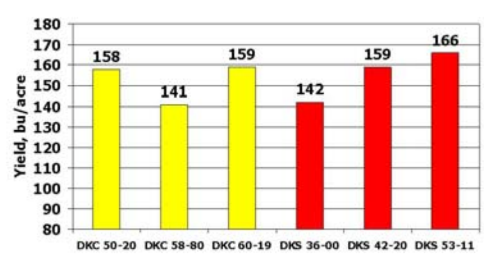


From 2004-2006, the yield advantage for grain sorghum was even greater at the North Central Experiment Field (corn = 105 bpa; grain sorghum = 137 bpa). In 2007, yields were comparable, with corn averaging 153 and grain sorghum averaging 156 bpa. Overall, dryland grain sorghum has shown a consistent yield advantage over dryland corn in many parts of this region.

Dryland Yield, Belleville, 2004-2006



Dryland Yield, Belleville, 2007



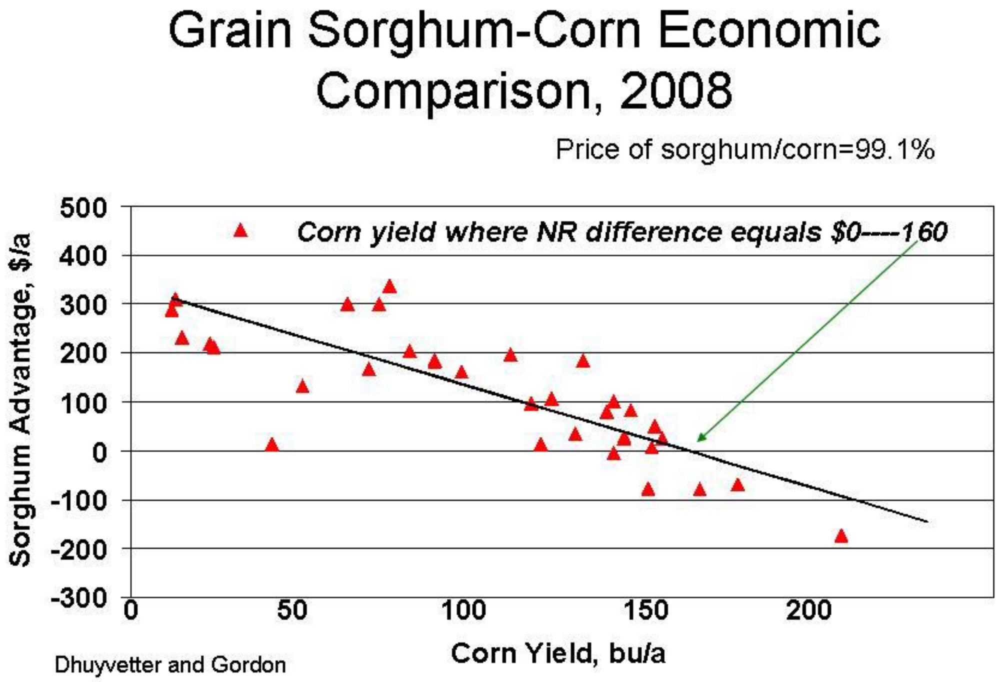
Comparing the production costs and current market prices of those two commodities, at what yield level does corn become more profitable than grain sorghum?

Economic comparisons were made using information from *Grain Sorghum Cost-Return Budget in North Central Kansas* MF-2159 and *Corn Cost-Return Budget in North Central Kansas* MF-2161, Dan O'Brien et al., available at www.agmanager.info/

Assumptions Used in Economic Comparison of Dryland Corn and Sorghum in North Central Kansas (Courtland)			
	Average Yield for Location		
	70	90	110
Sorghum costs* ($/acre)	$210.72	$255.49	$289.62
Corn costs* ($/acre)	$276.55	$310.73	$346.43
Sorghum price ($/bu)**	$4.98	$4.98	$4.98
Corn price ($/bu)**	$5.00	$5.00	$5.00
Government ($/acre)	$13.03	$14.16	$15.29
Sorghum return over costs ($/acre)	$150.91	$206.87	$273.47
Corn return over costs ($/acre)	$86.48	$153.43	$218.86

* Costs include land, labor, machinery, and production costs. Fertilizer prices, machinery costs are updated as of 2/15/08, provided by Kevin Dhuyvetter, K-State Extension Agricultural Economics.
** The crop prices used are forward contract prices at the grain elevator in Courtland, Kansas from mid-February 2008.

Corn yield was used to characterize the relative productivity of each environment. The economic advantage for sorghum was plotted against corn yield to determine which environments favored corn and which favored sorghum based on the economic assumptions presented above.



Grain sorghum and corn prices have narrowed considerably in recent years, and are now very close overall. In some areas, grain sorghum market prices are higher than corn. The point at which greater profitability switched from sorghum to corn varied with location, but is generally about 160 bpa. In other words, sorghum was more profitable in environments that supported corn yields of 160 bpa or less. Corn was more profitable in environments that supported corn yields of 160 bpa or more.

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2. The outlook for thin stands and late-emerged wheat

In some areas of Kansas, the wheat crop came up late or stands have been unusually thin. Where this is the case, should these fields be kept or destroyed and planted to a summer row crop?

Crop insurance considerations play an important role in this decision, of course. But there are also agronomic and economic factors to consider.

Wheat yields are normally only 40-60 percent of normal when it is seeded or emerges very late. But even if the field has only half a stand, it is probably worth keeping this year. With the high price of wheat currently, a field with only 15- to 20-bushel yield potential may be worth keeping this year; whereas in previous years that may not have been justified. One thing to keep in mind is that late-emerged wheat will mature later than normal, and may face more disease pressure. Spring weather conditions are especially critical to the ultimate yield of late-emerged wheat.

It is too early at this point in the season to make a reasonable estimate of yield potential. The earliest producers can start estimating yields is when the wheat reaches the jointing stage. There are still many factors that can influence yields after that time, but counting the number of tillers present at jointing time can at least provide a rough estimate of yield potential.

To make this estimate, producers can assume that each tiller per square foot will equal about one bushel of grain yield. For example, if there are 20 tillers per square foot at jointing, producers could estimate the yield potential to be about 20 bushels per acre. This is far from precise, but it will suffice as an early ballpark estimate. Normally, only about 70 to 80 percent of the tillers present at jointing will make it to heading, but this is highly dependent on weather conditions and initial tiller density.

One concern with late-emerging or late-developing wheat is that a higher percentage of the tillers will be spring as opposed to fall tillers compared to wheat that emerges during the optimal time in the fall. A study was done in 1996 comparing the number and productivity of fall and spring tillers for wheat that emerged at different times of the year.

Effect of Planting Date on Tiller Production and Yield								
		Fall Tillers (no/sq yd)			Spring Tillers (no/sq yd)			
Planting Date	Plants (no/sq yd)	Maximum	Survived the Winter	Productive	Maximum	Productive	Total spikes (no/sq yd)	Yield (bu/acre)
Sept. 28	141	1266	578	281	584	195	476	39.0
Oct. 11	207	916	594	360	659	192	552	57.7
Oct. 28	141	183	183	152	600	272	424	54.8
Nov. 13	143	147	147	117	213	144	260	30.2

Effect of Planting Date on Tiller Weight and Harvest Index				
		Tiller weight (g)		
Planting Date	Fall/Spring Tillers	Straw	Grain	Harvest Index
Sept. 28	Fall	0.92	0.48	0.34
	Spring	0.78	0.38	0.33
Oct. 11	Fall	0.95	0.77	0.45
	Spring	0.82	0.66	0.44
Oct. 28	Fall	1.13	0.95	0.46
	Spring	0.89	0.68	0.43
Nov. 13	Fall	0.98	0.73	0.43
	Spring	0.79	0.42	0.35

Source: Keeping Up With Research, SRL 133 "Planting Date Effects on Tiller Development and Productivity of Wheat," D. E. Thiry, R.G. Sears, J.P. Shroyer, and G.M. Paulsen.

Planting date had a large effect on both yields and the way yields were determined.

September 28 planting: There were a high number of tillers produced during both fall and spring. The percentage of tillers that formed spikes was the lowest of all planting dates, however, which indicates that there was a lot of competition among tillers for available water and nutrients. The harvest index was very low for both fall and spring tillers, meaning that a lower percentage of the available nutrients went into grain production than at the other planting dates.

October 11 planting: There was excellent emergence at this planting date (207 plants per square yard). There were also a high number of productive fall tillers, and a high harvest index for both fall and spring tillers. About 69 percent of the total grain yield came from fall tillers and 31 percent from spring tillers.

October 28 planting: There were more spring tillers than fall tillers. Although a high percentage of the fall tillers were productive, there weren't enough of them to produce a high yield. These plants tillered profusely in the spring, though, and those spring tillers had a high harvest index. About 44 percent of the grain yield was from fall tillers and 56 percent from spring tillers.

Nov. 18 planting: Here's where we can start to see what might happen with wheat that doesn't emerge until very late in the season. These plants had very little tillering in both fall and spring, and the stands were too thin to produce high yields. The main tillers that developed in the fall had high harvest index, but the spring tillers that formed had low weight and low harvest index. Because of the low numbers of both fall and spring tillers, and low productivity of spring tillers, yields were low.

Conclusions from the study:

* Planting date greatly affects grain yield by influencing the development and survival of tillers.

* Early planting causes excessive tillers, which have low survival, low harvest index, and low grain yield.

* Late planting causes inadequate fall tillers, which are not compensated for by spring tillers that have a low harvest index and low grain yield.

* Planting wheat within the optimum period promotes development and survival of fall and spring tillers that have high harvest index and high grain yield.

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3. The BlueSkyRAINS project for smoke management in the Flint Hills

Every spring, smoke from prescribed burns on the Flint Hills has the potential to affect air quality in eastern Kansas and surrounding states. At K-State, a method of smoke modeling is being researched that could help manage the extent and impacts of smoke plumes from the Flint Hills.

The BlueSkyRAINS web-based information system has been used in the Pacific Northwest to monitor smoke from prescribed forest burns. The system is now being tweaked to work for burns on the prairie.

There are two components to BlueSkyRAINS. "BlueSky" is a computer model developed by the USDA Forest Service to predict the impacts of smoke from prescribed, wildland, and agricultural fires. "RAINS" (Rapid Access Information System) is a Geographic Information System product of the U.S. Environmental Protection Agency (EPA). The Forest Service merged the two products into BlueSkyRAINS.

Prescribed burns in the Flint Hills are important for the prairie ecosystem and the Kansas cattle industry. The Flint Hills remains one of the largest unbroken areas of tallgrass prairie in the United States. Spring burning suppresses invasive woody shrubs and reduces mulch and residue, increasing the productivity of the grassland. As more grass grows, cattle weight gains increase, which helps the producer and the economy.

Prescribed burning does have a downside. In the spring of 2003, all Flint Hills producers burned their land at the same time due to weather conditions. A large smoke plume was created; the plume traveled over Kansas City and into Missouri. Results were seen even as far as Tennessee and northern Iowa. The smoke decreased urban air quality causing an ozone spike in Kansas City.

Prescribed burning has many benefits, but the smoke must be managed carefully.

By using BlueSkyRAINS, land managers, regulators, and the general public can view the potential smoke impacts from regional burning activities, such as prescribed burns on the Flint Hills, before the fires occur. For example, forest fire managers have used BlueSkyRAINS to tell a computer modeling system before they burn the location, time of day, and acreage to be burned. The system then animates the projected smoke plume. It can determine downwind smoke concentrations, potential public health alerts, visibility, if roads may be affected, and other effects. These predictions help managers make the best decision about when to burn.

K-State is the first organization to expand this technology beyond its use in forestry. It's an expensive undertaking, but the goal is for anyone to be able to log onto the Internet and see if it is safe to burn. If the technology can be successfully implemented, the EPA may not have to step in to regulate burns, and ranchers could rest assured that their burns won't create liability issues like traffic accidents and wildfires.

A group of researchers at K-State has just received a three-year grant to research the potential of BlueSkyRAINS in a prairie ecosystem. Burning prairie is very different than burning forests. Also, Kansas topography and climate are different than in the Pacific Northwest, so the model needs to be fined-tuned to make the readings accurate and useful. The technology will hopefully be ready for use by those in the Flint Hills at the end of the three years.

For more information on BlueSkyRAINS, see:
http://www.blueskyrains.org

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4. Winter canola production schools scheduled

K-State, in partnership with the USDA Risk Management Agency, is sponsoring several area Winter Canola Production Schools in Kansas. Interest in winter canola production is increasing. Winter canola provides Kansas producers with opportunities to introduce another viable, beneficial dryland broadleaf crop into their cropping system – one that is also economically competitive with other traditional dryland crops.

Prices offered for winter canola in Kansas have more than doubled since last fall. As of February 8, producers could contract Kansas winter canola acres (not production) at $0.2250 per pound for the 2008 crop and $0.2090 per pound for the 2009 crop. This translates to $11.25 per bushel for the 2008 crop. With a long-term average dryland yield of 1,600 to 2,000 lbs/acre, gross income would range from $360 to $450 per acre.

Winter canola provides agronomic benefits, such as improved pest control, to other cereal grass crops in dryland rotation cropping systems. This is especially useful in areas where dryland soybeans are not practical. For limited irrigation, winter canola can provide an economically attractive crop. Winter canola's water use requirement is similar to winter wheat.

Dates for the schools and contacts are as follows:

March 13 – McPherson, McPherson County Extension (620) 241-1523
March 18 –Great Bend, Barton County Extension (620) 793-1910
March 19 – Pratt, Pratt County Extension (620) 672-6121

Registration starts at 8:30 am with the program concluding at 3 pm. Lunch, courtesy of the Producers Cooperative Oil Mill, Oklahoma City is provided. Pre-registration is requested by calling the respective extension office about one week prior to the meeting. This insures adequate food and materials.

The program includes:
Canola Plant Growth and Development – Kraig Roozeboom, Extension Cropping Systems Specialist.
Winter Canola Production Practices and Considerations – Vic Martin, Extension Annual Forages and Alternative Crops Specialist.
Canola Pest Management and Canola Harvest – Bill Heer, Agronomist-In-Charge, South Central Experiment Field.
Canola Variety Selection, Hybrid Canola, and Seed Treatments – Mike Stamm, K-State/Oklahoma State University Canola Breeder
Winter Canola Crop Insurance – Jim Hamilton, USDA Risk Management Agency
Canola Marketing Opportunities – Gene Neuens, Producers Cooperative Oil Mill
Great Plains Canola Association – John Haas, Board of Directors

Producer Panel and Discussion

If there any questions or for more information, contact the respective Extension offices or Vic Martin at 620-663-5525.

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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