KANSAS FARM MANAGEMENT ASSOCIATION

Your Farm - Your Information - Your Decision

N E W S L E T T E R

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CHANGES IN CROP ACREAGE MIX FROM 1981 TO 2010

With corn, soybean, grain sorghum, and wheat prices at relatively high levels, and drought conditions throughout most of the state, it will be interesting to see how the battle for crop acreage bears out this year. This article documents the trend in the acreage of corn, grain sorghum, soybeans, wheat, and hay and silage from 1981 to 2010 for eastern, central, and western non-irrigated KFMA farms. It is important to note that both non-irrigated and irrigated crop acreage was included in the computations and that the percentages for each crop represent the percentage of that crop in relationship to harvested acres. Given that the farms are typed non-irrigated in this study, irrigated acres are a relatively minor component of crop acres for the farms examined.

Table 1 presents the crop acreage mix for eastern KFMA farms using moving five-year averages starting with the 1981 to 1985 period. The easiest way to compare acreage trends over time is to compare the average crop acreage mix to the crop acreage mix in the 2006 to 2010 period. Making this comparison, it can be seen that corn and soybeans were above the average in 2006 to 2010, and grain sorghum and wheat were below the average. Corn exhibited the largest increase accounting for approximately 12 percent of harvested acres in the 1981 to 1985 period and approximately 27 percent of harvested acres in the 2006 to 2010 period.

Also in this newsletter:

Grain sorghum and wheat both exhibited large decreases in their proportions of harvested acres. Grain sorghum dropped from approximately 17 percent of harvested acres in 1981 to 1985 to approximately 3 percent of harvested acres in 2006 to 2010, while wheat dropped from approximately 32 percent to 17 percent of harvested acres in the same periods. Though not illustrated in Table 1, crop intensity (harvested acres divided by crop acres) increased from 0.98 in the 1981 to 1985 period to 1.09 in the 2006 to 2010 period.

The trend in crop acreage mix for the central KFMA farms is presented in Table 2. Anecdotal evidence in central Kansas suggests that farms have at least slightly moved away from the continuous wheat rotation. The trends reported in Table 2 support this evidence. Wheat still represents approximately one-half of harvested acres. However, wheat as a percent of harvested acres declined from approximately 63 percent in the 1981 to 1985 period to approximately 49 percent in the 2006 to 2010 period. Corn and soybean acreage as a share of harvested acres increased dramatically over the period. Specifically, corn acreage increased from approximately 1 percent in the 1981 to 1985 period to approximately 9 percent in the 2006 to 2010 period, while soybean acreage increased from approximately 4 percent to 17 percent of harvested acres during the same periods. Though not illustrated in Table 2, crop intensity (harvested acres divided by crop acres) increased from 0.85 in the 1981 to 1985 period to 1.02 in the 2006 to 2010 period.

Table 3 presents the trend in the crop acreage mix for western KFMA farms. In the 1981 to 2000 period, wheat as a proportion of harvested acres ranged from approximately 63 to 77 percent. During the same time period, feed grains (corn and soybeans) ranged from approximately 18 to 29 percent. The mix of these crops changed quite a bit during the last ten years. Wheat accounted for approximately 55 to 59 percent of harvested acres in the last ten years, while feed grains accounted for approximately 30 to 39 percent. These results support anecdotal evidence of farms switching from a wheat/fallow to a wheat/feed grain/fallow rotation. It is particularly interesting to note the increasing importance of corn. Corn as a proportion of harvested acres increased from just 2 percent in the 1981 to 1985 period to 23 percent in the most recent period, a more than ten-fold increase. Unlike the trends in eastern and central Kansas, the proportion of acres in soybeans in western Kansas has not changed very much over the period examined. Though not illustrated in Table 3, crop intensity (harvested acres divided by crop acres) increased from 0.52 in the 1981 to 1985 period to 0.68 in the 2006 to 2010 period.

Further crop acreage information, particularly for recent years, can be found on the KFMA web site (www.agmanager.info/kfma). Information for 2011 will be available in early May.

Michael Langemeier, Professor
Department of Agricultural Economics
Kansas State University

Table 1. Crop Acreage Mix for Eastern KFMA Farms, 1981 to 2010.

Period	Corn	Grain Sorghum	Soybeans	Wheat	Hay & Silage
1981 to 1985	11.60%	17.05%	31.79%	31.86%	6.52%
1986 to 1990	14.02%	16.51%	37.57%	24.56%	5.43%
1991 to 1995	11.93%	16.10%	37.82%	27.06%	6.01%
1996 to 2000	16.63%	13.77%	44.21%	18.46%	5.70%
2001 to 2005	24.42%	8.54%	41.42%	18.20%	6.08%
2006 to 2010	27.36%	2.98%	43.43%	17.14%	7.96%
Average	**17.66%**	**12.49%**	**39.37%**	**22.88%**	**6.28%**

Table 2. Crop Acreage Mix for Central KFMA Farms, 1981 to 2010.

Period	Corn	Grain Sorghum	Soybeans	Wheat	Hay & Silage
1981 to 1985	1.15%	21.14%	4.32%	63.45%	8.68%
1986 to 1990	2.02%	19.81%	4.61%	62.61%	9.58%
1991 to 1995	4.29%	18.72%	5.16%	61.21%	9.84%
1996 to 2000	5.81%	22.88%	8.81%	52.80%	8.19%
2001 to 2005	7.17%	21.34%	11.44%	49.13%	9.20%
2006 to 2010	8.58%	15.69%	17.28%	49.32%	7.84%
Average	**4.84%**	**19.93%**	**8.60%**	**56.42%**	**8.89%**

Table 3. Crop Acreage Mix for Western KFMA Farms, 1981 to 2010.

Period	Corn	Grain Sorghum	Soybeans	Wheat	Hay & Silage
1981 to 1985	1.54%	17.04%	0.82%	73.63%	4.54%
1986 to 1990	2.04%	19.47%	0.48%	67.86%	5.47%
1991 to 1995	6.18%	11.92%	0.23%	76.61%	3.14%
1996 to 2000	13.56%	14.99%	0.81%	62.82%	3.94%
2001 to 2005	11.12%	18.91%	2.30%	58.96%	5.10%
2006 to 2010	22.62%	16.11%	1.24%	54.56%	3.26%
Average	**9.51%**	**16.41%**	**0.98%**	**65.74%**	**4.24%**

RELATIVE PROFITABILITY OF GRAIN SORGHUM ENTERPRISES

The first article in this newsletter highlighted the decline in the percentage of harvested acres represented by grain sorghum in eastern and central Kansas. Before making cropping changes, it is important to understand a farm's relative competitiveness in producing specific enterprises. Using KFMA enterprise data for 84 farms, this article examines the relative profitability of farms with continuous grain sorghum enterprise data from 2006 to 2010. This article also illustrates the large differences in breakeven prices for grain sorghum. It is important to note that approximately 70 percent of the farms with continuous grain sorghum enterprise data were from central Kansas. The vast majority of the remaining farms were from northwest Kansas.

To illustrate differences in gross income, cost, and net return (i.e., profitability), farms with continuous grain sorghum enterprise data were sorted into thirds using net return to management per acre. Cost categories include seed, fertilizer, herbicide and insecticide, crop insurance, machinery, labor, land, interest, and other. The machinery cost category includes repairs; machine hire; fuel, gas, and oil; and depreciation. The labor cost category includes hired labor as well as family and operator labor.

Table 1 presents yield, price, gross income, cost, and net return for the three net return to management categories. Figure 1 provides a graphical depiction of total cost per acre, net return to management per acre, and price per bushel differences among the net return to management categories. The difference in net return between the low and high groups was $114.54. Net return to management per acre for the high net return group was $90.42. In contrast, net return to management for the low net return group was a -$24.11. The high net return group had more grain sorghum acres, more crop acres, a higher yield, a higher price per bushel, and significantly lower total costs than the low net return group.

Gross income per acre for the high net return group was approximately 31 percent higher than that for the low net return group while total cost per acre was approximately 15 percent lower for the high net return group. Differences in gross income per acre between the high and low net return groups accounted for 66 percent of the difference in net return to management between the two groups. Differences in total cost per acre accounted for the remaining 34 percent of the difference in net return to management between the two groups. Most of the difference in gross income between the two groups was associated with yield differences. The three largest differences in costs per acre between the two groups were associated with the labor, machinery, and fertilizer cost categories. Interestingly, almost one-half of the difference in cost was due to labor cost per acre. As noted above, the high net return group had both more grain sorghum and crop acres. Specifically, the high net return group had 46 percent more grain sorghum acres and 75 percent more crop acres than the low net return group. Using this information, economies of size likely explain a portion of the lower machinery and labor costs for the high net return group.

Cost per bushel for each farm with continuous grain sorghum enterprise data from 2006 to 2010 is presented in Figure 2. The average cost per bushel over the five-year period was $3.54. This can be compared to an average grain sorghum price of $3.62 and an average gross income per bushel of $3.98. The bottom one-third group had a cost of production ($4.28) that was $1.39 per bushel higher than the cost of production for the top one-third group ($2.89). The trend line in Figure 2 emphasizes the importance of economies of scale with respect to grain sorghum production.

The analysis above was presented to motivate

grain sorghum producers to examine their production costs. For many Kansas farms, grain sorghum remains a very important crop. This fact, along with changes in crop mixes across Kansas, increases the need to know a farm's cost of production. For those interested in additional enterprise summary information, check out the KFMA web site: www.agmanager.info/kfma.

Michael Langemeier, Professor
Department of Agricultural Economics
Kansas State University

Table 1. Kansas Farm Management Association: State Average
2006-2010 Nonirrigated Grain Sorghum Enterprise Sorted by Net Return to Management per Acre

	Profit Category			Difference between High 1/3 and Low 1/3	
	High 1/3 Per Acre	Mid 1/3 Per Acre	Low 1/3 Per Acre	Acres / $	%
Number of Farms	28	28	28		
Enterprise Acres	388	445	265	123	46%
Owned Acres	65	154	79	(14)	-18%
Rented Acres	323	291	186	137	74%
Yield per Acre	95.0	86.2	76.4	18.6	24%
Operator Percentage	82.9%	79.8%	83.0%	-0.2%	0%
Price per Bushel	$3.72	$3.60	$3.56	$0.16	4%
INCOME:					
Crop Income	$298.67	$240.73	$220.38	$78.29	36%
Government Payments	$11.78	$15.35	$13.08	($1.30)	-10%
Other Income	$6.48	$13.96	$7.78	($1.29)	-17%
Gross Income	**$316.93**	**$270.04**	**$241.24**	**$75.70**	**31%**
COSTS:					
Seed	$10.88	$13.24	$12.75	($1.87)	-15%
Fertilizer	$40.37	$39.30	$44.61	($4.24)	-10%
Herbicide-Insecticide	$30.75	$33.09	$32.91	($2.16)	-7%
Crop Insurance	$10.99	$9.79	$9.13	$1.86	20%
Machinery	$51.56	$56.07	$57.98	($6.42)	-11%
Labor	$27.70	$28.63	$46.47	($18.77)	-40%
Other	$8.10	$10.36	$10.54	($2.44)	-23%
Land	$30.69	$31.67	$33.72	($3.03)	-9%
Interest	$15.47	$16.49	$17.24	($1.77)	-10%
Total Cost	**$226.51**	**$238.64**	**$265.35**	**($38.84)**	**-15%**
Net Return to Management	**$90.42**	**$31.40**	**($24.11)**	**$114.54**	

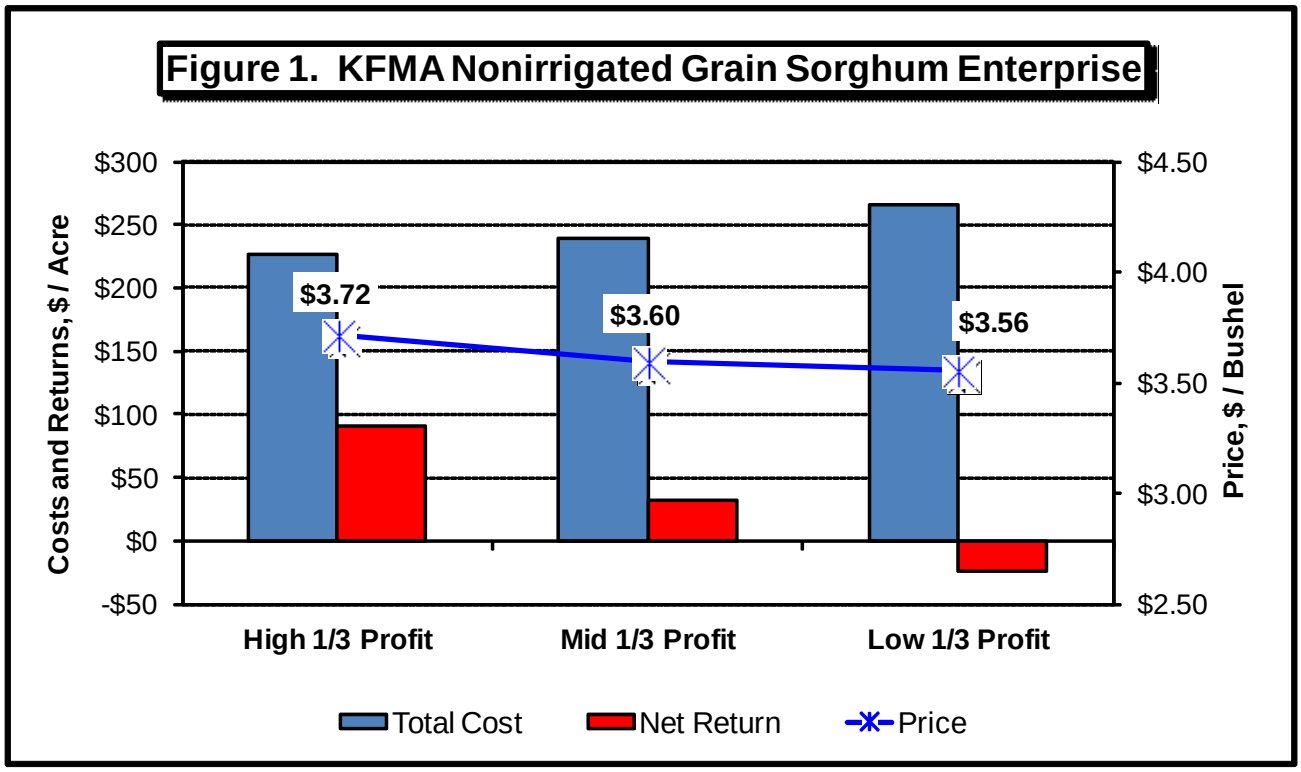
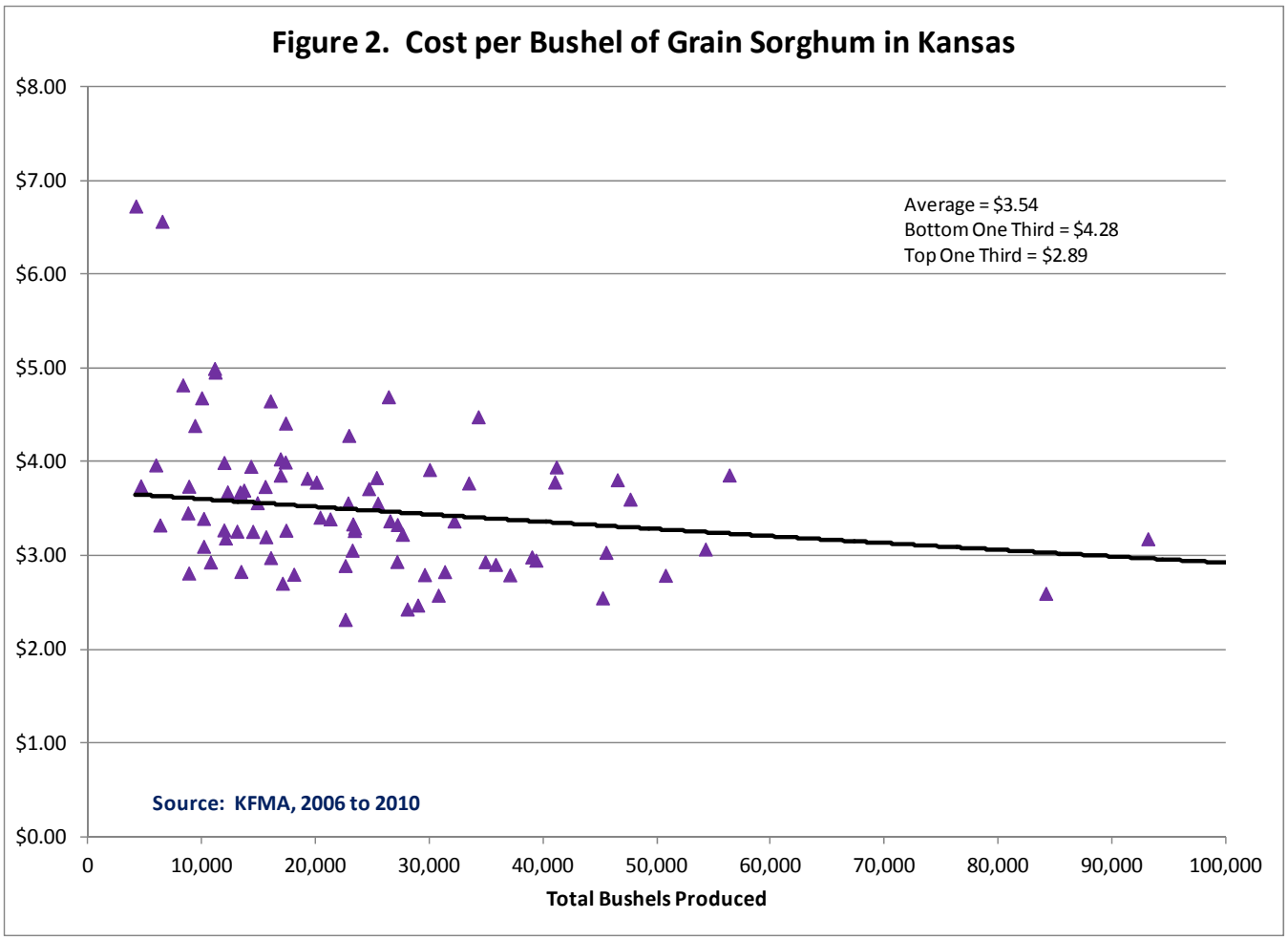


Figure 1. KFMA Nonirrigated Grain Sorghum Enterprise
$300
$250
$200
$150
$100
$50
$0
-$50
$4.50
$4.00
$3.50
$3.00
$2.50
Costs and Returns, $ / Acre
Price, $ / Bushel
$3.72
$3.60
$3.56
High 1/3 Profit
Mid 1/3 Profit
Low 1/3 Profit
Total Cost
Net Return
Price



RECOMMENDATIONS FOR FURTHER READING

The purpose of this section of the newsletter is to briefly discuss articles and web sites that may be of interest to readers. In general, the articles discussed will not report on original research. Rather, the articles will contain citations to web sites and articles that discuss topics of general interest.

Darrell Peel, an agricultural economist at Oklahoma State University, has recently discussed the historic cattle reduction due to drought in Oklahoma in his *Cow/Calf Corner* newsletter. The author projects that all cattle and calves, beef cows, beef heifers, and estimated feeder cattle in Oklahoma will be down 27.0 percent, 12.6 percent, 32.7 percent, and 48.0 percent, respectively, from the beginning of this year to the beginning of next year. He notes that Oklahoma has not had such a large drop in beef cows since the 1970s. What has made the drought so devastating in Oklahoma is the fact that it has lasted so long.

A recent USDA-ERS publication entitled "Rural America at a Glance: 2011 Edition" discusses unemployment rate, employment growth, poverty rates, and population trend differences between metro and nonmetro counties in the U.S. The nonmetro unemployment rate in the second quarter of this year was 8.2 percent. In comparison, the metro unemployment rate was 9.2 percent. As the author notes, many

individuals have become discouraged and have stopped looking for work. Including this group in the unemployed numbers yields metro and nonmetro unemployment rates of 15.1 and 16.2 percent, respectively. The article also provides a chart detailing job growth between the second quarters of 2010 and 2011. Three in five counties in the U.S., including many Kansas counties, have experienced job growth during this period. More information can be obtained from the article which is posted to my contributor site on Ag Manager under "Recommendations for Further Reading".

A recent USDA-ERS report entitled "Estimating the Substitution of Distillers' Grains for Corn and Soybean Meal in the U.S. Feed Complex" written by Linwood Hoffman and Allen Baker contains a wealth of information on current and potential DDGS use. Specifically, the authors discuss the feeding characteristics of DDGS, potential DDGS use, substitution rates of DDGS for corn and soybean meal by livestock type, DDGS supply and consumption estimates by crop year, and the aggregate substitution of DDGS for corn and soybean meal. For the 2010/11 crop year, the potential DDGS consumption was estimated to be 61.1 million metric tons (mmt). For the same crop year, the estimated supply of DDGS was 36.1 mmt. DDGS is now the second most common feedstuff used in the U.S., second only to corn. The authors note that in aggregate a metric ton of DDGS can replace on average 1.22 metric tons of feed consisting of corn and soybean meal in the U.S. For those wanting to dig into the details pertaining to DDGS use, I encourage you to check out the report which is posted on my contributor site on Ag Manager under "Recommendations for Further Reading".

Mark Wynne, a senior economist at the Federal Reserve Bank of Dallas, has recently written an article for the *Economic Letter* entitled "The Sluggish Recovery from the Great Recession: Why There is No 'V' Rebound this Time". The author notes that for most historical recessions there has been a strong rebound of gross domestic product (GDP) in quarters following the recession. The most recent recession has not shown this rebound. The current recession was the result of a banking crisis. Using multi-country analysis, the author goes on to indicate that recessions brought on by banking crises tend to experience a much slower rebound rate. More information can be obtained from the article which is posted to my contributor site on Ag Manager under "Recommendations for Further Reading".

There is a strong link between innovation and technological adoption, and national economic growth rates. Darrell West, at the Brookings Institution, discusses this link as well as policy issues related to this link in a recent article entitled "Technology and the Innovation Economy". After discussing the link between innovation and economic growth, the author discusses the need for a clear focus on innovation. He suggests that there are a number of policy areas that need to be addressed including the following: research and development tax credits, commercializing University knowledge, STEM (Science, Technology, Engineering, and Math) Workforce Training and Development, and immigration reform. Despite the high demand for STEM training, the U.S. has a smaller proportion of their students going into these fields than other developed countries. The author's immigration reform suggestions would focus on keeping more students trained in these fields in the U.S., following their graduation from U.S. Universities. More information can be found in the article which is posted to my contributor site on Ag Manager under "Recommendations for Further Reading".

Michael Langemeier, Professor
Department of Agricultural Economics
Kansas State University

The Kansas Farm Management Association (KFMA) Newsletter is distributed monthly to provide farm management information to farm decision makers. Further farm management information can be found on the KFMA program website: www.agmanager.info/kfma; and, on the Extension Agricultural Economics website: www.agmanager.info. The Newsletter is edited by Michael Langemeier, Professor, Department of Agricultural Economics, Kansas State University.