

Ag Profitability Conference

Kansas State University

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Impact of Rising Fuel and Fertilizer Costs

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Winter 2006 meetings



Background thoughts . . .

- **Prices for energy-related inputs are at extremely high levels (all-time highs in many cases)**
- **Producers likely cannot do much about the prices they face, but they need to “understand the numbers” to make good decisions**
- **Major decisions crop producers have pertain to input levels, crop selection, tillage method, and possibly negotiating leases on rented land**

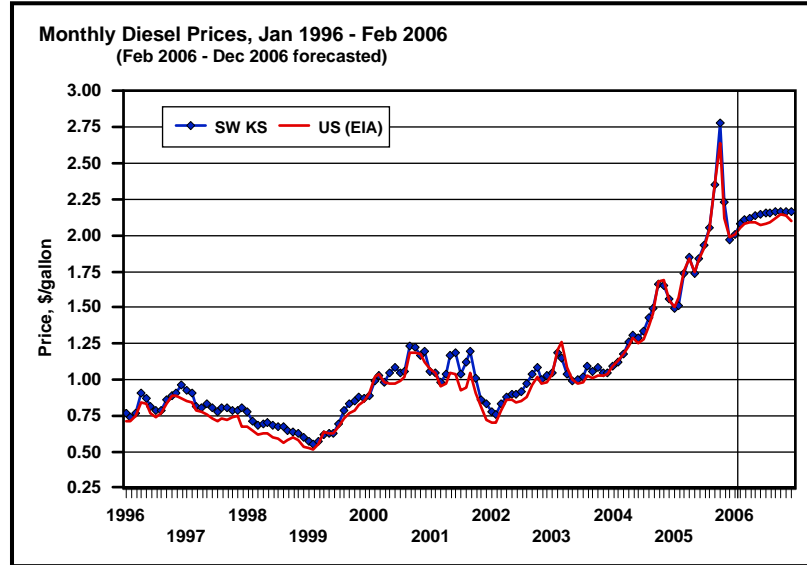
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Historical and forecasted prices for energy-related inputs

(diesel fuel, fertilizer, natural gas)

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Diesel prices are forecasted to be below 2005 peak level, but they are still at historically high levels ...



Based on 1/31/06 futures closing prices

Historical and forecasted diesel prices during principal farming months...

Diesel Fuel Prices

Year	Mar-Oct Diesel Price			Year-to-year percent change		
	SW KS	US (EIA)	Average	SW KS	US (EIA)	Average
2000	\$1.09	\$1.04	\$1.07	----	----	----
2001	\$1.09	\$0.98	\$1.04	0.6%	-6.1%	-2.7%
2002	\$0.94	\$0.88	\$0.91	-14.1%	-10.0%	-12.1%
2003	\$1.05	\$1.05	\$1.05	12.1%	18.6%	15.3%
2004	\$1.37	\$1.34	\$1.36	30.0%	28.4%	29.2%
2005	\$2.04	\$2.02	\$2.03	48.5%	49.9%	49.2%
2006 (F)	\$2.14	\$2.10	\$2.12	5.3%	4.1%	4.7%
2006 - 2005	\$0.11	\$0.08	\$0.10	5.3%	4.1%	4.7%
06 - Avg(00-04)	\$1.03	\$1.04	\$1.04	93.3%	97.9%	95.5%

F = forecast

Estimated effect diesel price has on machinery costs per acre based on custom rates...

Diesel Price Impact on Custom Rates for Various Field Operations

Operation	Custom rate*	Fuel price increase, \$/gallon				
		\$0.05	\$0.10	\$0.15	\$0.25	\$0.50
Increase in custom rate, \$/acre						
Chiseling	\$8.45	\$0.04	\$0.08	\$0.12	\$0.20	\$0.40
Field cultivation	\$7.13	\$0.03	\$0.06	\$0.10	\$0.17	\$0.34
Disking	\$6.84	\$0.03	\$0.06	\$0.10	\$0.16	\$0.32
Min-till planter	\$10.94	\$0.05	\$0.10	\$0.16	\$0.26	\$0.52
No-till drill	\$11.45	\$0.05	\$0.10	\$0.16	\$0.27	\$0.54
Sprayer	\$4.26	\$0.02	\$0.04	\$0.06	\$0.10	\$0.20
Swather-conditioner	\$9.46	\$0.04	\$0.09	\$0.13	\$0.22	\$0.45
Round baler	\$8.24	\$0.04	\$0.07	\$0.12	\$0.20	\$0.39
Combine--wheat	\$15.24	\$0.07	\$0.14	\$0.22	\$0.36	\$0.72
Combine--soybeans	\$21.48	\$0.10	\$0.19	\$0.31	\$0.51	\$1.02
Combine--corn	\$21.68	\$0.10	\$0.20	\$0.31	\$0.51	\$1.03

* 2005 state average reported by Kansas Agricultural Statistics

Increase in 2005 custom rates 0.5% 0.9% 1.4% 2.4% 4.7%

Impact of energy prices on irrigation pumping costs

KSU Irrigation Energy Costs.xls -----
A spreadsheet program to compare the costs of irrigation energy options.
Version -- 11.08.05

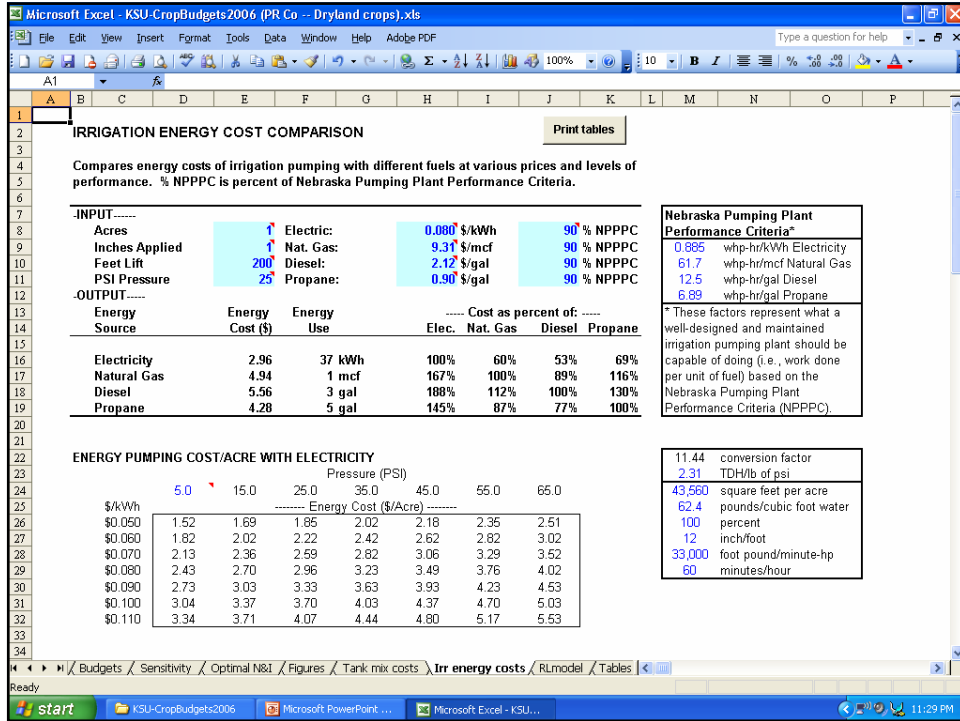
DESCRIPTION OF INPUTS
 In the spreadsheet all blue numbers are inputs and all black numbers are calculated from these inputs. Several of the input cells (i.e., blue number) have a red diamond in the upper right hand corner of the cell. By moving your mouse cursor over this diamond, a brief description of the input will be displayed on the screen.

COMPANION PUBLICATIONS
 This spreadsheet is based on the publication "Developing a Spreadsheet Template for Comparing Irrigation Energy Costs" (AF-161) by David A. Pacey and Freddie R. Lamm. In addition, K-State Farm Management Guide crop budgets and other useful information is available via the K-State Agricultural Economics website (www.agmanager.info).

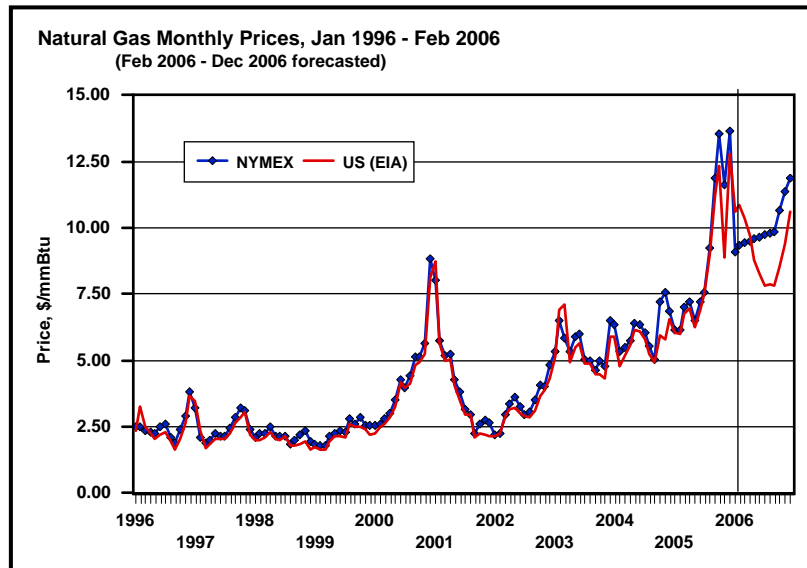
Developed by:

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KSU Irrigation Energy Costs.xls available at www.agmanager.info



Natural gas prices remain at historically high levels...



Historical and forecasted natural gas prices during principal farming months...

Natural Gas Prices

Year	Mar-Sep Natural Gas Price			Year-to-year percent change		
	NYMEX	US (EIA)	Average	NYMEX	US (EIA)	Average
2000	\$3.89	\$3.85	\$3.87	----	----	----
2001	\$3.85	\$3.49	\$3.67	-1.0%	-9.3%	-5.1%
2002	\$3.25	\$3.12	\$3.18	-15.5%	-10.7%	-13.2%
2003	\$5.40	\$5.24	\$5.32	66.0%	68.2%	67.1%
2004	\$5.81	\$5.63	\$5.72	7.6%	7.5%	7.5%
2005	\$8.09	\$8.37	\$8.23	39.2%	48.6%	43.9%
2006 (F)	\$9.96	\$8.65	\$9.31	23.2%	3.3%	13.1%
2006 - 2005	\$1.87	\$0.28	\$1.08	23.2%	3.3%	13.1%
06 - Avg(00-04)	\$5.52	\$4.39	\$4.95	124.4%	102.9%	113.9%

F = forecast

Based on 1/31/06 futures closing prices

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Irrigation pumping costs versus energy prices and lift...

ENERGY PUMPING COST/ACRE WITH NATURAL GAS

\$/mcf	Feet Lift						
	50	100	150	200	250	300	350
	----- Energy Cost (\$/Acre-Inch) -----						
\$5.00	1.23	1.74	2.26	2.77	3.29	3.80	4.32
\$5.50	1.35	1.92	2.48	3.05	3.62	4.18	4.75
\$6.00	1.47	2.09	2.71	3.33	3.95	4.56	5.18
\$6.50	1.60	2.27	2.94	3.61	4.28	4.95	5.61
\$7.00	1.72	2.44	3.16	3.88	4.60	5.33	6.05
\$7.50	1.84	2.62	3.39	4.16	4.93	5.71	6.48
\$8.00	1.97	2.79	3.61	4.44	5.26	6.09	6.91
\$8.50	2.09	2.96	3.84	4.72	5.59	6.47	7.34
\$9.00	2.21	3.14	4.07	4.99	5.92	6.85	7.77
\$9.50	2.33	3.31	4.29	5.27	6.25	7.23	8.21
\$10.00	2.46	3.49	4.52	5.55	6.58	7.61	8.64
\$4.36	1.07	1.52	1.97	2.42	2.87	3.32	3.77
\$9.31	2.29	3.25	4.21	5.17	6.12	7.08	8.04

Based on pressure of 30 psi

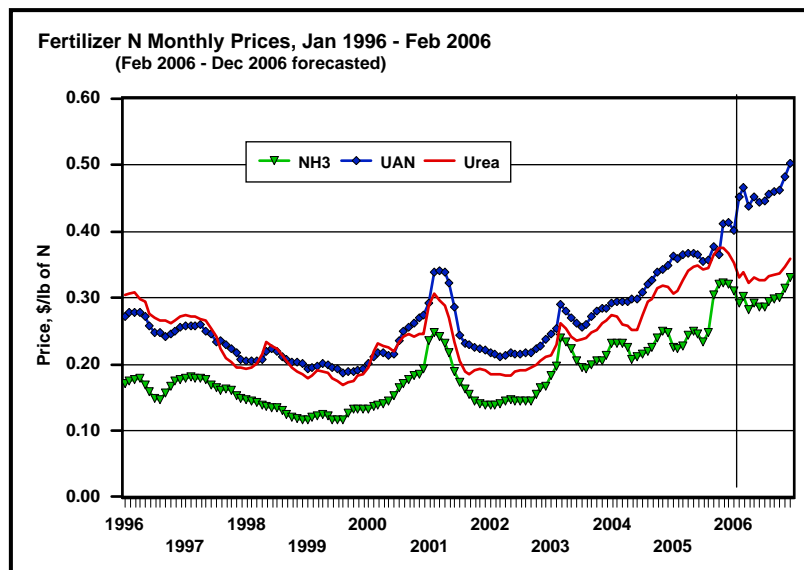
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Irrigation pumping costs versus energy prices and lift...

ENERGY PUMPING COST/ACRE WITH DIESEL FUEL							
\$/gallon	Feet Lift						
	50	100	150	200	250	300	350
	----- Energy Cost (\$/Acre-Inch) -----						
\$0.50	0.61	0.86	1.12	1.37	1.62	1.88	2.13
\$0.75	0.91	1.29	1.67	2.05	2.44	2.82	3.20
\$1.00	1.21	1.72	2.23	2.74	3.25	3.76	4.26
\$1.25	1.52	2.15	2.79	3.42	4.06	4.69	5.33
\$1.50	1.82	2.58	3.35	4.11	4.87	5.63	6.40
\$1.75	2.12	3.01	3.90	4.79	5.68	6.57	7.46
\$2.00	2.43	3.44	4.46	5.48	6.49	7.51	8.53
\$2.25	2.73	3.87	5.02	6.16	7.31	8.45	9.59
\$2.50	3.03	4.30	5.58	6.85	8.12	9.39	10.66
\$2.75	3.34	4.73	6.13	7.53	8.93	10.33	11.73
\$3.00	3.64	5.16	6.69	8.22	9.74	11.27	12.79
\$1.08	1.31	1.86	2.41	2.96	3.51	4.06	4.60
\$2.12	2.57	3.65	4.73	5.81	6.88	7.96	9.04

Based on pressure of 30 psi

Nitrogen fertilizer prices are at historically high levels...



Based on 1/31/06 futures closing prices

Historical and forecasted fertilizer prices during principal fertilizing months...

Fertilizer Prices (Corn Belt)

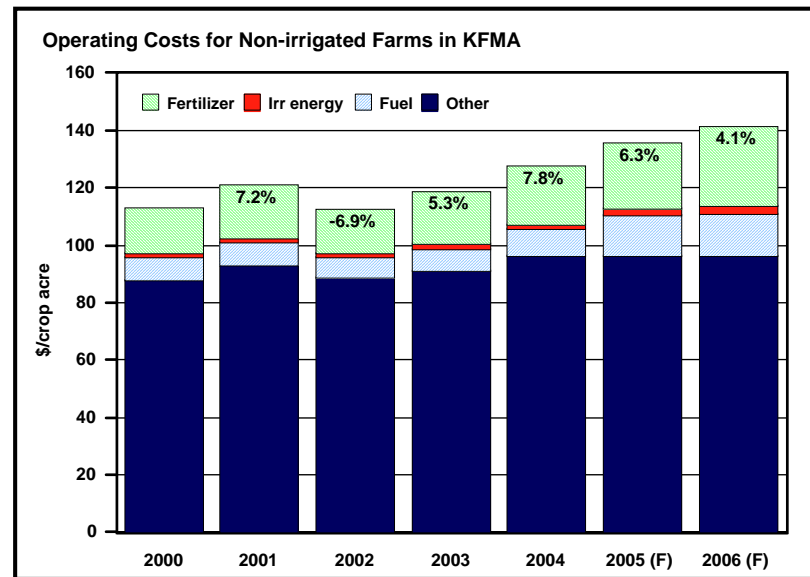
Year	NH3 (82%)	UAN (32%)	Urea (46%)	- P -	- K -	Wtd Avg	Yr-to-yr % change
2000	0.136	0.204	0.205	0.211	0.148	0.175	----
2001	0.217	0.305	0.272	0.193	0.148	0.234	33.2%
2002	0.141	0.218	0.187	0.201	0.144	0.175	-25.3%
2003	0.195	0.253	0.227	0.209	0.141	0.211	20.7%
2004	0.218	0.290	0.262	0.214	0.141	0.234	10.8%
2005	0.238	0.356	0.322	0.223	0.174	0.267	14.4%
2006 (F)	0.305	0.425	0.349	0.234	0.199	0.314	17.5%
2006 - 2005	\$0.067	\$0.068	\$0.027	\$0.012	\$0.025	\$0.047	17.5%
Percent chg	28.0%	19.2%	8.2%	5.2%	14.3%	17.5%	
06 - Avg(00-04)	\$0.123	\$0.171	\$0.118	\$0.029	\$0.054	\$0.108	52.7%
Percent chg	67.9%	67.3%	51.2%	14.0%	37.5%	52.7%	

* Oct-Dec of previous year (P = average of 10-34-0 and 18-46-0, K = muriate of potash)

F = forecast

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Costs per acre will be up in 2006 for fourth straight year...



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Projected budgets...

- **Crop rotations:**
 - Dryland: wheat (73%), corn (7%), milo (17.5%), SF (2.5%)
 - Irrigated: wheat (15%), corn (60%), milo (7.5%), soybeans (17.5%)
- **Machinery costs: 2000-04 vs. 2006-fuel-adjusted-rate**
- **Natural gas: 2000-04 avg vs. projected 2006 value**
- **Fertilizer: 2000-04 avg vs. projected 2006 values**
- **Inputs based on KSU Farm Management Guides except N fertilizer and irrigation → optimal levels**

Focus should be on changes and relative differences rather than absolute values

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Cost scenarios...

Input	Average Prices	Current Prices
Machinery	2000-04 time-adjusted custom rates	2000-04 time-adjusted rates x 110%
Fertilizer	2000-04 avg	2006 forecast
N	\$0.206/lb	\$0.338/lb (+64%)
P	\$0.205/lb	\$0.234/lb (+14%)
K	\$0.145/lb	\$0.199/lb (+37%)
Irrigation	2000-04 avg \$1.97/inch	2006 forecast \$4.21/inch (+114%)

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Dryland crop budgets

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels								
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower	Alfalfa	Rotation1	Rotation2
Rotation (1 or 2, if none enter 0)	1	1	1	1	1	1		
Percent of rotation (total - 100%)	73.0%	7.0%	17.5%	0.0%	2.5%	0.0%	100%	0%
INCOME PER ACRE								
A. Yield per acre	34.8	59.7	59.6	19.4	1,144.3	2.9	---	---
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12	\$75.00	---	---
C. Net government payments	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	n/a
D. Indemnity payments	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	n/a
E. Miscellaneous income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	n/a
F. Returns/acre ((A x B) + C + D + E)	\$147.26	\$164.24	\$152.35	\$129.25	\$149.65	\$232.25	\$149.40	n/a
COSTS PER ACRE								
1. Seed	\$4.60	\$26.82	\$8.01	\$26.25	\$16.40	\$11.13	\$7.05	n/a
2. Herbicide	10.49	35.15	35.15	13.65	36.40	2.98	17.18	n/a
3. Insecticide / Fungicide	0.00	0.00	0.00	0.00	14.33	6.69	0.36	n/a
4. Fertilizer and Lime	12.86	12.81	13.21	3.55	9.77	16.90	12.84	n/a
5. Crop Consulting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a
6. Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a
7. Drying	0.00	0.00	0.00	0.00	4.46	0.00	0.11	n/a
8. Miscellaneous	5.50	5.50	5.50	5.50	5.50	5.50	5.50	n/a
9. Machinery Expense	59.58	37.50	49.61	42.46	60.10	104.11	56.30	n/a
10. Non-machinery Labor	7.00	7.00	7.00	5.00	7.00	12.50	7.00	n/a
11. Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a
12. Land Charge / Rent	30.60	30.60	30.60	30.60	30.60	30.60	30.60	n/a
G. SUB TOTAL	\$130.63	\$155.38	\$149.09	\$127.01	\$184.56	\$190.41	\$136.94	n/a
13. Interest on 1/2 Nonland Costs	4.00	4.99	4.74	3.86	5.98	6.39	4.25	n/a
H. TOTAL COSTS	\$134.63	\$160.37	\$153.83	\$130.86	\$190.54	\$196.80	\$141.19	n/a
I. RETURNS OVER COSTS (F - H)	\$12.63	\$3.86	(\$1.47)	(\$1.62)	(\$40.88)	\$35.45	\$8.21	n/a
J. TOTAL COSTS/UNIT (H/A)	\$3.87	\$2.69	\$2.58	\$6.75	\$0.17	\$67.63	---	---
K. RETURN TO ANNUAL COST ((I+J)/G)	12.74%	5.70%	2.19%	1.76%	-18.91%	21.97%	9.10%	n/a

Dryland crops example profitability summary ...

Comparison of Crop Returns under Various Input Price Scenarios

Crop	Wheat	Corn	Sorghum	Sunflower	Wtd Avg
Base scenario ¹	\$12.63	\$3.86	(\$1.47)	(\$40.88)	\$8.21
At forecasted 2006 prices for...					
Fuel ²	\$6.44	(\$0.04)	(\$6.63)	(\$47.13)	\$2.36
Fertilizer ²	\$6.32	(\$1.36)	(\$6.72)	(\$44.73)	\$2.22
Natural gas ²	\$12.63	\$3.86	(\$1.47)	(\$40.88)	\$8.21
Fuel, fert, and nat gas ²	\$0.13	(\$5.25)	(\$11.86)	(\$50.98)	(\$3.62)
Change, \$/ac	(\$12.51)	(\$9.11)	(\$10.39)	(\$10.10)	(\$11.84)

¹ Returns based on current Farm Management Guide costs except fuel, fertilizer, and irrigation pumping (2000-04 avg) and futures-based crop prices as of 2/3/06.

² All other costs and crop prices are the same as in base scenario (yields vary with fertilizer and irrigation costs).

Irrigated crop budgets

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels								
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower	Alfalfa	Rotation1	Rotation2
Rotation (1 or 2, if none enter 0)	1	1	1	1	1	1		
Percent of rotation (total - 100%)	15.0%	60.0%	7.5%	17.5%	0.0%	0.0%	100%	0%
INCOME PER ACRE								
A. Yield per acre	43.3	167.6	102.2	43.7	2,744.6	6.8	---	---
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12	\$75.00	---	---
C. Net government payments	\$33.00	\$33.00	\$33.00	\$33.00	\$33.00	\$33.00	\$33.00	n/a
D. Indemnity payments	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	n/a
E. Miscellaneous income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	n/a
F. Returns/acre ((A x B) + C + D + E)	\$198.72	\$454.79	\$270.16	\$292.31	\$358.35	\$542.25	\$374.10	n/a
COSTS PER ACRE								
1. Seed	\$6.00	\$44.70	\$17.70	\$28.35	\$19.19	\$11.13	\$34.01	n/a
2. Herbicide	5.18	30.55	27.11	14.87	18.90	16.00	23.74	n/a
3. Insecticide / Fungicide	0.00	38.70	0.00	0.00	14.35	8.60	23.22	n/a
4. Fertilizer and Lime	16.30	55.85	28.45	7.76	38.13	25.63	39.44	n/a
5. Crop Consulting	6.00	6.50	6.25	6.25	6.00	6.00	6.36	n/a
6. Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a
7. Drying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a
8. Miscellaneous	7.50	7.50	7.50	7.50	7.50	7.50	7.50	n/a
9. Machinery Expense	65.15	92.65	87.39	69.55	76.96	165.68	84.09	n/a
10. Non-machinery Labor	7.50	10.00	10.00	8.00	9.00	20.00	9.28	n/a
11. Irrigation	108.01	117.31	109.14	115.95	114.13	132.29	115.06	n/a
12. Land Charge / Rent	35.70	35.70	35.70	35.70	35.70	35.70	35.70	n/a
G. SUB TOTAL	\$257.33	\$439.46	\$329.24	\$293.93	\$339.87	\$428.53	\$378.40	n/a
13. Interest on 1/2 Nonland Costs	5.95	13.24	8.83	7.42	9.25	12.80	10.80	n/a
H. TOTAL COSTS	\$263.29	\$452.69	\$338.07	\$301.34	\$349.12	\$441.33	\$389.20	n/a
I. RETURNS OVER COSTS (F - H)	(\$64.57)	\$2.10	(\$67.91)	(\$9.03)	\$9.23	\$100.92	(\$15.10)	n/a
J. TOTAL COSTS/UNIT (H/A)	\$6.08	\$2.70	\$3.31	\$6.90	\$0.13	\$65.00	---	---
K. RETURN TO ANNUAL COST ((I+13)/G)	-22.78%	3.49%	-17.94%	-0.55%	5.44%	26.54%	-1.14%	n/a

Irrigated crops example profitability summary ...

Comparison of Crop Returns under Various Input Price Scenarios

Crop	Wheat	Corn	Sorghum	Soybean	Wtd Avg
Base scenario ¹	(\$64.57)	\$2.10	(\$67.91)	(\$9.03)	(\$15.10)
At forecasted 2006 prices for...					
Fuel ²	(\$68.85)	(\$3.16)	(\$72.93)	(\$13.25)	(\$20.01)
Fertilizer ²	(\$71.68)	(\$25.17)	(\$80.20)	(\$10.17)	(\$33.65)
Natural gas ²	(\$89.28)	(\$35.37)	(\$94.87)	(\$42.54)	(\$49.18)
Fuel, fert, and nat gas ²	(\$98.01)	(\$65.19)	(\$109.32)	(\$47.90)	(\$70.40)
Change, \$/ac	(\$33.44)	(\$67.29)	(\$41.41)	(\$38.87)	(\$55.30)

¹Returns based on current Farm Management Guide costs except fuel, fertilizer, and irrigation pumping (2000-04 avg) and futures-based crop prices as of 2/3/06.

²All other costs and crop prices are the same as in base scenario (yields vary with fertilizer and irrigation costs).

Management options...

- What can producers do in response to these high input prices?
- Choices will center around crop selection and input use (i.e., fertilizer, fuel for machinery and irrigation)

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Crop selection...

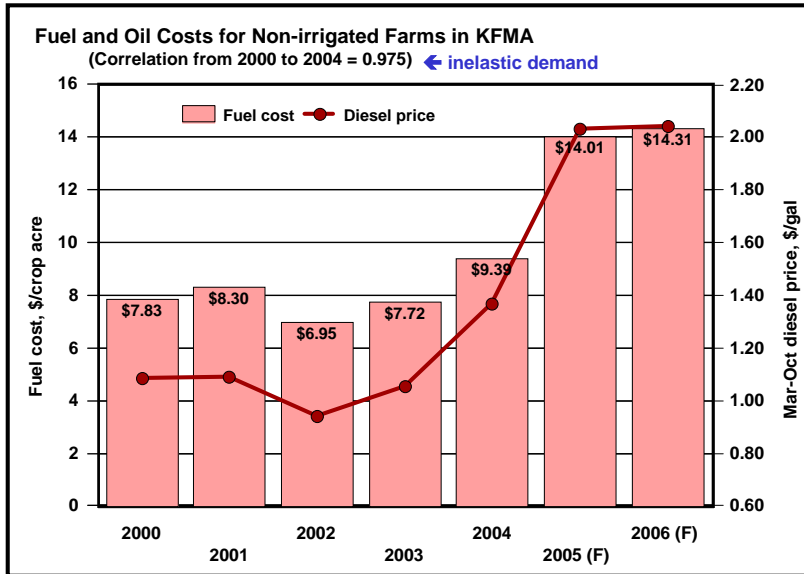
K-State Crop Budgets as resources

- Projected budgets – Farm Management Guides
- Actual budgets – KFMA Enterprise Analysis
- *KSU-CropBudgets2006.xls*
- All are available on www.agmanager.info



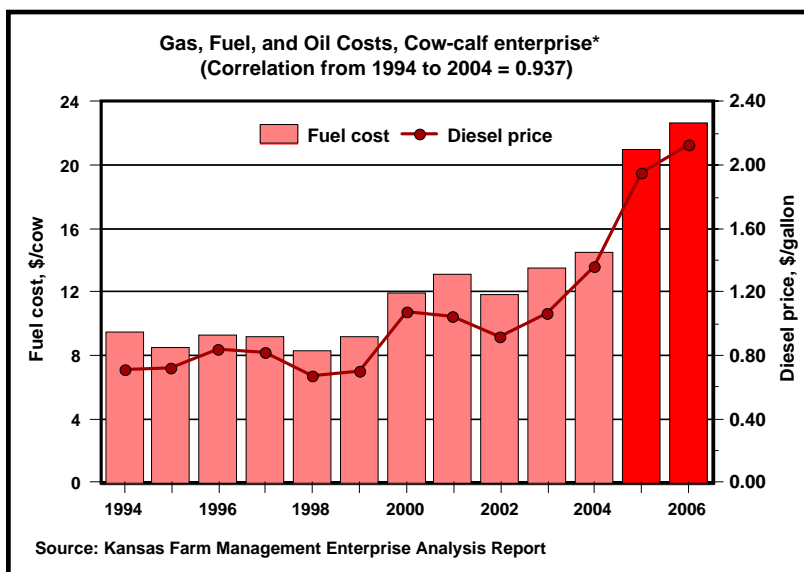
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Fuel costs per acre versus diesel prices...



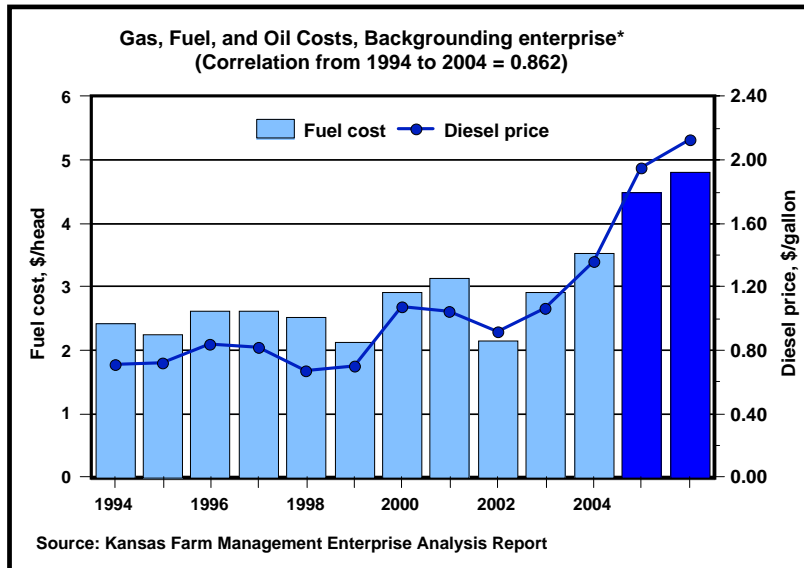
Without any change, costs in 2005 & 2006 will be up substantially on average.

Cow/calf -- Fuel costs per head versus diesel prices...



Without any change, costs in 2005 & 2006 will be up substantially on average.

Backgrounding -- Fuel costs per acre versus diesel prices...



Without any change, costs in 2005 & 2006 will be up substantially on average.

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What can producers do in response to higher machinery costs?

Without any change, costs of machinery operations will increase about 7-10% from more "normal" times.

Things to consider...

- Reduce operations?
- Hire custom operators?
- Make sure machinery is properly maintained and used efficiently?
- Pass increased costs on to landowners?
- Nothing?

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USDA-NRCS Energy Consumption Awareness Tool: Tillage - Microsoft Internet Explorer

Address: http://ecat.sc.egov.usda.gov/Default.aspx

Energy Estimator

United States Department of Agriculture
Natural Resources Conservation Service

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You are here: Home

Welcome to Energy Estimator: Tillage

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- CSP Energy Job Sheets

Feedback

- Comment on Energy Estimator: Tillage

Energy Estimator for Tillage is the first of several tools from Natural Resources Conservation Service (NRCS) developed to increase energy awareness in agriculture. The tool estimates diesel fuel use and costs in the production of key crops in your area and compares potential energy savings between conventional tillage and alternative tillage systems. The crops covered are limited to the most predominant crops in 74 Crop Management Zones (CMZ's). NRCS agronomists have identified these crops and estimated the fuel use associated with common tillage systems. Without including every crop and tillage system, the Energy Estimator gives you an idea of the magnitude of diesel fuel savings under different levels of tillage.

Step 1: Zip Code

Begin using this tool by entering your zip code, then click CONTINUE:

Zip Code * : 67672

Impact of reducing tillage -- http://ecat.sc.egov.usda.gov/Default.aspx

USDA-NRCS Energy Consumption Awareness Tool: Tillage - Microsoft Internet Explorer

Address: http://ecat.sc.egov.usda.gov/Cost.aspx?UnitPrice=2.12

You are here: Home / Step 2: Crop Zone / Step 3: Fuel / Step 4: Cost

Step 4: Fuel Cost

If you want to checkout different fuel prices, enter a different price per gallon and click "RECALCULATE": \$ 2.12

Total Diesel Fuel Cost Estimate (in dollars per year) based on \$2.12/gallon

Crop	Acres	Conventional Tillage	Mulch-Till	Ridge-Till	No-Till
Corn	7	\$72	\$53	\$51	\$40
Fallow	33.3		\$155		\$25
Sorghum	17.5	\$184	\$136	\$129	\$72
Sunflower	2.5	\$25	\$19	\$17	\$8
Wheat	73	\$909	\$549		\$290
Total Fuel Cost		\$1,191	\$912	\$197	\$437
Potential Cost Savings over Conventional Tillage			\$435	\$85	\$780

Total Farm Diesel Fuel Consumption Estimate (in gallons per year)

Crop	Acres	Conventional Tillage	Mulch-Till	Ridge-Till	No-Till
Corn	7	34	25	24	19
Fallow	33.3		73		12
Sorghum	17.5	87	64	61	34
Sunflower	2.5	12	9	8	4
Wheat	73	429	259		137
Total Fuel Use		562	430	93	206
Potential Fuel Savings over Conventional Tillage			205	40	368
Savings			36%	7%	65%

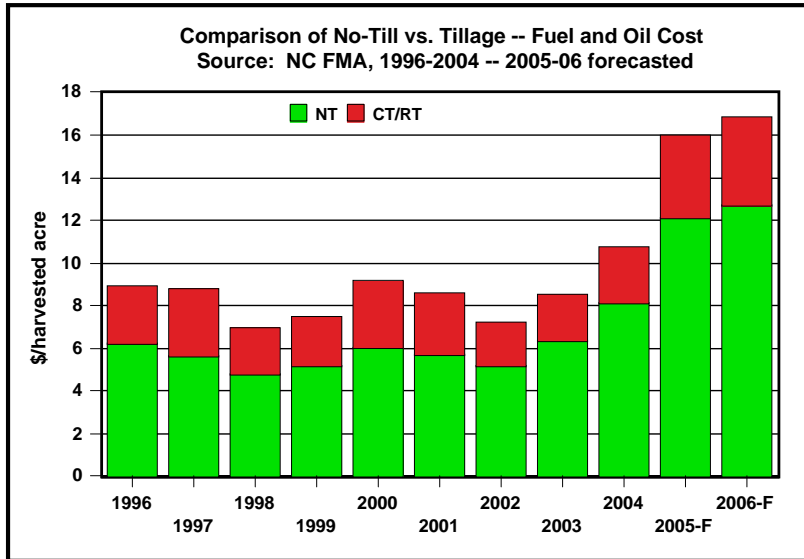
WA KEENEY, KS 67672

Back Print Start Over

Last Modified: 12/06/2005

Savings of \$5.85/a vs CT (\$3.56 vs MT)
 (based on average crop mix in region)

Fuel-savings benefit of no-till increases at higher prices...



NT fuel generally 67-75% of CT/RT, savings could be as high as \$4/acre at current diesel prices...

35

What can a producer do?

Hiring custom operators likely will not be the answer...

CropLife 100 (December 2005 issue)
22nd Annual Ranking

ADDING FUEL TO THE FIRE

As fuel prices increase (and are expected to stay high throughout 2006), retailers are looking for ways to recoup their costs. Here are the most popular options:

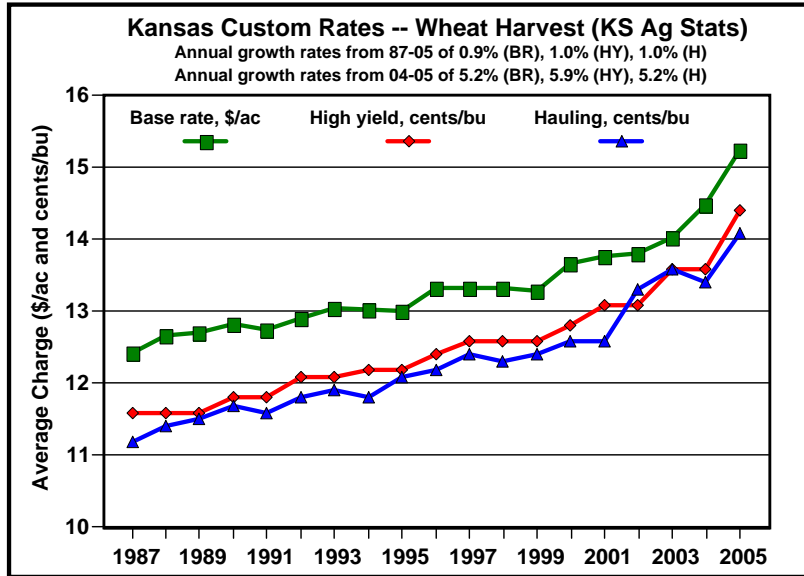
Charging More For Services	71%
Adding a Fuel Surcharge	35%
No Recovery at This Time	24%
Looking at Other Options	3%

Base = 62

... while some custom operators might not increase their rates, something will have to give (quality of work?).

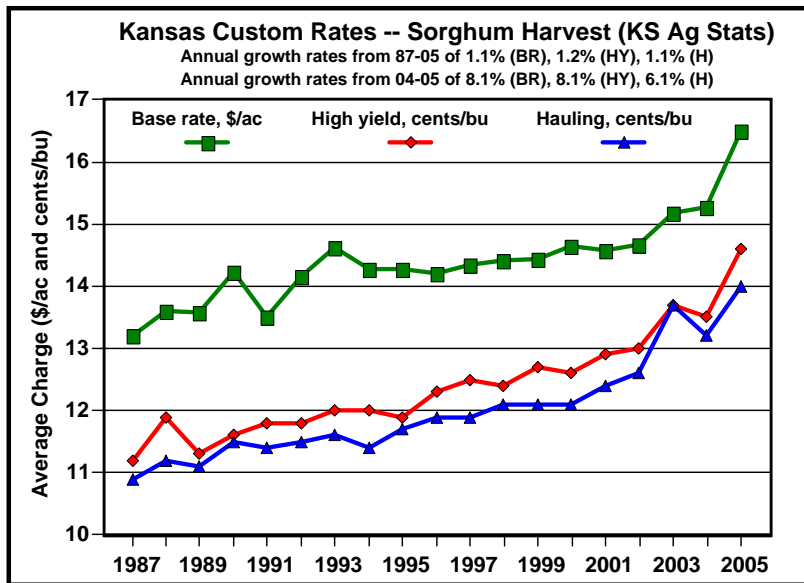
36

Custom harvesters raised their rates in 2005...



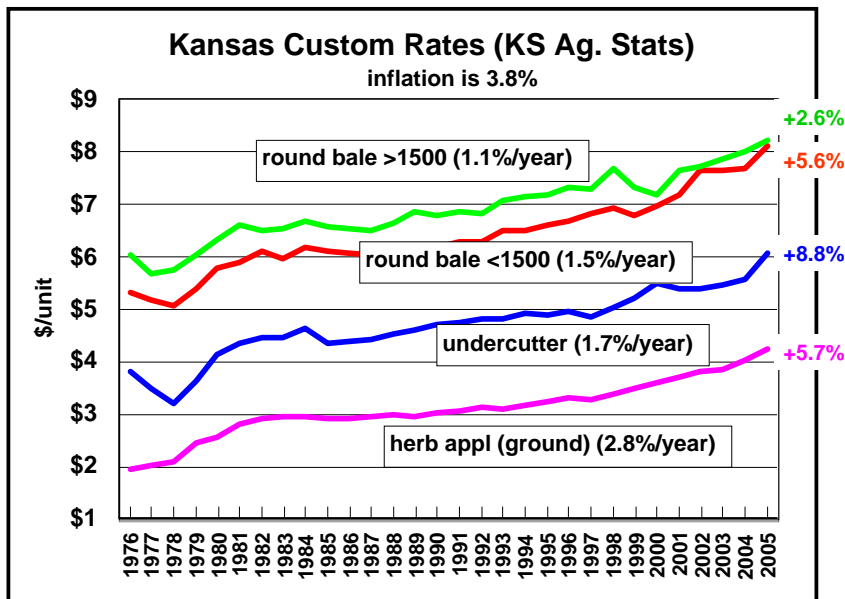
37

Custom harvesters raised their rates in 2005...



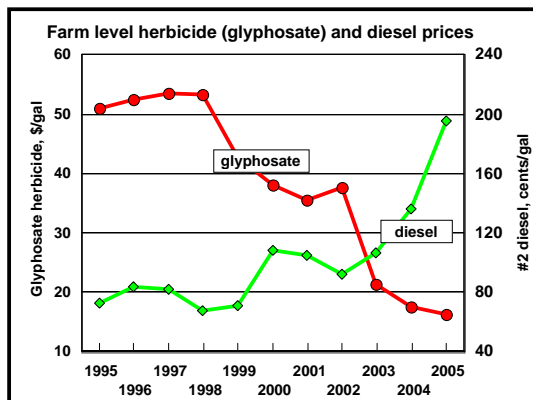
39

Not all custom rates increased as much in 2005...



What can a producer do?

- Benefits of “improved machinery operation” will depend on current situation. While benefit for most producers is likely quite small, cost of doing so is also likely small → *Just do it!*
- If you have been thinking of no-till, but have been reluctant to make the change --- now might be the time to make the switch!



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www.agmanager.info

Site Updates

- Updated Crop Basis Tool
February 7, 2006 by Kevin O'Connell
- Monthly NFI and Diesel Price Forecasts
January 31, 2006 by Kevin O'Connell
- Crop Basis Maps
January 22, 2006 by Kevin O'Connell
- Updated Cattle Databases
December 23, 2005 by Jim Winkert
- Livestock and Hay Charts
December 23, 2005 by Jim Winkert
- In The Cattle Markets
December 20, 2005 by Jim Winkert, MRC
- Grain Outlook
December 16, 2005 by Mike Washburn
- KSU-Crop Budgets 2006.xls
December 13, 2005 by O'Connell et al
- Modifying Fertilizer Prices to Reflect Price
December 2, 2005 by Parsons et al
- Impact of Energy Prices on KS Farm Costs
December 2, 2005 by O'Connell et al

Ag Profitability Conferences
Women Managing the Farm Conference Information

Contact Us: Department of Agricultural Economics 342, Waters Hall, Manhattan, KS 66506 (785) 532-5523

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

KSU-CropBudgets2006.xls can help with nitrogen fertilizer and irrigation questions

N-Rate Calculator - Microsoft Internet Explorer

Address http://extension.agron.iastate.edu/soilfertility/nrate.aspx

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Corn Nitrogen Rate Calculator

Finding the Maximum Return To N

This web site provides a process to calculate economic return to N application with different nitrogen and corn prices and to find profitable N rates directly from recent N rate research data. The method used follows a newly developed regional approach for determining corn N rate guidelines that is being implemented in several Corn Belt states.

Single Price Ratio | Multiple Price Ratios | v. 1.10b

Choose state
Iowa
Illinois
Minnesota
Wisconsin

Choose rotation pattern(s)
 Corn following soybean
 Corn following corn
 Include non-responsive sites

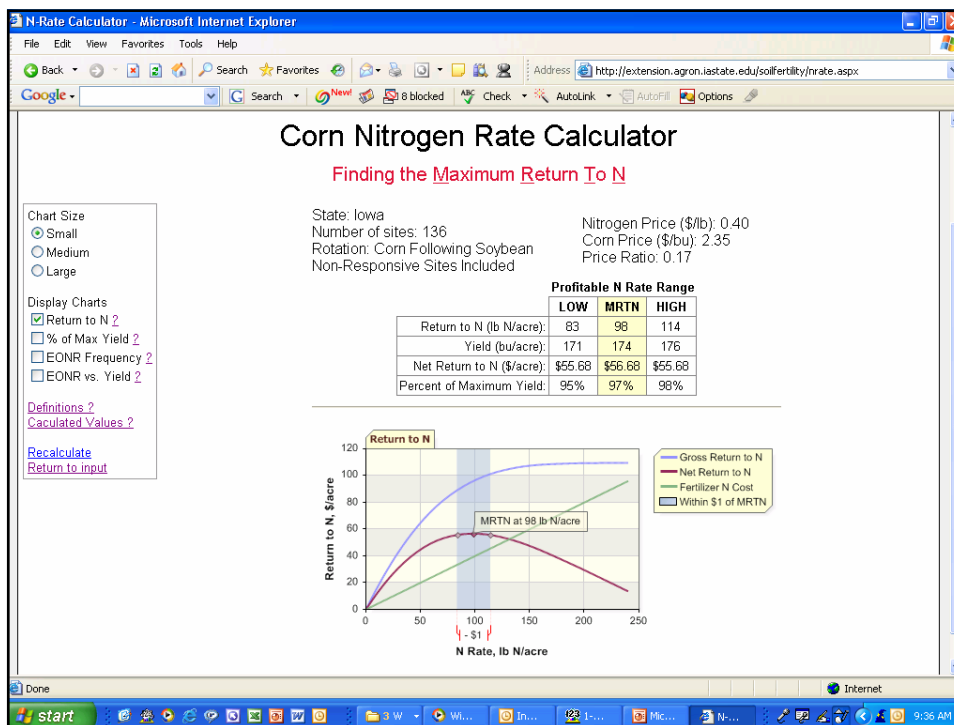
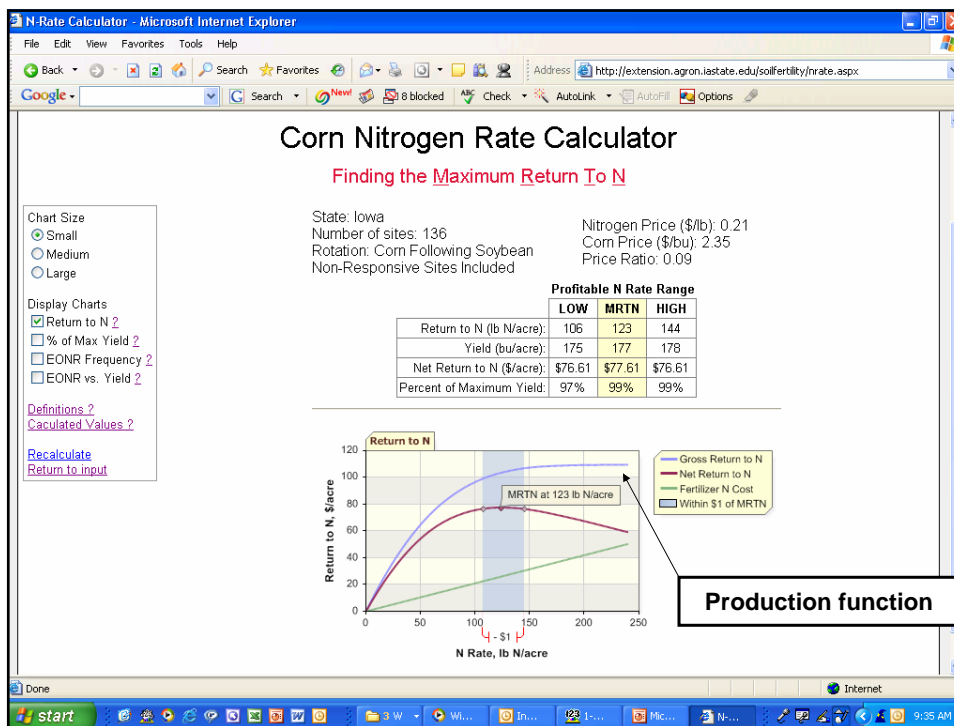
Set corn and nitrogen prices
 Nitrogen price (\$/lb) 0.22

Data to enter:

- state
- rotation
- nitrogen price
- corn price

Done

start | 3 W... | Win... | Inb... | 1-2... | Mc... | N-R... | 9:31 AM



Modifying KSU nitrogen recommendations based upon prices...

Nitrogen Recommendations for Wheat

Yield goal, bu/ac	40	50	60	70	80
KSU N rec, lbs/ac	36	60	84	108	132
N price	Price adjusted N rec, lbs/ac				
\$0.25	36	60	84	108	132
\$0.30	34	58	81	105	128
\$0.35	32	56	79	102	125
\$0.40	31	53	76	99	121
\$0.45	29	51	73	95	118
N price	Price adjusted N rec reduction				
\$0.25	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
\$0.30	4.9%	3.7%	3.1%	2.9%	2.7%
\$0.35	9.9%	7.4%	6.4%	5.8%	5.4%
\$0.40	14.9%	11.2%	9.6%	8.7%	8.1%
\$0.45	19.9%	14.9%	12.8%	11.6%	10.9%

SOM=2.0; STN=20; Wheat price=\$3.83

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Modifying KSU nitrogen recommendations based upon prices...

Nitrogen Recommendations for Corn

Yield goal, bu/ac	60	90	120	150	180
KSU N rec, lbs/ac	36	84	132	180	228
N price	Price adjusted N rec, lbs/ac				
\$0.25	35	83	130	178	225
\$0.30	33	80	127	173	220
\$0.35	32	77	123	169	215
\$0.40	30	75	119	164	209
\$0.45	28	72	116	160	204
N price	Price adjusted N rec reduction				
\$0.25	2.5%	1.6%	1.4%	1.3%	1.2%
\$0.30	7.5%	4.8%	4.1%	3.7%	3.5%
\$0.35	12.5%	8.0%	6.8%	6.2%	5.9%
\$0.40	17.4%	11.2%	9.5%	8.7%	8.3%
\$0.45	22.4%	14.4%	12.2%	11.2%	10.6%

SOM=2.0; STN=20; Corn price=\$2.52

48

Modifying KSU nitrogen recommendations based upon prices...

Nitrogen Recommendations for Grain Sorghum

Yield goal, bu/ac	50	75	100	125	150
KSU N rec, lbs/ac	20	60	100	140	180
N price	Price adjusted N rec, lbs/ac				
\$0.25	20	59	99	139	179
\$0.30	18	57	96	135	174
\$0.35	16	54	92	130	169
\$0.40	15	52	89	126	164
\$0.45	13	49	86	122	159
N price	Price adjusted N rec reduction				
\$0.25	2.4%	1.2%	1.0%	0.9%	0.8%
\$0.30	10.7%	5.4%	4.3%	3.8%	3.6%
\$0.35	19.0%	9.5%	7.6%	6.8%	6.3%
\$0.40	27.3%	13.7%	10.9%	9.8%	9.1%
\$0.45	35.6%	17.8%	14.3%	12.7%	11.9%

SOM=2.0; STN=20; Sorghum price=\$2.32

49

Dryland optimal fertilizer N values @ \$0.206/lb N

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels

Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower
Rotation (1 or 2, if none enter 0)	1	1	1	1	1
Percent of rotation (total - 100%)	73.0%	7.0%	17.5%	0.0%	2.5%
Yield Goal (YG), bu/ac	35.0	60.0	60.0	20.0	1150.0
Enter 0 for Dryland or 1 for Irrigated	0	0	0	0	0
Annual rainfall	18.0	18.0	18.0	18.0	18.0
Organic matter (OM), %	2.00	2.00	2.00	2.00	2.00
Soil test nitrogen (STN), lbs/ac	20.0	20.0	20.0	20.0	20.0
Other N adjustments, lbs/ac	0.0	0.0	0.0	0.0	0.0
Nitrogen fertilizer cost, \$/lb	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21
Irrigation energy cost, \$/inch	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97
KSU recommended nitrogen, lbs/ac	44.0	36.0	36.0	0.0	26.3
Econ Optimum fertN, lbs/ac	45.4	36.7	37.2	0.0	26.3
Econ Optimum Irrigation Amount, in	0.0	0.0	0.0	0.0	0.0
Yield at optimal N and I, bu/ac	34.8	59.7	59.6	19.4	1144.3
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12

Optimal rates are exceed KSU recommendations because prices are above long-term averages

50

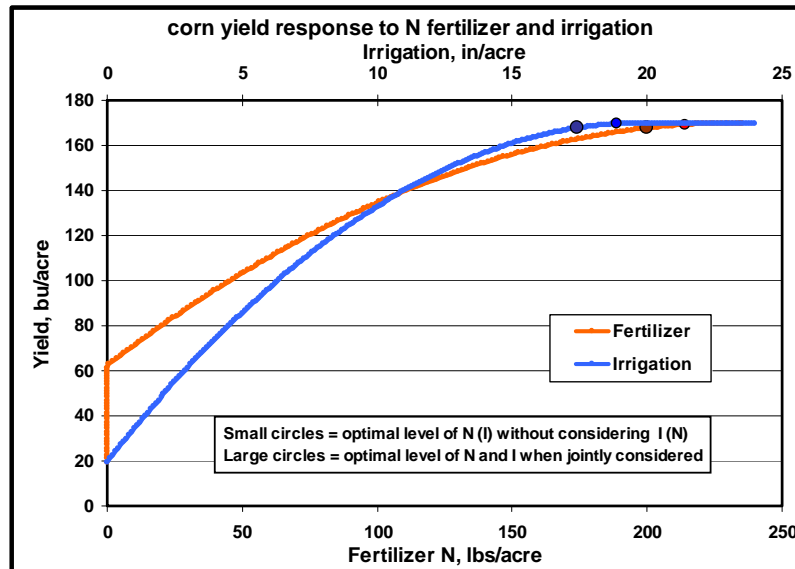
Dryland optimal fertilizer N values @ \$0.338/lb N

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels					
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower
Rotation (1 or 2, if none enter 0)	1	1	1	1	1
Percent of rotation (total - 100%)	73.0%	7.0%	17.5%	0.0%	2.5%
Yield Goal (YG), bu/ac	35.0	60.0	60.0	20.0	1150.0
Enter 0 for Dryland or 1 for Irrigated	0	0	0	0	0
Annual rainfall	18.0	18.0	18.0	18.0	18.0
Organic matter (OM), %	2.00	2.00	2.00	2.00	2.00
Soil test nitrogen (STN), lbs/ac	20.0	20.0	20.0	20.0	20.0
Other N adjustments, lbs/ac	0.0	0.0	0.0	0.0	0.0
Nitrogen fertilizer cost, \$/lb	\$0.34	\$0.34	\$0.34	\$0.34	\$0.34
Irrigation energy cost, \$/inch	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97
KSU recommended nitrogen, lbs/ac	44.0	36.0	36.0	0.0	26.3
Econ Optimum fertN, lbs/ac	41.3	31.9	31.9	0.0	22.1
Econ Optimum Irrigation Amount, in	0.0	0.0	0.0	0.0	0.0
Yield at optimal N and I, bu/ac	34.5	59.2	59.0	19.4	1134.8
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12

Optimal rates are about 10-15% less than KSU recommendations at high N price

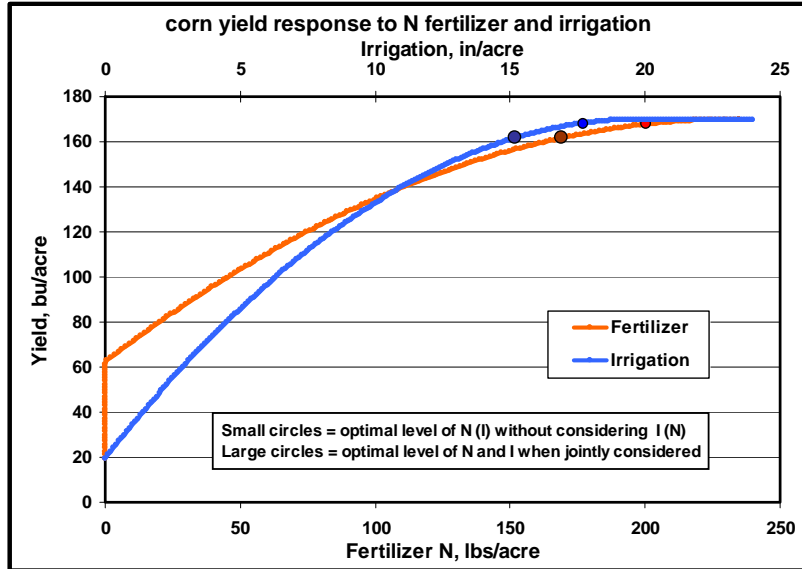
51

When considering irrigation and N together, optimal values decrease significantly [LOW PRICES]...



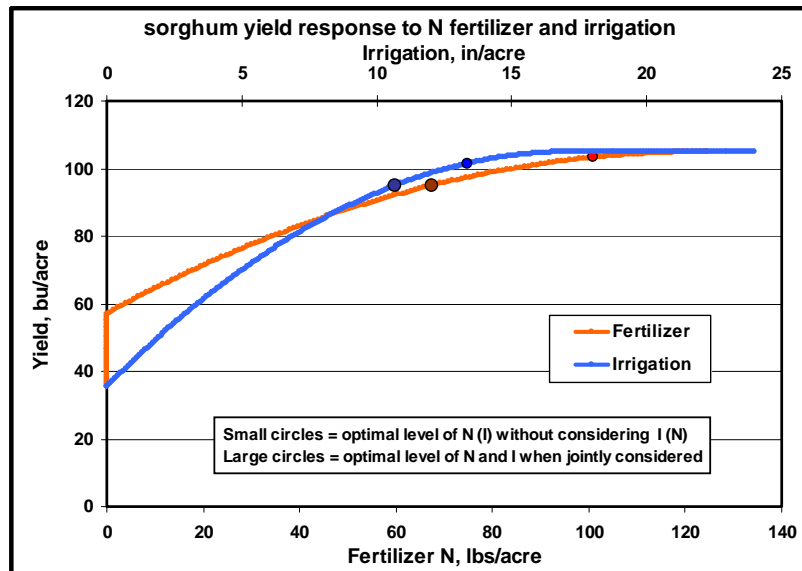
52

When considering irrigation and N together, optimal values decrease significantly [HIGH PRICES]...



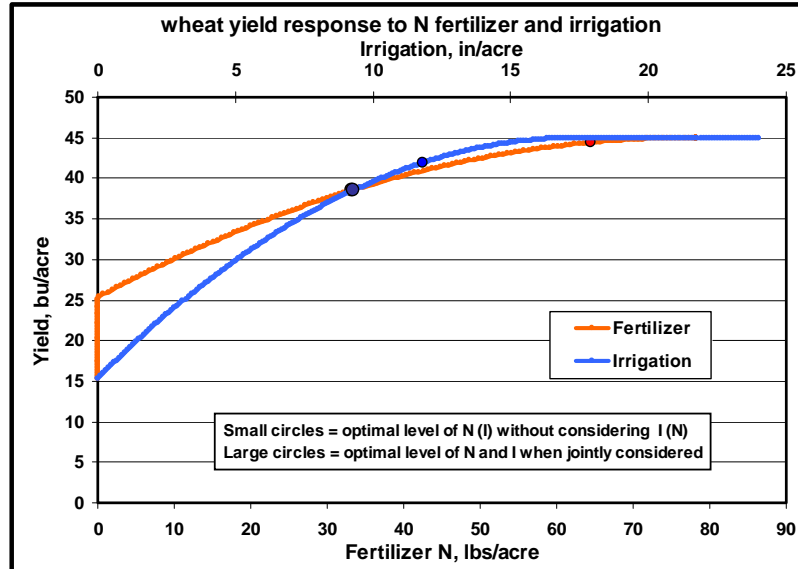
53

When considering irrigation and N together, optimal values decrease significantly [HIGH PRICES]...



54

When considering irrigation and N together, optimal values decrease significantly [HIGH PRICES]...



55

Irrigated optimal fert N values @ \$0.206/lb N & \$1.97/in

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels					
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower
Rotation (1 or 2, if none enter 0)	1	1	1	1	1
Percent of rotation (total - 100%)	15.0%	60.0%	7.5%	17.5%	0.0%
Yield Goal (YG), bu/ac	45.0	170.0	105.0	45.0	2800.0
Enter 0 for Dryland or 1 for Irrigated	1	1	1	1	1
Annual rainfall	18.0	18.0	18.0	18.0	18.0
Organic matter (OM), %	2.00	2.00	2.00	2.00	2.00
Soil test nitrogen (STN), lbs/ac	20.0	20.0	20.0	20.0	20.0
Other N adjustments, lbs/ac	0.0	0.0	0.0	0.0	0.0
Nitrogen fertilizer cost, \$/lb	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21
Irrigation energy cost, \$/inch	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97
KSU recommended nitrogen, lbs/ac	68.0	212.0	108.0	0.0	150.0
Econ Optimum fertN, lbs/ac	55.2	199.8	94.5	0.0	134.2
Econ Optimum Irrigation Amount, in	13.3	17.4	13.8	16.8	16.0
Yield at optimal N and I, bu/ac	43.3	167.6	102.2	43.7	2744.6
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12

Optimal rates are below KSU recommendations because of irrigation

56

Irrigated optimal fert N values @ \$0.338/lb N & \$1.97/in

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels					
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower
Rotation (1 or 2, if none enter 0)	1	1	1	1	1
Percent of rotation (total - 100%)	15.0%	60.0%	7.5%	17.5%	0.0%
Yield Goal (YG), bu/ac	45.0	170.0	105.0	45.0	2800.0
Enter 0 for Dryland or 1 for Irrigated	1	1	1	1	1
Annual rainfall	18.0	18.0	18.0	18.0	18.0
Organic matter (OM), %	2.00	2.00	2.00	2.00	2.00
Soil test nitrogen (STN), lbs/ac	20.0	20.0	20.0	20.0	20.0
Other N adjustments, lbs/ac	0.0	0.0	0.0	0.0	0.0
Nitrogen fertilizer cost, \$/lb	\$0.34	\$0.34	\$0.34	\$0.34	\$0.34
Irrigation energy cost, \$/inch	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97
KSU recommended nitrogen, lbs/ac	68.0	212.0	108.0	0.0	150.0
Econ Optimum fertN, lbs/ac	49.7	185.9	84.9	0.0	123.7
Econ Optimum Irrigation Amount, in	12.3	16.4	12.7	16.8	14.9
Yield at optimal N and I, bu/ac	42.4	165.3	100.2	43.7	2702.0
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12

Optimal rates decrease 10-15% at high N price

57

Irrigated optimal fert N values @ \$0.338/lb N & \$4.21/in

Comparison of Crop Returns with Nitrogen Fertilizer and Irrigation Water at Economic Optimum Levels					
Crop/System	Wheat	Corn	Sorghum	Soybean	Sunflower
Rotation (1 or 2, if none enter 0)	1	1	1	1	1
Percent of rotation (total - 100%)	15.0%	60.0%	7.5%	17.5%	0.0%
Yield Goal (YG), bu/ac	45.0	170.0	105.0	45.0	2800.0
Enter 0 for Dryland or 1 for Irrigated	1	1	1	1	1
Annual rainfall	18.0	18.0	18.0	18.0	18.0
Organic matter (OM), %	2.00	2.00	2.00	2.00	2.00
Soil test nitrogen (STN), lbs/ac	20.0	20.0	20.0	20.0	20.0
Other N adjustments, lbs/ac	0.0	0.0	0.0	0.0	0.0
Nitrogen fertilizer cost, \$/lb	\$0.34	\$0.34	\$0.34	\$0.34	\$0.34
Irrigation energy cost, \$/inch	\$4.21	\$4.21	\$4.21	\$4.21	\$4.21
KSU recommended nitrogen, lbs/ac	68.0	212.0	108.0	0.0	150.0
Econ Optimum fertN, lbs/ac	33.2	169.2	67.5	0.0	105.6
Econ Optimum Irrigation Amount, in	9.3	15.2	10.7	15.6	13.0
Yield at optimal N and I, bu/ac	38.5	161.6	95.0	43.7	2599.9
B. Price per unit	\$3.83	\$2.52	\$2.32	\$5.94	\$0.12

At high N and irrigation costs, optimal rates decrease significantly

58

Impact of high costs on leases ...

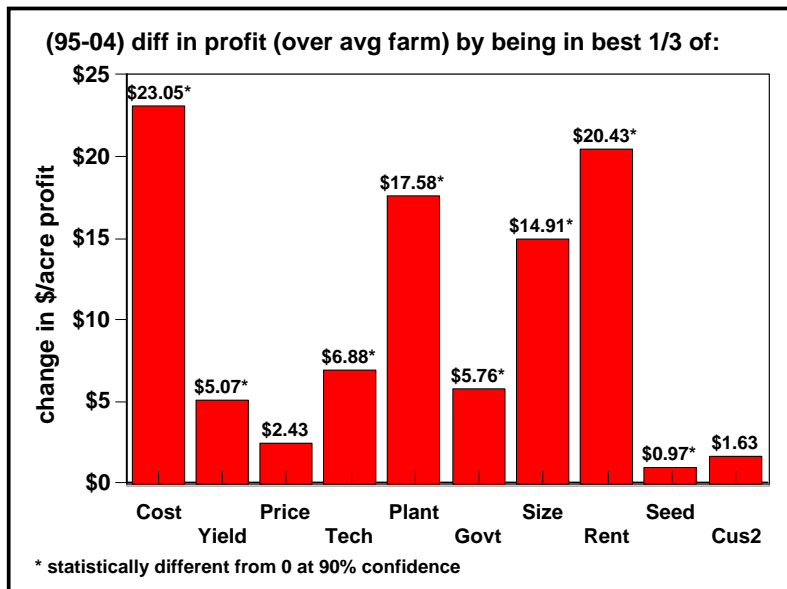
KSU-Lease.xls is a tool that can be used to analyze the impact of current costs have on equitable crop share leases as well as their cash-rent equivalents

The impact high costs have on leases will depend on each specific situation due to how producers change (or not change) production practices in response to these high prices

➔ producers should “run their own numbers”

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Some producers will be able to absorb increased cost much easier than others...



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Summary ...

- High input prices will have significant impact on crop returns in 2006
 - Irrigated crops impacted more than dryland crops
 - Feedgrains impacted more than soybeans
 - How producers “manage” for this will depend on their unique situations
- High diesel fuel prices will impact returns, but they have relatively minor impact on equitable crop share percentages
- Crop share tenants will not be impacted nearly as much as those cash renting (assuming fertilizer and irrigation pumping expenses are being shared)

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Summary ...

- Producers cash renting may want to negotiate with landowners to see if they will help “share the pain” (likewise for crop share tenants not sharing fertilizer or irrigation pumping costs)
- Producers need to “do their homework” to make sure they understand the numbers before talking to their landowner(s)
- Tenants need to think long-term when negotiating with landowners
 - Impact of losing or giving up land?
 - Have “good times” been shared?

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Management Analysis and Strategic Thinking

Site Updates

Modifying Fertilizer Recs to Reflect Price
December 2, 2005 by Karlens et al.

Impact of Energy Prices on KS Farm Costs
December 2, 2005 by Dhuyvetter et al.

Livestock and Hay Charts
December 2, 2005 by Jim Mintert

Updated Cattle Databases
December 2, 2005 by Jim Mintert

Updated Crop Basis Tool
December 1, 2005 by Kevin Dhuyvetter

Monthly NH3 and Diesel Price Forecasts
November 30, 2005 by Kevin Dhuyvetter

In The Cattle Markets
November 28, 2005 by Jim Mintert/LMIC

The U.S. Ethanol Industry
November 25, 2005 by Dhuyvetter et al.

Livestock Farm Management Update
November 18, 2005 by Rod Jones

Crop Basis Maps
November 18, 2005, by Kevin Dhuyvetter

Livestock Risk Protection
November 17, 2005 by Dhuyvetter and Mintert

Grain Outlook
November 17, 2005 by Mike Woolvetton

Cost Comparison of Silage Storage Alternatives
November 8, 2005 by Dhuyvetter et al.

Contact Us: Department of Agricultural Economics 342, Waters Hall, Manhattan, KS 66506 (765) 532-5823

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

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