

# Wheat Economics and the Impacts of Rising Input Prices

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 Kansas State University




**Get INTENSE About Wheat**

2008 Kansas Wheat Conference  
 August 5-6, 2008  
 Grand Prairie Hotel & Convention Center  
 Hutchinson, KS

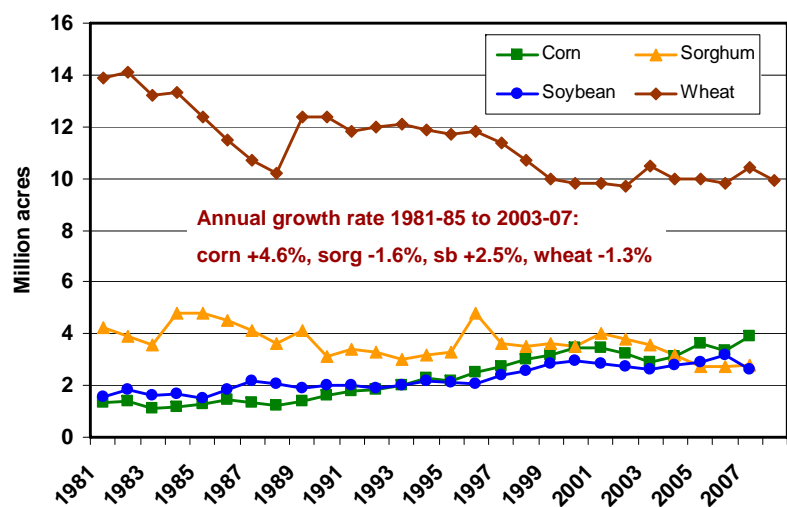

  
 Kansas State Research & Extension  
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## Outline of presentation...

- Brief overview of Kansas wheat production and historical returns
- Fuel prices
- Fertilizer prices
- Projected budgets examining profit potential for 2009

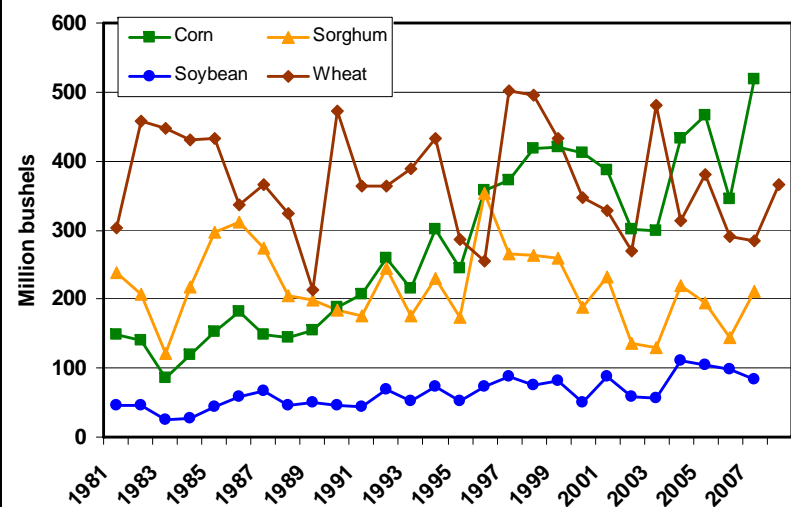

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### Planted Acres of Major Crops in Kansas

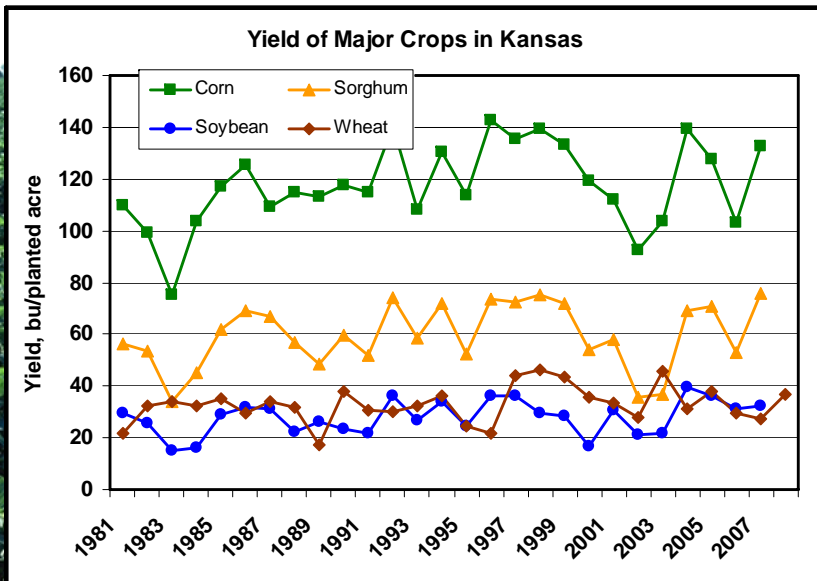


Annual growth rate 1981-85 to 2003-07: corn 5.4%, sorg -0.8%, sb 4.1%, wheat -0.8%

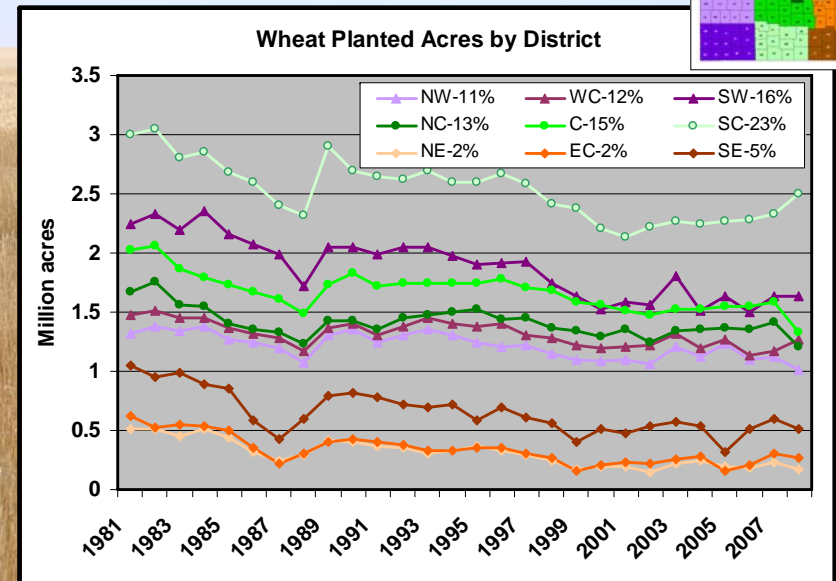
### Production of Major Crops in Kansas



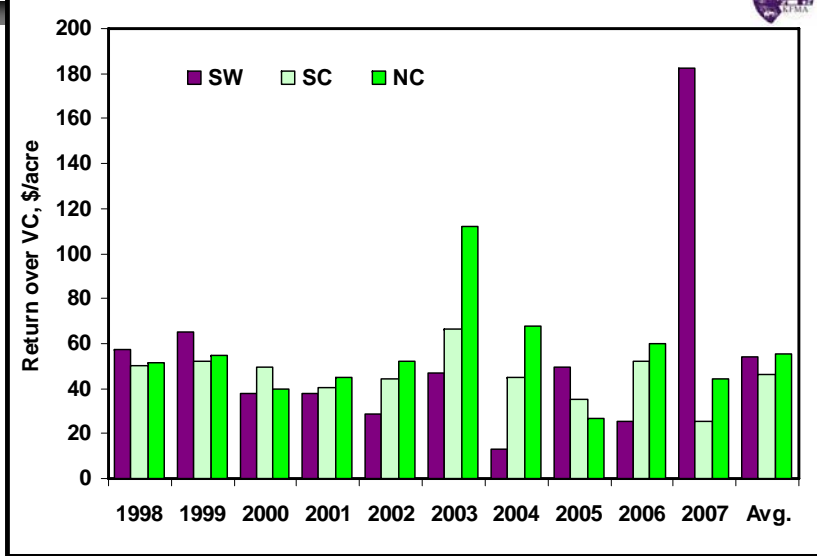
Annual growth rate 1981-85 to 2003-07: corn 0.83%, sorg 0.90%, sb 1.54%, wheat 0.46%



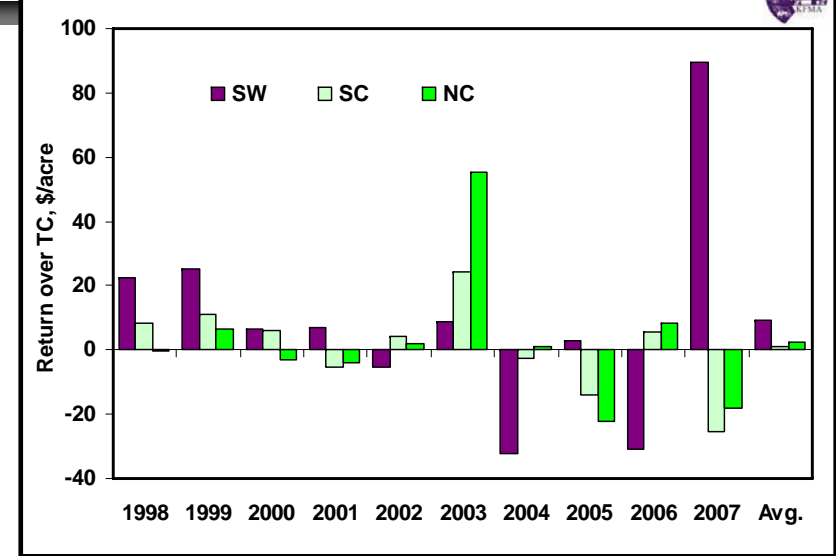
In 1999-08, over 50% of wheat acres from SW, C, and SC regions...



Wheat Returns over Variable Costs, 1998-2007



Wheat Returns over Total Costs, 1998-2007



## Alternative crop considerations...

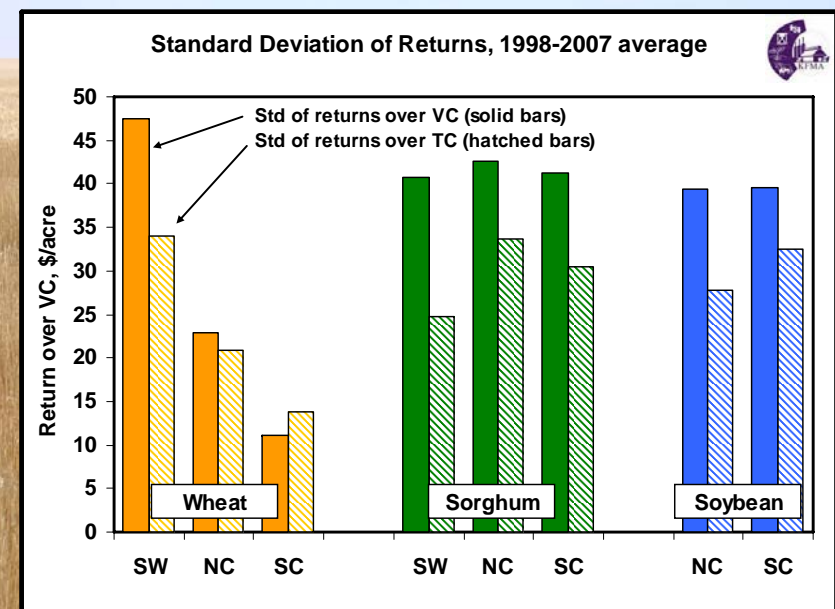
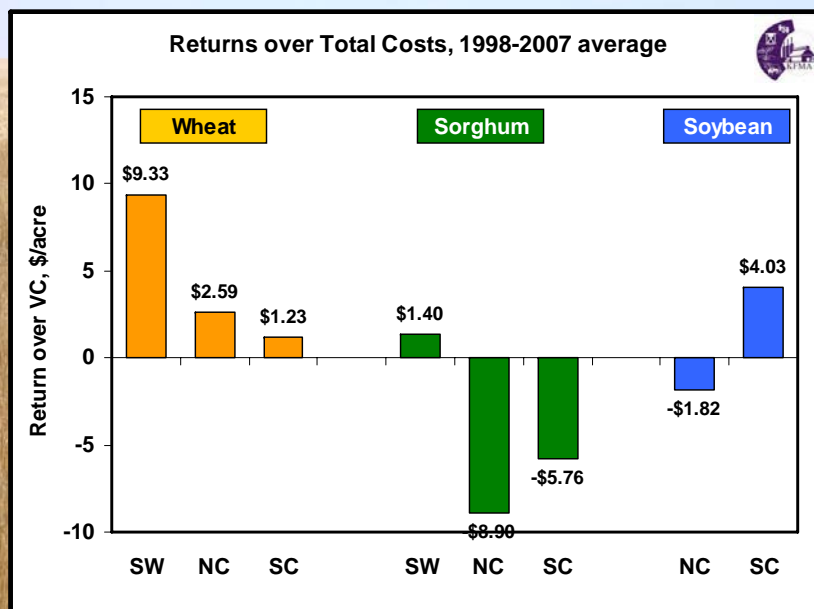
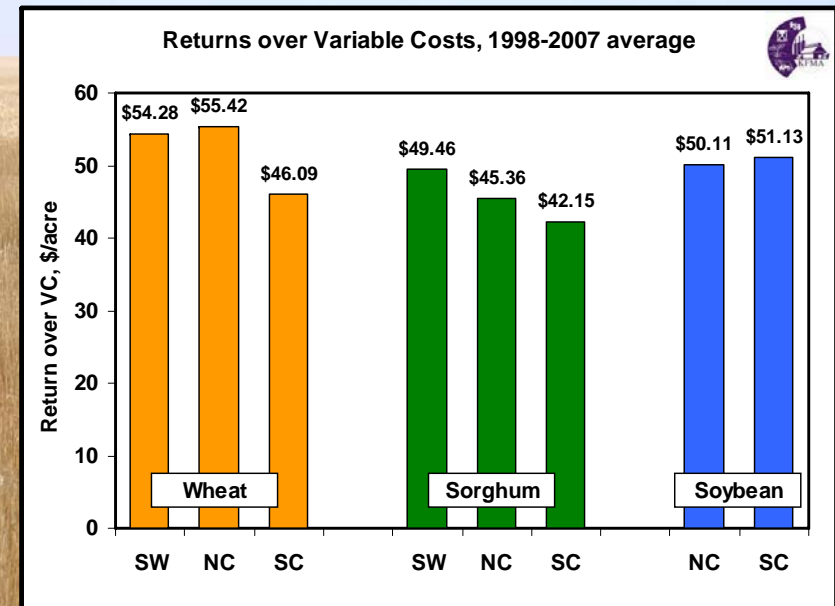
### Historical profitability

- Short run – return over variable costs
- Long run – return over total costs
- Variability of returns
- Future/current profitability
- Projected budgets



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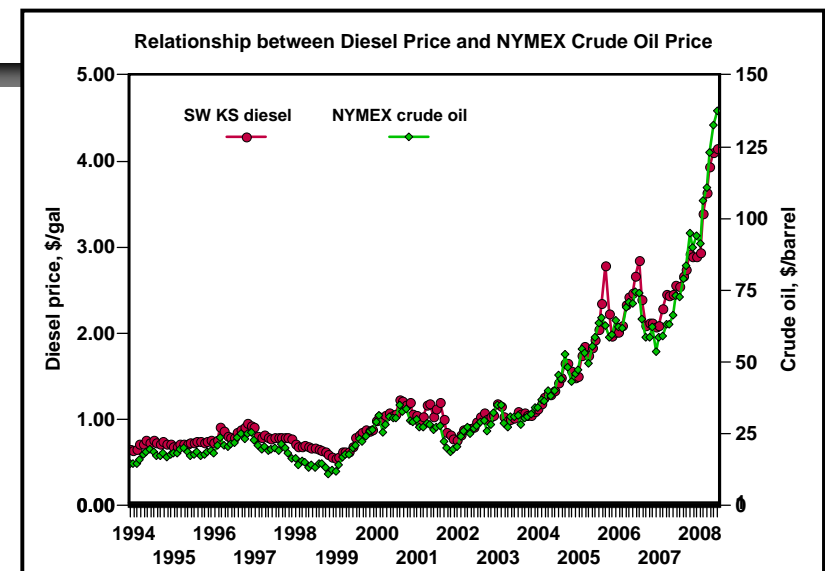


## Alternative crop considerations...

- Wheat compares quite favorably with other crops when looking at historical returns...
- But, how accurate or useful is this “crop-by-crop” comparison if it does not account for rotational effects?
- Comparisons can still be useful, but it is important to keep in mind that *difficult-to-quantify* factors related to crop rotation can impact relative returns

## Alternative crop considerations...

- How does crop profitability of various crops look going forward?
- Projected budgets based on KSU Farm Management Guides for South Central Kansas modified to reflect current conditions
- But, first some information on fuel and fertilizer...



Relationship suggests that NYMEX crude oil futures market can be used to forecast diesel prices.

## Historical and forecasted crude oil and farm diesel fuel average Mar-Oct prices...

Crude Oil and Off-road Diesel Fuel Prices

Year	Crude oil /1	Year-to-year change \$/barrel	Year-to-year change percent	Diesel fuel /2	Year-to-year change \$/gal	Year-to-year change percent
2001	\$26.98	-----	-----	\$1.09	-----	-----
2002	\$27.05	\$0.07	0.3%	\$0.94	(\$0.15)	-14.1%
2003	\$30.53	\$3.48	12.9%	\$1.05	\$0.11	12.1%
2004	\$41.84	\$11.31	37.0%	\$1.37	\$0.32	30.0%
2005	\$57.98	\$16.14	38.6%	\$2.04	\$0.67	48.5%
2006	\$68.07	\$10.09	17.4%	\$2.41	\$0.38	18.6%
2007	\$70.09	\$2.02	3.0%	\$2.52	\$0.11	4.4%
2008 (F)	\$122.88	\$52.80	75.3%	\$4.00	\$1.48	58.7%
2009 (F)	\$127.51	\$4.62	3.8%	\$4.30	\$0.31	7.7%

/1 Mar-Oct average of NYMEX futures

/2 Mar-Oct average for Southwest Kansas

'F' = forecast based on 07/31/2008 futures prices

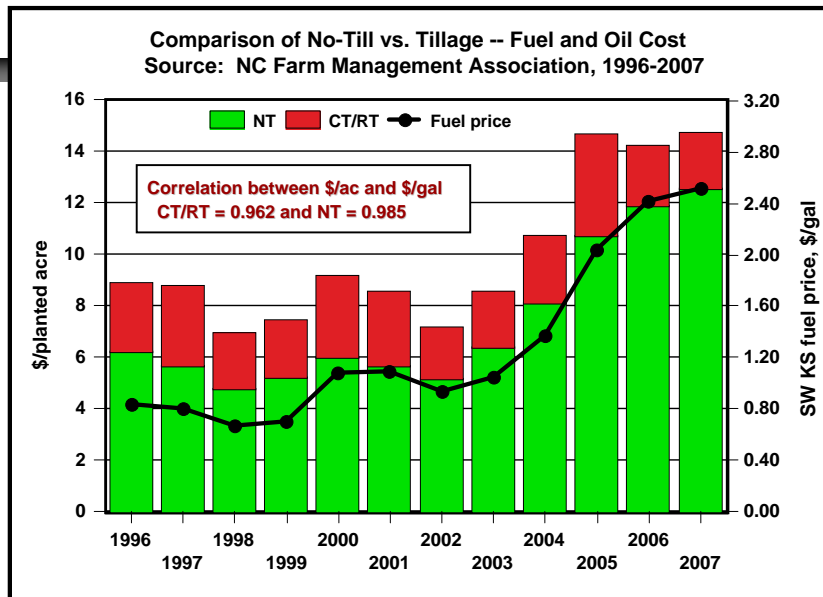
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## What can producers do in response to higher machinery costs associated with fuel prices?

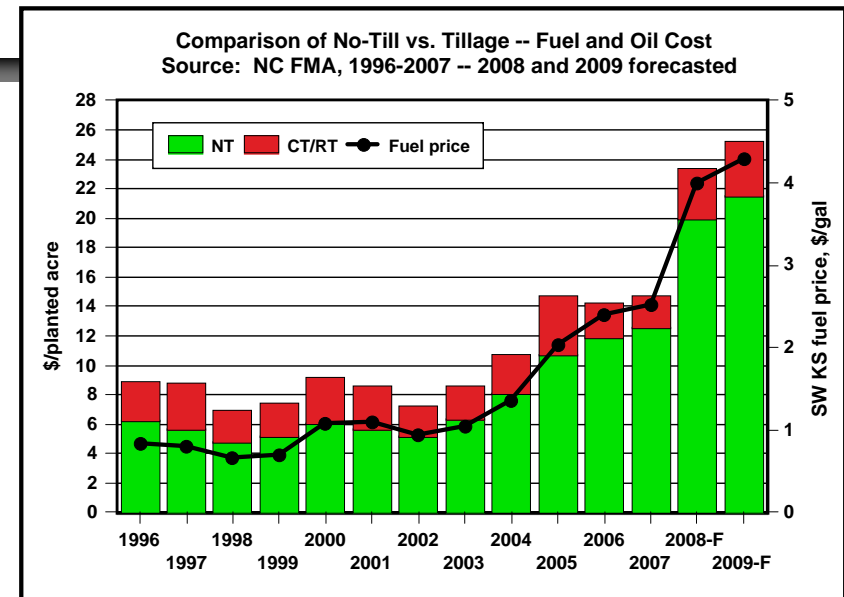
Without any change, costs of machinery operations in 2008 will be up over 17% from 2007 strictly due to fuel prices (2009 up over 20%).

### Things to consider...

- Reduce operations (NT results in \$3-\$4/ac in fuel savings)?
- Hire custom operators?
- Machinery management (maintenance, efficient use, etc.)?
- Pass increased costs on to landowners?
- Do better job of purchasing fuel?
- Nothing?

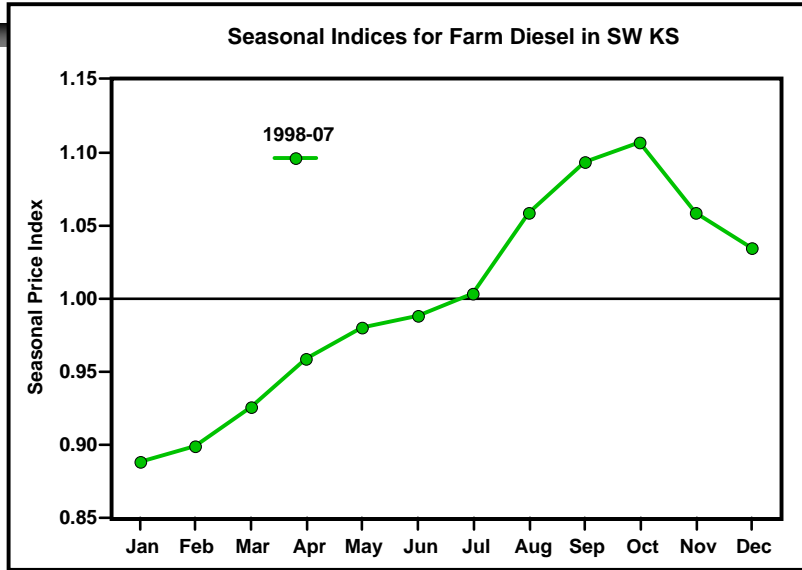


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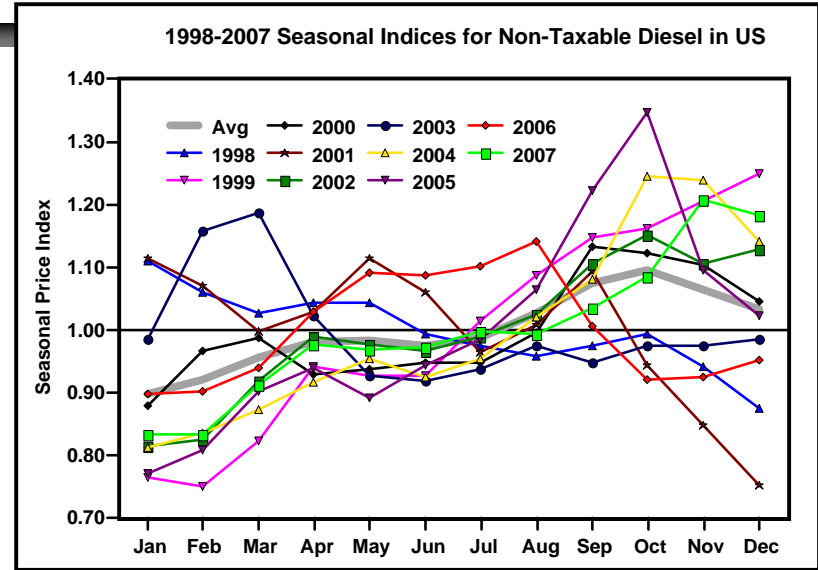
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## Purchasing fuel based on seasonal patterns?



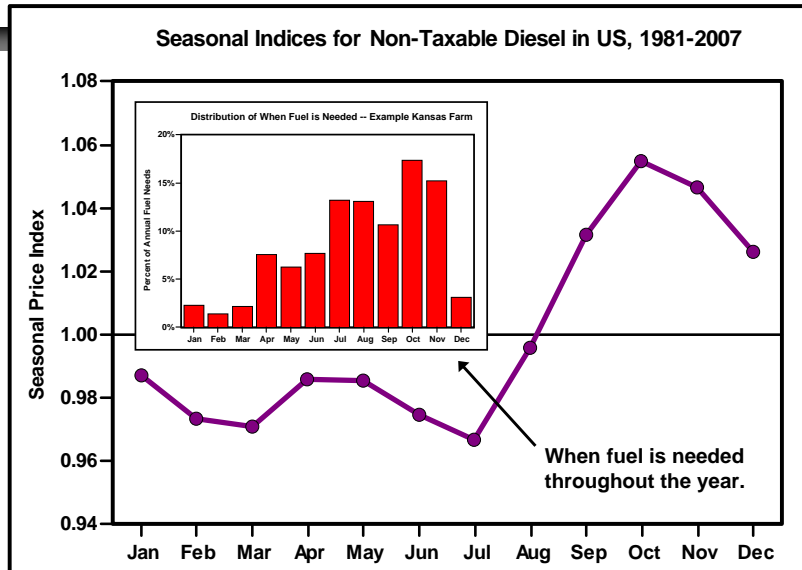
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## Seasonal pattern is not particularly predictable...



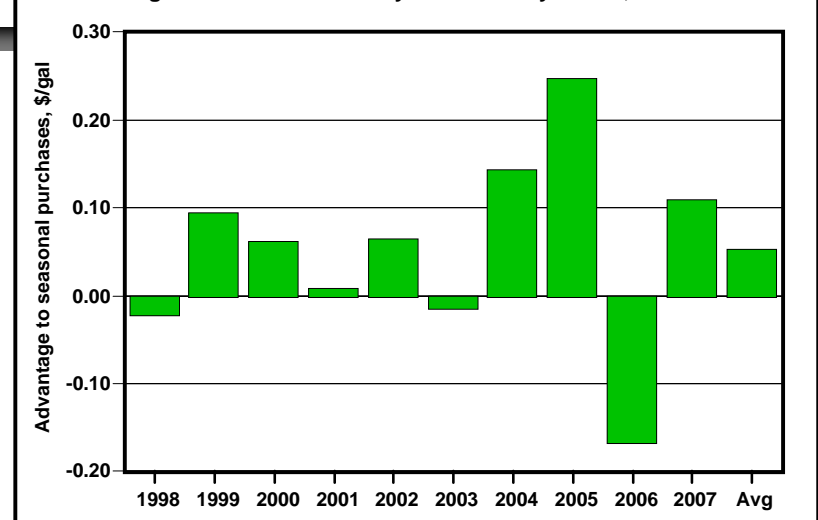
22

## Seasonal pattern used for analysis...



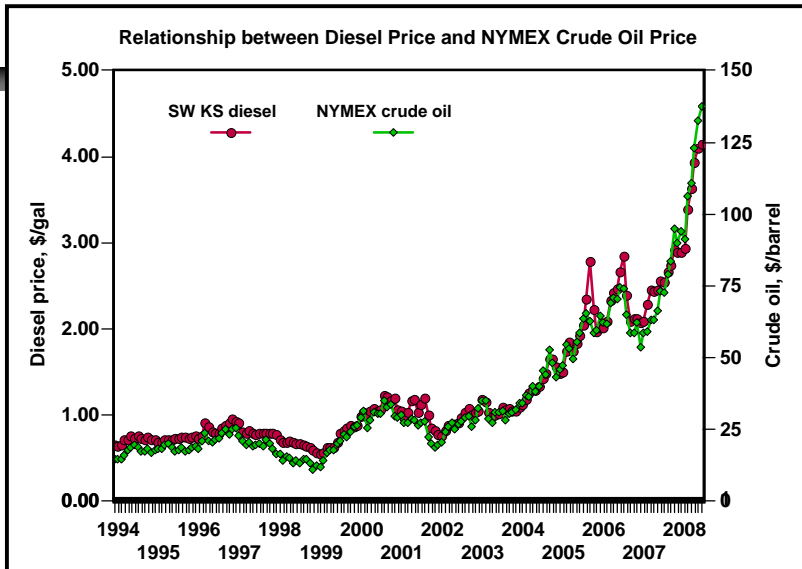
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## Purchasing Diesel Fuel Seasonally versus Every Month, SW KS



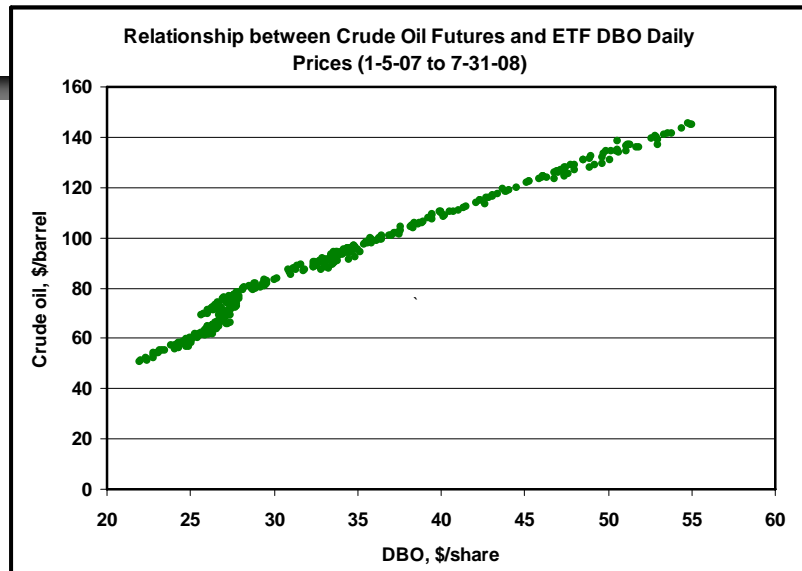
IF the only storage costs that existed were interest, then a strategy of buying in the months of Jan, Feb, Mar, Jun and Jul (based on 27-year seasonal pattern) would have resulted in a \$0.05/gallon advantage compared to buying as needed (i.e., every month). Purchasing tanks eliminates gain.

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Relationship suggest you could reasonably hedge diesel fuel price using the NYMEX crude oil futures market. One contract (1000 barrels) would effectively hedge 30,500 gallons of diesel.

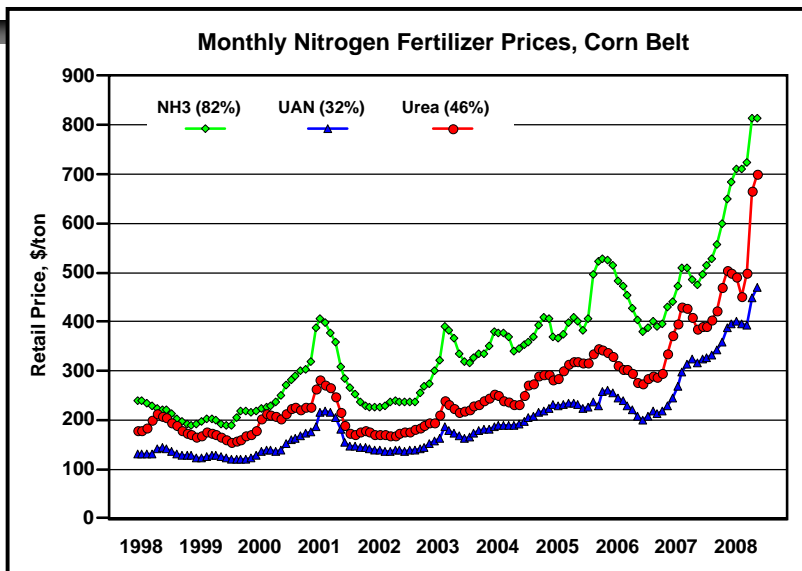
Index Performance*	1 Year	3 Year	5 Year	10 Year	Fund Inception*
DB Crude Oil Index†	8.27	17.25	32.54	24.12	21.76
S&P GS Crude Index*	11.26	2.34	18.95	14.51	32.10
DBAG Crude Index*	13.19	5.69	22.63	16.23	31.91



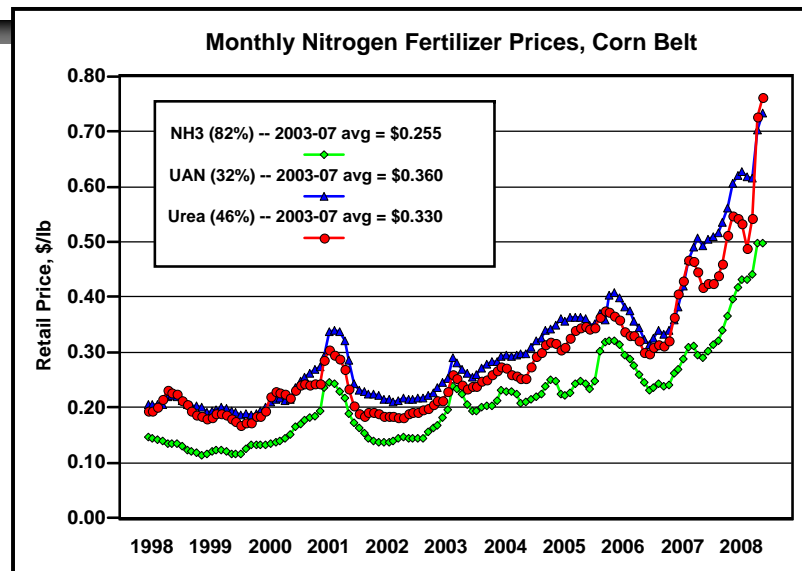
Relationship suggests you could reasonably hedge crude oil price (hence diesel fuel price) via buying DBO stock. One share of DBO stock would effectively hedge approximately 11-12 gallons of diesel.



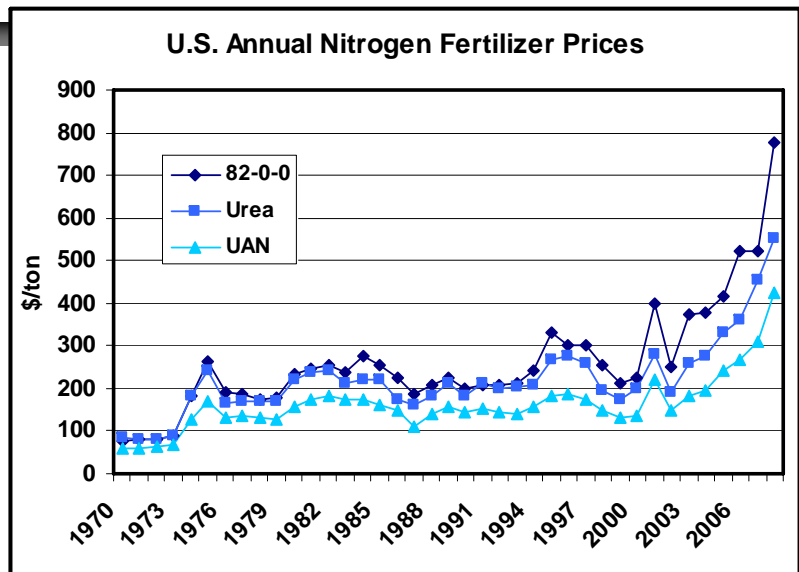
Prices of nitrogen fertilizer is at all time highs...



Prices of nitrogen fertilizer is at all time highs...

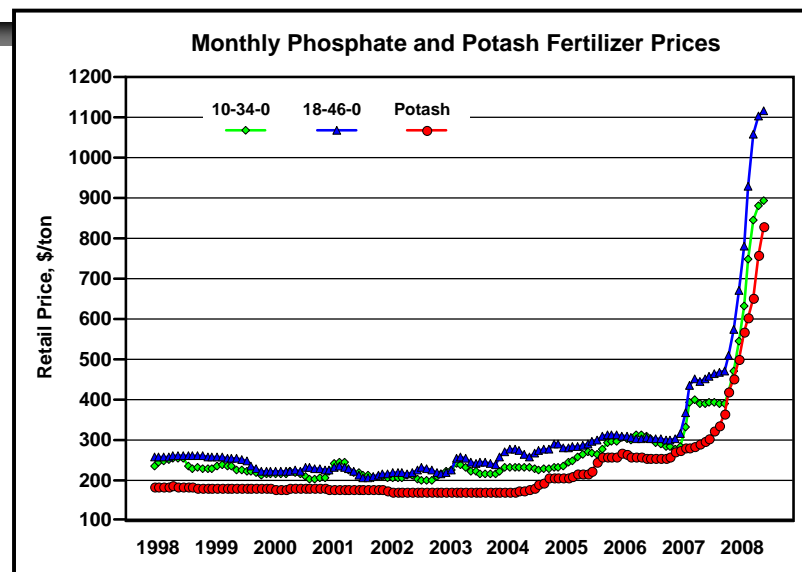


Prices of nitrogen fertilizer is at all time highs...

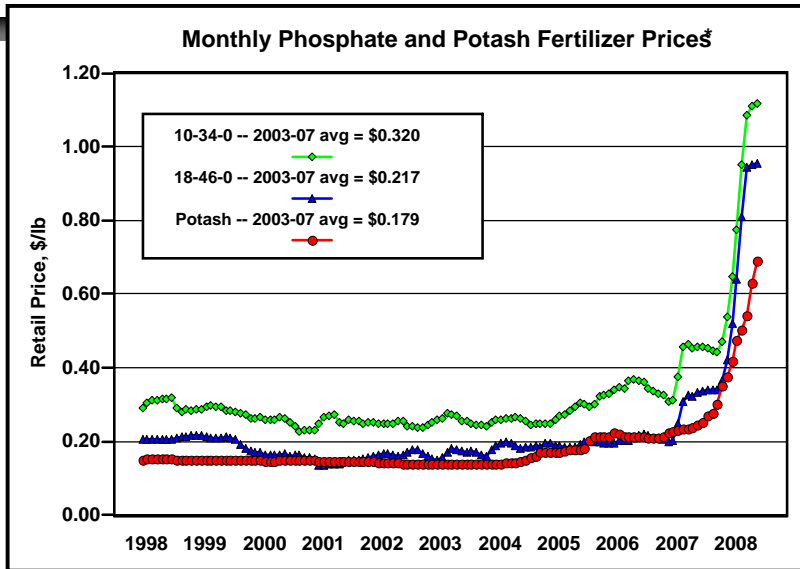


Source: USDA NASS and KSU

Prices of other nutrients also are at all time highs...

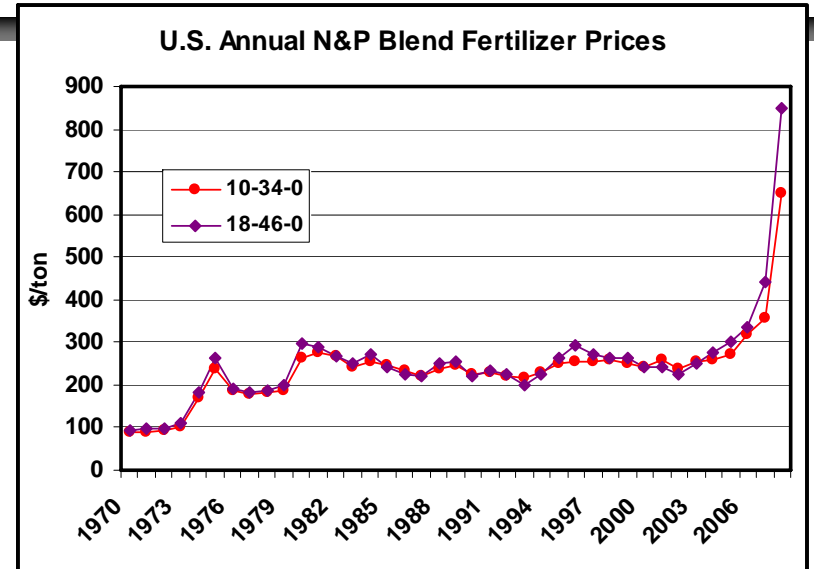


Prices of other nutrients also are at all time highs...



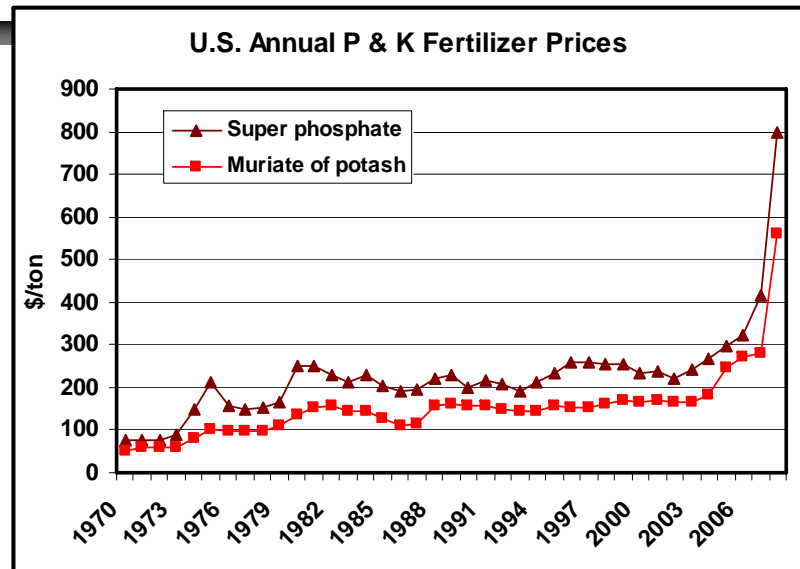
\* Value of P calculated after deducting value of N at average price of NH<sub>3</sub>, Urea, UAN

Prices of N and P blends are at all time highs...

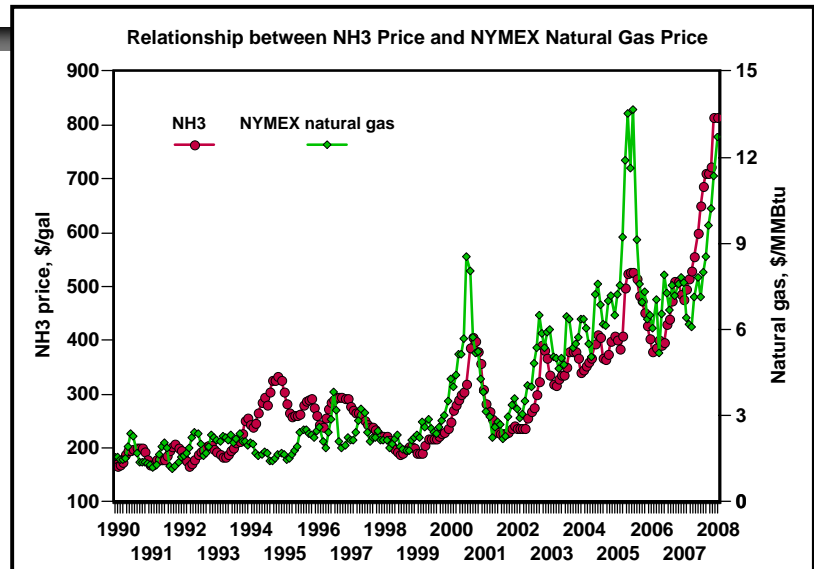


Source: USDA NASS and KSU

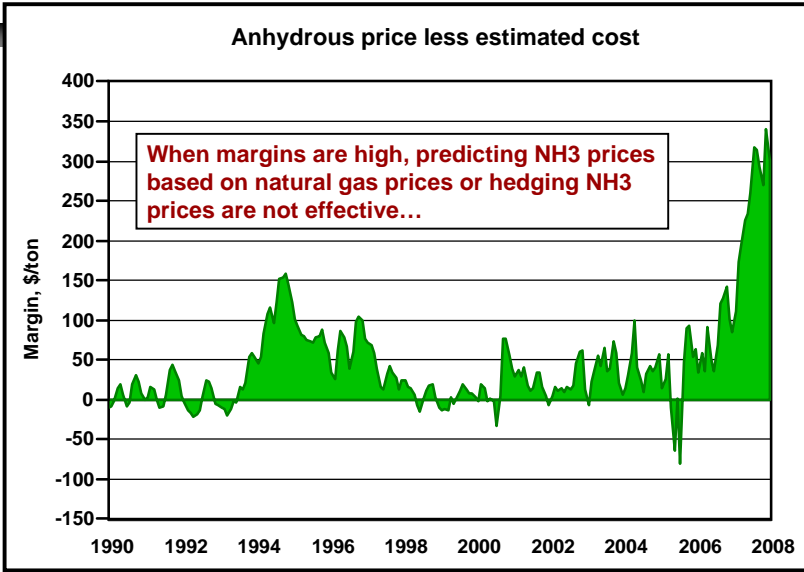
Prices of P and K are at all time highs...



Source: USDA NASS and KSU



Relationship is relatively strong during "normal" time periods...



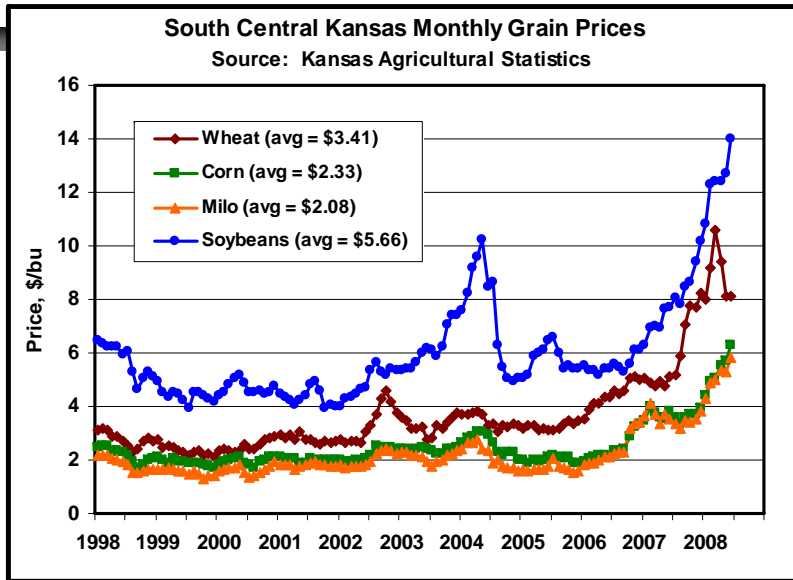
### NYSE's best in 2007

Updated 3d 12h ago | Comment | Recommend 1  
 The best-performing stocks on the New York Stock Exchange for the (more charts):

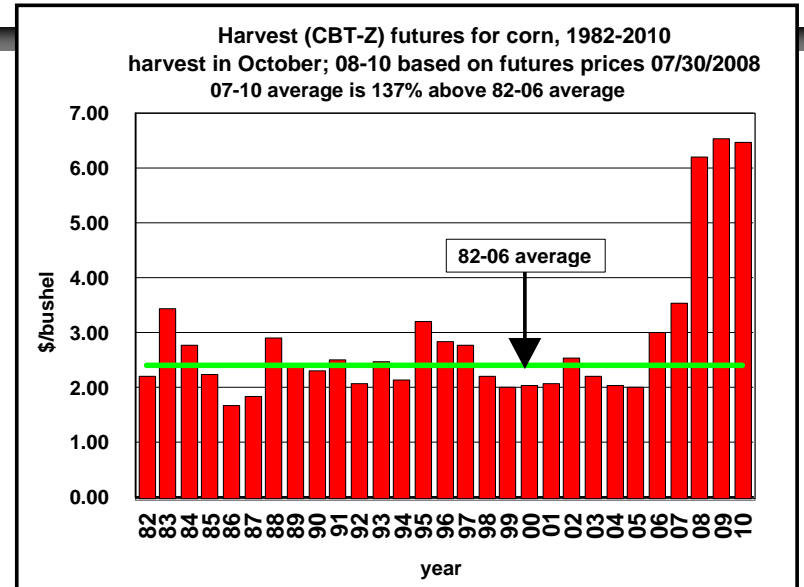
Company	2007 close	% gain
Mosaic	\$94.34	341.7%
CF Industries Holdings	\$110.06	329.3%
Terra Industries	\$47.76	298.7%
Mechel OAO	\$97.14	281.2%
China Southern Airlines	\$65.45	220.1%
PotashCorp	\$143.96	201.0%
Siderurgica Nacional	\$89.57	198.8%
Trina Solar	\$53.80	184.7%
Excel Maritime Carriers	\$40.19	175.1%
AK Steel Holding	\$46.24	173.6%
Owens Illinois	\$49.50	168.3%
Bally Technologies	\$49.72	166.2%
Vimpel-Communications	\$41.60	163.5%
Chipotle Mexican Grill	\$147.07	158.0%
GraffTech International	\$17.75	156.5%
Calgon Carbon	\$15.89	156.3%
Suntech Power Holdings	\$82.32	142.1%
CNH Global	\$65.82	141.1%
New Oriental Edu&Tchnlgy	\$80.59	140.3%
National Oilwell Varco	\$73.46	140.1%
Yanzhou Coal Mining	\$97.06	139.4%
Jacobs Engineering	\$95.61	134.5%
Aegean Marine Petrol Netwkr	\$38.39	134.1%
McDermott International	\$59.03	132.1%
Agrium	\$72.21	129.3%
Alpha Natural Resources	\$32.48	128.3%

Great year to be in the fertilizer business

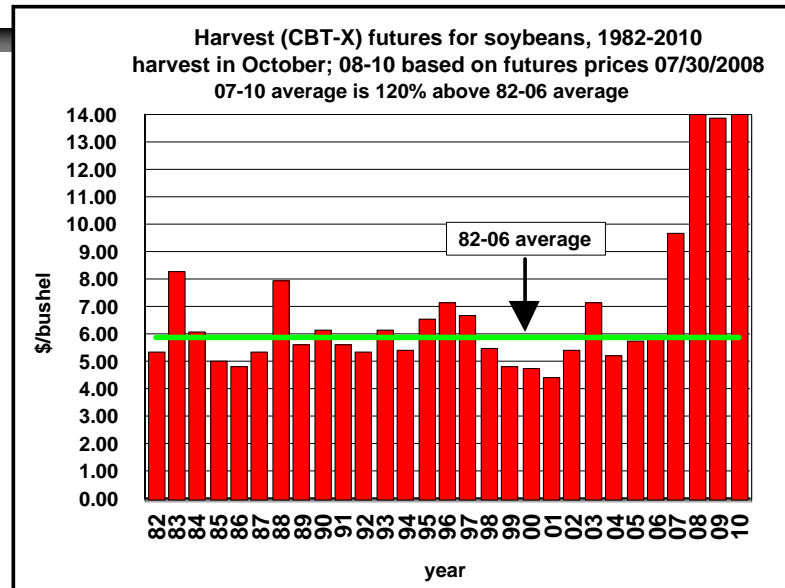
But, grain prices also are at all time highs!



How long will strong crop prices stick around?

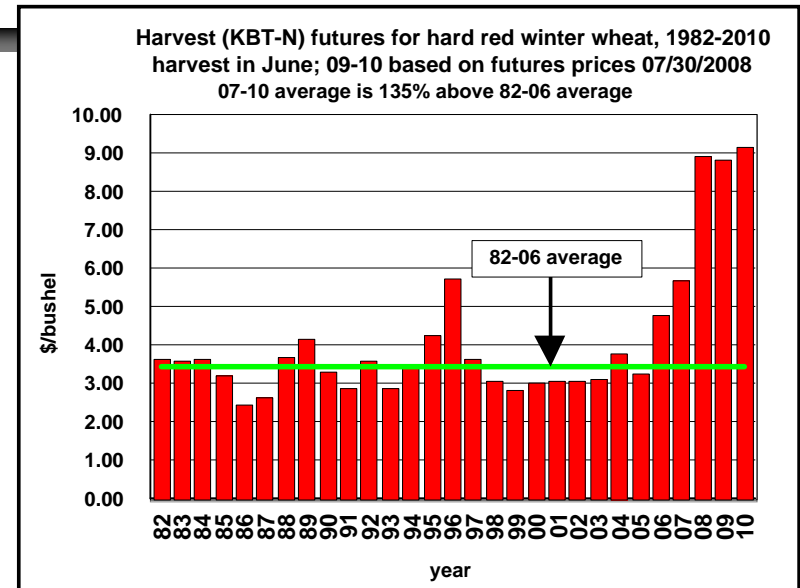


## It's not just corn prices...



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## It's not just corn prices...



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What do these high fertilizer and crop prices imply for optimal fertilizer rates?

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## KSU nitrogen recommendations...

### Corn and grain sorghum

$$\text{N rec} = (\text{Yield Goal} \times 1.6) - (\% \text{SOM} \times 20) - \text{Profile N} - \text{Manure N} - \text{Other N Adjustments} + \text{Previous Crop Adjustments}$$

### Wheat

$$\text{N rec} = (\text{Yield Goal} \times 2.4) - (\% \text{SOM} \times 10) - \text{Profile N} - \text{Manure N} - \text{Other N Adjustments} + \text{Previous Crop Adjustments} + \text{Tillage Adjustments} + \text{Grazing Adjustments}$$

### Sunflowers

$$\text{N rec} = (\text{Yield Goal} \times 0.075) - (\% \text{SOM} \times 20) - \text{Profile N} - \text{Manure N} - \text{Other N Adjustments} + \text{Previous Crop Adjustments}$$

## KSU Nitrogen recommendations

### Corn Nitrogen Recommendations

Fertilizer N Required At Various Yield and Soil Organic Matter Levels Assuming Profile N Test Is Not Used (includes 30 lb N/A residual default)<sup>1</sup>

Yield Goal (Bu/A)	Soil Organic Matter Content (%)						
	1.0	1.5	2.0	2.5	3.0	3.5	4.0
	----- lb N/A -----						
60	46	36	26	16	6	0	0
100	110	100	90	80	70	60	50
140	174	164	154	144	134	124	114
180	238	228	218	208	198	188	178
220	300	292	282	272	262	252	242

N Rec<sup>2</sup> = (Yield Goal × 1.6) - (% SOM × 20) - Profile N - Manure N - Other N Adjustments + Previous Crop Adjustments

<sup>1</sup> Total N requirements presented include only Yield Goal and Soil Organic Matter Adjustments assuming profile N test not used. N rate should also be adjusted for Previous Crop, Manure and Other Appropriate N Rate Adjustments (see N rate adjustments for warm-season crops).  
<sup>2</sup> Maximum fertilizer N recommendations are 230 lb N/A for Dryland Corn production and 300 lb N/A for Irrigated Corn production.  
<sup>3</sup> A minimum fertilizer N application of 30 lb N/A may be appropriate for early crop growth and development.

### Grain Sorghum Nitrogen Recommendations

Fertilizer N Required At Various Yield and Soil Organic Matter Levels Assuming Profile N Test Is Not Used (includes 30 lb N/A residual default)<sup>1</sup>

Yield Goal (Bu/A)	Soil Organic Matter Content (%)						
	1.0	1.5	2.0	2.5	3.0	3.5	4.0
	----- lb N/A -----						
40	14	4	0	0	0	0	0
80	78	68	58	48	38	28	18
120	142	132	122	112	102	92	82
160	206	196	186	176	166	156	146
200	270	260	250	240	230	220	210

N Rec<sup>2</sup> = (Yield Goal × 1.6) - (% SOM × 20) - Profile N - Manure N - Other N Adjustments + Previous Crop Adjustments

<sup>1</sup> Total N requirements presented include only Yield Goal and Soil Organic Matter Adjustments assuming profile N test not used. N rate should also be adjusted for Previous Crop, Manure and Other Appropriate N Rate Adjustments (see N rate adjustments for warm-season crops).  
<sup>2</sup> A minimum fertilizer N application of 30 lb N/A may be appropriate for early crop growth and development.

## KSU Nitrogen recommendations

### Wheat Nitrogen Recommendations

Fertilizer N Required At Various Yield and Soil Organic Matter Levels Assuming Profile N Test Is Not Used (includes 30 lb N/A residual default)<sup>1</sup>

Yield Goal (Bu/A)	Soil Organic Matter Content (%)						
	1.0	1.5	2.0	2.5	3.0	3.5	4.0
	----- lb N/A -----						
30	32	27	22	17	12	7	2
40	56	51	46	41	36	31	26
50	80	75	70	65	60	55	50
60	104	99	94	89	84	79	74
70	128	123	118	113	108	103	98

N Rec<sup>2</sup> = (Yield Goal × 2.4) - (% SOM × 10) - Profile N - Other N Adjustments + Previous Crop Adjustments + Tillage Adjustments + Grazing Adjustments

<sup>1</sup> Total N requirements presented include only Yield Goal and Soil Organic Matter Adjustments assuming profile N test not used. N rate should also be adjusted for Previous Crop, Tillage, Grazing and Other Appropriate N Rate Adjustments (see N rate adjustments for cool-season crops).  
<sup>2</sup> A minimum fertilizer N application of 30 lb N/A may be appropriate for early crop growth and development.

### Sunflower Nitrogen Recommendations

Fertilizer N Required At Various Yield and Soil Organic Matter Levels Assuming Profile N Test Is Not Used (includes 30 lb N/A residual default)<sup>1</sup>

Yield Goal (Lb/A)	Soil Organic Matter Content (%)						
	1.0	1.5	2.0	2.5	3.0	3.5	4.0
	----- lb N/A -----						
1,000	25	15	5	0	0	0	0
1,500	63	53	43	33	23	13	3
2,000	100	90	80	70	60	50	40
2,500	138	128	118	108	98	88	78
3,000	175	165	155	145	135	125	115

N Rec<sup>2</sup> = (Yield Goal × 0.075) - (% SOM × 20) - Profile N - Manure N - Other N Adjustments + Previous Crop Adjustments

<sup>1</sup> Total N requirements presented include only Yield Goal and Soil Organic Matter Adjustments assuming profile N test not used. N rate should also be adjusted for Previous Crop, Manure and Other Appropriate N Rate Adjustments (see N rate adjustments for warm-season crops).  
<sup>2</sup> A minimum fertilizer N application of 30 lb N/A may be appropriate for early crop growth and development.

## KSU nitrogen recommendations vs. N price

- Recommendations do not explicitly include prices
- Mathematical relationship between expected yield and nitrogen (i.e., production function) is needed in order to adjust recommendations for prices
- Similar issues pertain to P & K recommendations (i.e., no way to adjust them for prices)
- Production functions were estimated that are consistent with KSU N recommendations at the following prices:
  - Wheat \$3.20/bu
  - Corn \$2.35/bu
  - fertN \$0.21/lb N

Microsoft Excel - KSU-CropBudgets2006

KSU-CropBudgets2006.xls -- A spreadsheet budgeting program to compare the economic returns of multiple crops and/or crop rotations where nitrogen fertilizer and irrigation levels are determined optimally based upon prices.

Version -- 5.14.07

**INPUTS vs CALCULATED VALUES**  
 In the *Budgets*, *Optimal N&I*, *Figures*, and *Irr energy costs* sheets all blue numbers are inputs and all black numbers are calculated from these inputs. The *Irr energy costs* sheet is included as a calculator to assist with determining irrigation pumping costs to enter into the *Budgets* sheet (costs calculated in the *Irr energy costs* sheet need to be manually entered into the *Budgets* sheet).

**DESCRIPTION OF INPUTS**  
 Several of the input cells (i.e., blue number) have a red diamond in the upper right hand corner of the cell. By moving your mouse cursor over this diamond, a brief description of the input will be displayed on the screen.

**COMPANION PUBLICATION**  
 The mathematical approach used to determine the economic optimal N rates is described in "Modifying Yield-Goal-Based Fertilizer Recommendations to Reflect Price" (available on [www.agmanager.info](http://www.agmanager.info)).

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 Terry L. Kastens --- 785-532-5866 --- [tkastens@ksu.edu](mailto:tkastens@ksu.edu)  
 Troy J. Dumler --- 620-275-9164 --- [tdumler@ksu.edu](mailto:tdumler@ksu.edu)

Extension Agricultural Economists  
 Kansas State University

Estimated production functions are embedded in an Excel spreadsheet

Screen capture from *KSU-CropBudgets2006.xls...*

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels						
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower	Alfalfa
Rotation (1 or 2, if none enter 0)	1	1	1	1	1	1
Percent of rotation (total - 100%)	50.0%	10.0%	20.0%	20.0%	0.0%	0.0%
Yield goal (YG), bu/ac	50.0	100.0	90.0	27.0	2000.0	3.5
Enter 0 for dryland or 1 for irrigated	0	0	0	0	0	0
Annual rainfall	28.0	28.0	28.0	28.0	28.0	28.0
Organic matter (OM), %	2.00	2.00	2.00	2.00	2.00	2.00
Soil test nitrogen (STN), lbs/ac	10.0	10.0	10.0	10.0	10.0	10.0
Other N adjustments, lbs/ac	0.0	0.0	0.0	0.0	0.0	0.0
Nitrogen fertilizer cost, \$/lb	\$0.750	\$0.750	\$0.750	\$0.750	\$0.750	\$0.750
Irrigation energy cost, \$/inch	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
KSU recommended nitrogen, lbs/ac	90.0	110.0	94.0	0.0	100.0	---
Econ Optimum fertN, lbs/ac	84.9	103.8	87.9	0.0	91.9	---
Econ Optimum Irrigation Amount, in	0.0	0.0	0.0	0.0	0.0	0.0
Yield at optimal N and I, bu/ac	49.2	98.7	88.5	24.3	1,970.7	3.2
<b>INCOME PER ACRE</b>						
A. Yield per acre	49.2	98.7	88.5	24.3	1,970.7	3.2
B. Price per unit	\$7.90	\$5.75	\$5.15	\$12.75	\$0.2500	\$110.00
C. Net government payments	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
D. Indemnity payments	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
E. Miscellaneous income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
F. Returns/acre ((A x B) + C + D + E)	\$403.86	\$582.64	\$470.92	\$324.83	\$507.67	\$361.50

N rates based upon user inputs (blue numbers)

Adjustments to KSU Nrecs at various WHEAT and N prices

Nitrogen Recommendations for Wheat										
Yield goal, bu/ac	45					60				
KSU N rec, lbs/ac*	78					114				
N price	Wheat price, \$/bu					Wheat price, \$/bu				
\$/lb	\$2.50	\$3.00	\$3.50	\$4.00	\$4.50	\$2.50	\$3.00	\$3.50	\$4.00	\$4.50
	Price adjusted N rec, lbs/ac					Price adjusted N rec, lbs/ac				
\$0.25	73	75	77	78	80	107	110	113	115	116
\$0.40	63	67	70	73	74	94	100	104	107	109
\$0.55	54	60	64	67	69	82	90	95	99	102
\$0.70	45	52	57	61	64	70	79	86	91	95
\$0.85	35	44	50	55	59	57	69	77	84	88
N price	Price adjusted N rec reduction					Price adjusted N rec reduction				
\$0.25	6.8%	3.5%	1.2%	-0.6%	-2.0%	6.2%	3.2%	1.1%	-0.6%	-1.8%
\$0.40	18.8%	13.5%	9.7%	6.8%	4.6%	17.1%	12.3%	8.8%	6.2%	4.2%
\$0.55	30.7%	23.4%	18.2%	14.3%	11.3%	28.0%	21.4%	16.6%	13.0%	10.3%
\$0.70	42.7%	33.4%	26.7%	21.8%	17.9%	38.9%	30.4%	24.4%	19.9%	16.3%
\$0.85	54.6%	43.3%	35.3%	29.2%	24.5%	49.8%	39.5%	32.2%	26.7%	22.4%

Soil organic matter (SOM)=2.0; Soil test nitrogen (STN)=10; Other N adjustment=0  
 \* Based on formulas reported in *Soil Test Interpretations and Fertilizer Recommendations* (MF-2586)

At long-run wheat prices, we would obviously want to cut back N rates...

Adjustments to KSU Nrecs at various WHEAT and N prices

Nitrogen Recommendations for Wheat										
Yield goal, bu/ac	45					60				
KSU N rec, lbs/ac*	78					114				
N price	Wheat price, \$/bu					Wheat price, \$/bu				
\$/lb	\$7.00	\$7.50	\$8.00	\$8.50	\$9.00	\$7.00	\$7.50	\$8.00	\$8.50	\$9.00
	Price adjusted N rec, lbs/ac					Price adjusted N rec, lbs/ac				
\$0.25	83	83	83	84	84	120	121	121	121	122
\$0.40	79	80	80	81	81	116	117	117	118	118
\$0.55	76	77	78	78	79	111	112	113	114	115
\$0.70	73	74	75	75	76	107	108	109	111	111
\$0.85	69	71	72	73	74	102	104	106	107	108
N price	Price adjusted N rec reduction					Price adjusted N rec reduction				
\$0.25	-6.0%	-6.4%	-6.8%	-7.2%	-7.5%	-5.4%	-5.9%	-6.2%	-6.6%	-6.9%
\$0.40	-1.7%	-2.4%	-3.1%	-3.7%	-4.2%	-1.5%	-2.2%	-2.8%	-3.4%	-3.8%
\$0.55	2.6%	1.5%	0.6%	-0.2%	-0.9%	2.3%	1.4%	0.6%	-0.2%	-0.8%
\$0.70	6.8%	5.5%	4.4%	3.3%	2.4%	6.2%	5.0%	4.0%	3.0%	2.2%
\$0.85	11.1%	9.5%	8.1%	6.8%	5.7%	10.1%	8.7%	7.4%	6.2%	5.2%

Soil organic matter (SOM)=2.0; Soil test nitrogen (STN)=10; Other N adjustment=0  
 \* Based on formulas reported in *Soil Test Interpretations and Fertilizer Recommendations* (MF-2586)

Depending on your N price, you may want to reduce N rates slightly...

Adjustments to KSU Nrecs at various CORN and N prices

Nitrogen Recommendations for Corn										
Yield goal, bu/ac	80					120				
KSU N rec, lbs/ac*	78					142				
N price	Corn price, \$/bu					Corn price, \$/bu				
\$/lb	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00
	Price adjusted N rec, lbs/ac					Price adjusted N rec, lbs/ac				
\$0.25	83	83	84	84	84	149	150	151	151	152
\$0.40	79	80	81	81	82	144	145	146	147	148
\$0.55	76	77	78	79	79	138	140	142	143	144
\$0.70	72	73	75	76	77	133	135	137	139	140
\$0.85	68	70	72	73	74	127	130	133	135	136
N price	Price adjusted N rec reduction					Price adjusted N rec reduction				
\$0.25	-6.1%	-6.8%	-7.4%	-7.9%	-8.3%	-5.0%	-5.6%	-6.1%	-6.5%	-6.8%
\$0.40	-1.4%	-2.6%	-3.5%	-4.3%	-5.0%	-1.2%	-2.1%	-2.9%	-3.5%	-4.1%
\$0.55	3.2%	1.6%	0.4%	-0.7%	-1.7%	2.6%	1.4%	0.3%	-0.6%	-1.4%
\$0.70	7.8%	5.8%	4.2%	2.8%	1.6%	6.4%	4.8%	3.5%	2.3%	1.4%
\$0.85	12.4%	10.1%	8.1%	6.4%	4.9%	10.2%	8.3%	6.6%	5.3%	4.1%

Soil organic matter (SOM)=2.0; Soil test nitrogen (STN)=10; Other N adjustment=0  
 \* Based on formulas reported in *Soil Test Interpretations and Fertilizer Recommendations* (MF-2586)

## Adjustments to KSU Nrecs at various SORGHUM and N prices

### Nitrogen Recommendations for Grain Sorghum

Yield goal, bu/ac		75					90				
KSU N rec, lbs/ac*		70					94				
N price \$/bu	N price \$/lb	Grain sorghum price, \$/bu					Grain sorghum price, \$/bu				
		\$5.00	\$5.50	\$6.00	\$6.50		\$4.50	\$5.00	\$5.50	\$6.00	\$6.50
		Price adjusted N rec, lbs/ac					Price adjusted N rec, lbs/ac				
\$0.25	75	76	76	77	77	100	101	102	102	103	
\$0.40	71	72	73	74	75	96	97	98	99	100	
\$0.55	68	69	70	71	72	91	93	94	95	96	
\$0.70	64	66	67	68	69	87	89	90	92	93	
\$0.85	60	62	64	65	67	82	84	87	88	90	
N price		Price adjusted N rec reduction					Price adjusted N rec reduction				
\$0.25	-7.6%	-8.5%	-9.3%	-9.9%	-10.4%	-6.8%	-7.6%	-8.3%	-8.8%	-9.3%	
\$0.40	-2.1%	-3.6%	-4.8%	-5.8%	-6.6%	-1.9%	-3.2%	-4.3%	-5.2%	-5.9%	
\$0.55	3.4%	1.4%	-0.3%	-1.6%	-2.8%	3.1%	1.2%	-0.2%	-1.5%	-2.5%	
\$0.70	8.9%	6.4%	4.3%	2.5%	1.0%	8.0%	5.7%	3.8%	2.2%	0.9%	
\$0.85	14.4%	11.3%	8.8%	6.6%	4.8%	12.9%	10.1%	7.8%	5.9%	4.3%	

Soil organic matter (SOM)=2.0; Soil test nitrogen (STN)=10; Other N adjustment=0  
 \* Based on formulas reported in *Soil Test Interpretations and Fertilizer Recommendations* (MF-2586)

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**Projected budgets based on Farm Management Guides**

Home / Farm Management / FM Guides / Nonirrigated Crops

### Non-irrigated Crops

Crop	Western	South Central	North Central	Northeast	Southeast	Southwest
Wheat	MF-903	MF-574	MF-2158	MF-572	MF-992	
Grain Sorghum	MF-904	MF-575	MF-2159	MF-573	MF-995	
Forage Sorghum Silage		MF-548				
Soybeans	MF-2365	MF-2155	MF-2160	MF-570	MF-994	
Double Crop Soybeans		MF-2537	MF-2537	MF-571	MF-2537	
Corn	MF-2150	MF-2157	MF-2161	MF-571	MF-993	
Corn Silage				MF-2364		
Sunflower	MF-987		MF-2144	MF-2144		
Double Crop Sunflower		MF-2145	MF-2145	MF-2145	MF-2145	
Canola		MF-2421				
Cane Hay	MF-997					
Alfalfa	MF-2367	MF-363	MF-363	MF-363	MF-363	
Cotton		MF-939			MF-939	MF-2565
Brome Hay		MF-2143	MF-2143	MF-2143	MF-2143	
Fescue Hay		MF-2145	MF-2145	MF-2145	MF-2145	

Excel Version of Crop Budgets: FarmManagementGuides-Crops.xls

In order to read the PDF documents you will need Adobe Acrobat Reader. Click the on the following icon to download the free software.

Department of Agricultural Economics | K-State Research & Extension | College of Agriculture | Kansas State University

## 2009 projected budgets for South Central KS

TABLE 1. Production Inputs Used for Budgets

ITEM	Corn	Milo	Soybeans	Wheat	Alfalfa	DC SB	\$/unit
Seeding rate (lbs, seeds, etc)	21	3	135	100	3	160	
Seed price, \$/unit	\$2.11	\$3.33	\$0.24	\$0.14	\$3.66	\$0.24	
Fertilizer:							
82-0-0	86	77	0	60	0	0	\$0.6000 /lb
N (dry/liquid)	20	15	0	40	0	0	\$0.8750 /lb
P	39	36	24	30	40	20	\$1.1000 /lb
K	0	0	0	0	0	0	\$0.9000 /lb
Lime	500	500	500	500	333	0	\$0.020 /lb
Herbicide							
Bicep Lite II Magnum (PRE)	2						\$14.84 /qt
Atrazine 4L + crop oil	1	1					\$3.14 /qt
Bicep II Magnum (PRE)		1.6					\$10.94 /qt
Roundup Ultra Max II			44				\$0.36 /oz
+ 2% Ammonium Sulfate			3				\$0.28 /oz
Ally				0.1			\$25.44 /oz
+ Banvel				4			\$0.66 /oz
Pursuit					0.3		\$10.59 /oz
Roundup Weather Max						44	\$0.45 /oz
+ 2, 4-D LV Ester						0.5	\$6.78 /qt
Insecticide / Fungicide							
Seed treatment	1						\$1.25 /ac
Seedbox treatment				1			\$1.25 /ac
Tilt					3		\$2.83 /oz
xxx							
Irrigation water, inches/acre	0	0	0	0	0	0	\$4.50 /in
Irrigation repairs, \$/acre-inch							\$0.33 /in
Drying cost, \$/unit (bu, cwt, etc)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

Fertilizer prices were based on current quotes, chemical prices were increased from 25-50% from previous year, seed prices increased 10%.

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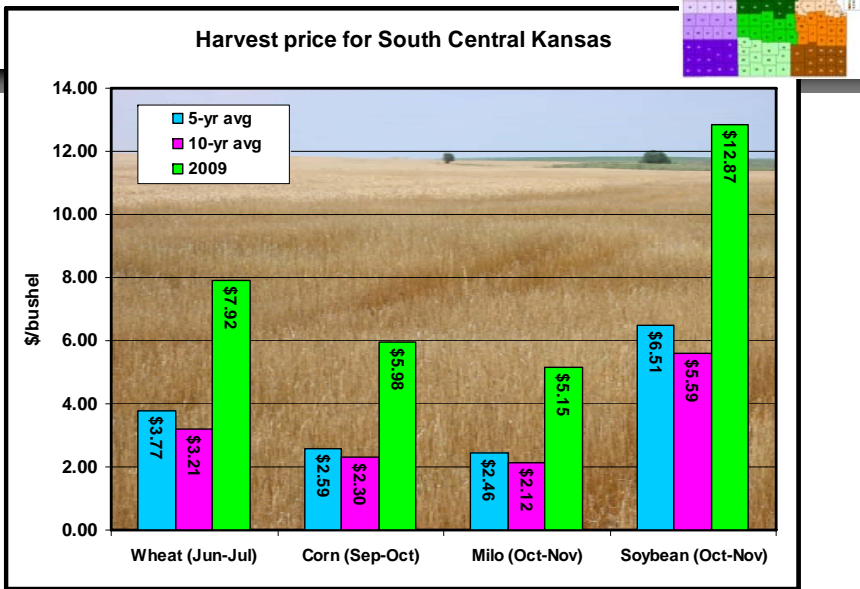
## 2009 projected budgets for South Central KS

TABLE 2. Machinery and Land Resources Used for Budgets+B31

ITEM	Corn	Milo	Soybeans	Wheat	Alfalfa	DC SB	\$/unit
Drill/Plant, \$/acre	\$11.71	\$9.77	\$12.14	\$8.62	\$2.18	\$12.14	
Tillage and Chemical Applications:							
Chisel	0	0	0	1	0.2453855	0	\$9.21 /ac
Disk	1	1	0	1	0.2	0	\$7.88 /ac
Field cultivate	1	1	0	2	0.2	0	\$7.46 /ac
Cultivate with sidedress	1	0	0	0	0	0	\$7.69 /ac
Anhydrous application	1	1	0	1	0	0	\$6.83 /ac
Fertilizer application	1	0	0	1	1	0	\$4.20 /ac
Herbicide application	1	2	2	1	0.2	2	\$4.45 /ac
Insecticide application	0	0	0	0	1	0	\$4.56 /ac
Harvest							
Base charge, \$/acre	\$22.01	\$16.84	\$22.14	\$15.97	\$39.60	\$22.14	
Charge for high yields, \$/unit	\$0.152	\$0.150	\$0.174	\$0.151	\$16.667	\$0.174	
High yield	74	36	27	21	0	27	
Hauling, \$/unit	\$0.140	\$0.145	\$0.140	\$0.147	\$0.000	\$0.140	
Non-machinery labor, hr/acre	0.99	0.86	0.53	0.93	1.30	0.52	\$10.00 /hr
Irrigation labor, hr/acre	0.00	0.00	0.00	0.00	0.00	0.00	\$10.00 /hr
Average land value, \$/acre /A	\$50	\$50	\$50	\$50	\$50	\$50	
Annual return to land, % /A							100.0%
Interest on capital, %							8.5%
Irrigation Equipment							
Well, pump and gearhead value	Total	\$/wet ac	Years				Salvage value, %
Power unit and meter	\$0	n/a	25				0%
Irrigation system	\$0	n/a	7				0%

Machinery costs were increased 25% from 2007 custom rates and land costs were increased 20% from values used last year.

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Prices were based on a combination of forward contract bids and futures prices adjusted for basis.

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## 2009 projected budgets for South Central KS

### CROP BUDGETS SHOWING TOTAL COSTS AND RETURNS

Crop/System	Corn	Milo	Soybeans	Wheat	Alfalfa	DC SB	Total	Per Acre	Per Acre
Planted acres of each crop	5.0	19.0	9.0	60.0	7	20	120.0		
Tillable acres per planted acre	1.00	1.00	1.00	1.00	1.00	0.00	100.0	Planted	Tillable
<b>INCOME PER ACRE</b>									
A. Yield per acre	90.0	80.0	27.0	45.0	3.5	20.0	---	---	---
B. Price per unit	\$5.98	\$5.15	\$12.87	\$7.92	\$110.00	\$12.87	---	---	---
C. Net government payments	\$15.35	\$15.35	\$15.35	\$15.35	\$15.35	\$0.00	\$1,535	\$12.79	\$15.35
D. Indemnity payments	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00	\$0.00
E. Miscellaneous income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00	\$0.00
F. Returns/acre (A x B) + C + D + E	\$553.10	\$427.01	\$362.71	\$371.75	\$400.35	\$257.30	\$44,396	\$369.97	\$443.96
<b>COSTS PER ACRE</b>									
1. Seed	\$44.35	\$10.00	\$32.67	\$14.30	\$10.99	\$38.72	\$2,415	\$20.13	\$24.15
2. Herbicide	32.81	20.64	16.67	5.19	3.18	23.19	1,504	12.53	15.04
3. Insecticide / Fungicide	1.25	0.00	0.00	1.25	8.48	0.00	141	1.17	1.41
4. Fertilizer and Lime	122.00	108.93	36.40	114.00	50.66	22.00	10,642	88.68	106.42
5. Crop Consulting	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
6. Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
7. Drying	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
8. Miscellaneous	5.75	5.75	5.75	5.75	5.75	5.75	690	5.75	6.90
9. Machinery Expense	109.08	94.85	58.70	102.90	143.87	57.48	11,206	93.39	112.06
10. Non-machinery Labor	9.90	8.60	5.30	9.30	13.00	5.20	1,014	8.45	10.14
11. Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
12. Land Charge / Rent	50.40	50.40	50.40	50.40	50.40	0.00	5,040	42.00	50.40
G. SUB-TOTAL	\$375.54	\$299.16	\$205.89	\$303.00	\$286.32	\$152.34	\$32,651	\$272.09	\$326.51
13. Interest on 1/2 Nonland Costs	12.42	9.35	6.85	8.42	8.18	5.74	1,030	8.58	10.30
H. TOTAL COSTS	\$387.96	\$308.52	\$211.74	\$312.51	\$294.50	\$158.07	\$33,681	\$280.67	\$336.81
I. RETURNS OVER COSTS (F - H)	\$165.14	\$118.49	\$150.97	\$59.24	\$105.85	\$99.23	\$10,716	\$89.30	\$107.16
J. TOTAL COSTS/UNIT (H/A)	\$4.31	\$3.86	\$7.84	\$6.94	\$84.14	\$7.90	---	---	---
K. RETURN TO TOTAL COST ((I+13)/G)	47.3%	42.7%	76.2%	22.7%	39.8%	68.9%	31.8%	31.8%	31.8%

Costs are +41% from projections a year ago, but profit potential still looks good for all crops!

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## Summary...

- Costs are up significantly (~40% above projected budgets a year ago) → access to capital is critical
- Fertilizer rates should possibly be reduced slightly due to extremely high prices
- High commodity prices offset increased input costs such that profit potential looks very positive
- Profit potential for wheat lags behind row crops (however, examining returns separately is not appropriate if rotational benefits exist)
- High costs & prices mean risk remains very high

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The screenshot shows the AgManager website interface. The main content area features a 'Providing Information and Tools For The Competitive Business' banner, a 'MAST' program advertisement, and several event listings for 2008, including 'Ag Lenders Conferences', 'Risk and Profit Conference', and '2008 Kansas Income Tax Institute'. A 'Recent Updates' sidebar lists various articles and reports. A prominent 'Questions?' box is overlaid on the bottom right of the page, next to contact information for Kevin Dhuyvetter.

### Questions?

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