

The Impact of Higher Input Prices on Crop Profitability

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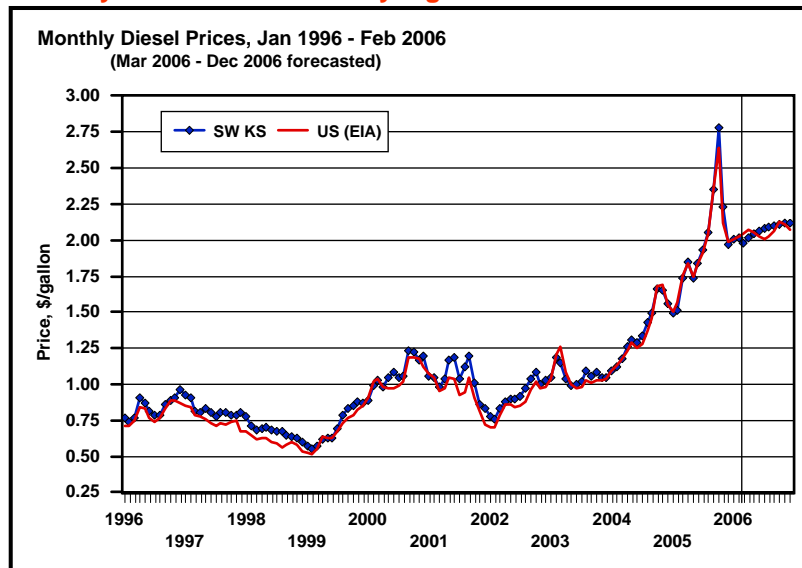
Background thoughts . . .

- Prices for energy-related inputs are at very high levels relative to what we normally expect
- Producers likely cannot do much about the prices they face, but they need to “understand the numbers” to make good management decisions
- Major decisions crop producers have pertain to input levels, crop selection, tillage method, and possibly negotiating leases on rented land

Historical and forecasted energy-related input prices (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 3/03/06 futures closing prices

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

Diesel Fuel Prices

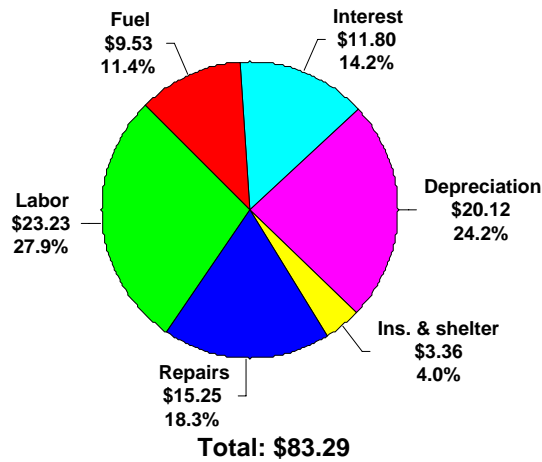
| Year | Mar-Oct Diesel Price | | | Year-to-year percent change | | |
|-----------------|----------------------|----------|---------|-----------------------------|----------|---------|
| | SW KS | US (EIA) | Average | SW KS | US (EIA) | Average |
| 2000 | \$1.09 | \$1.04 | \$1.07 | ---- | ---- | ---- |
| 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) | \$2.06 | \$2.05 | \$2.06 | 1.3% | 1.8% | 1.6% |
| 2006 - 2005 | \$0.03 | \$0.04 | \$0.03 | 1.3% | 1.8% | 1.6% |
| 06 - Avg(00-04) | \$0.95 | \$0.99 | \$0.97 | 85.9% | 93.7% | 89.7% |

F = forecast

Based on 3/03/06 futures closing prices

Fuel prices are extremely high, but fuel costs represent one of the smaller cost categories...

Machinery Costs Per Acre, Kansas, 2001
Source: 182 KFMA Members (Beaton)



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

Diesel Price Impact on Custom Rates for Various Field Operations

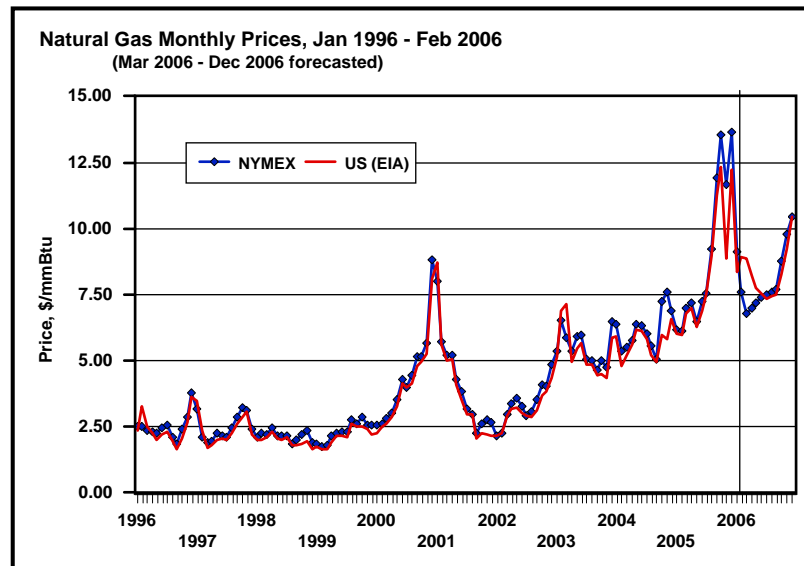
| Operation | Custom rate* | Fuel price increase, \$/gallon | | | | |
|----------------------------------|--------------|--------------------------------|--------|--------|--------|--------|
| | | (\$0.05) | \$0.03 | \$0.10 | \$0.25 | \$0.50 |
| Increase in custom rate, \$/acre | | | | | | |
| Chiseling | \$8.45 | (\$0.04) | \$0.02 | \$0.08 | \$0.20 | \$0.39 |
| Field cultivation | \$7.13 | (\$0.03) | \$0.02 | \$0.07 | \$0.17 | \$0.33 |
| Disking | \$6.84 | (\$0.03) | \$0.02 | \$0.06 | \$0.16 | \$0.32 |
| Min-till planter | \$10.94 | (\$0.05) | \$0.03 | \$0.10 | \$0.25 | \$0.51 |
| No-till drill | \$11.45 | (\$0.05) | \$0.03 | \$0.11 | \$0.27 | \$0.53 |
| Sprayer | \$4.26 | (\$0.02) | \$0.01 | \$0.04 | \$0.10 | \$0.20 |
| Swather-conditioner | \$9.46 | (\$0.04) | \$0.03 | \$0.09 | \$0.22 | \$0.44 |
| Round baler | \$8.24 | (\$0.04) | \$0.02 | \$0.08 | \$0.19 | \$0.38 |
| Combine--wheat | \$15.24 | (\$0.07) | \$0.04 | \$0.14 | \$0.35 | \$0.71 |
| Combine--soybeans | \$21.48 | (\$0.10) | \$0.06 | \$0.20 | \$0.50 | \$1.00 |
| Combine--corn | \$21.68 | (\$0.10) | \$0.06 | \$0.20 | \$0.50 | \$1.00 |

* 2005 state average reported by Kansas Agricultural Statistics

Increase in 2005 custom rates -0.5% 0.3% 0.9% 2.3% 4.6%

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Natural gas prices remain at historically high levels...



Based on 3/03/06 futures closing prices

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

Natural Gas Prices

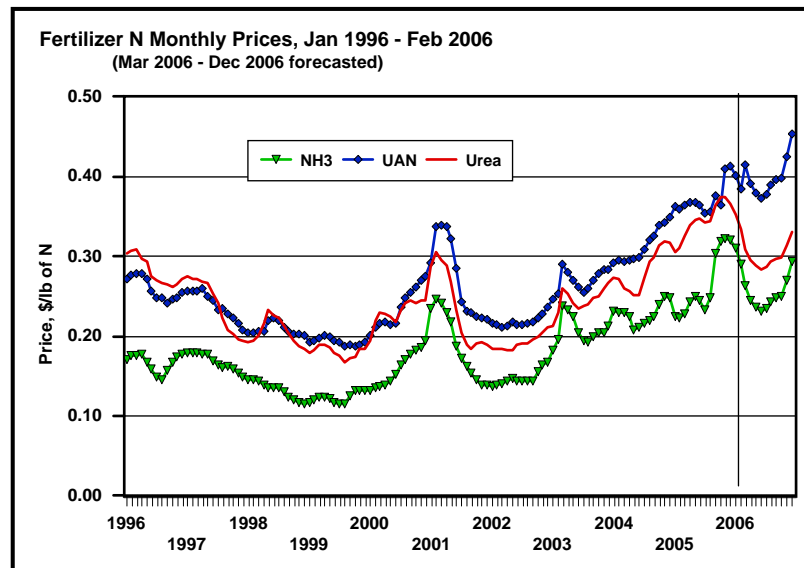
| Year | Mar-Sep Natural Gas Price | | | Year-to-year percent change | | |
|-----------------|---------------------------|----------|----------|-----------------------------|----------|---------|
| | NYMEX | US (EIA) | Average | NYMEX | US (EIA) | Average |
| 2000 | \$3.89 | \$3.85 | \$3.87 | ---- | ---- | ---- |
| 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) | \$7.75 | \$7.87 | \$7.81 | -4.2% | -6.0% | -5.1% |
| 2006 - 2005 | (\$0.34) | (\$0.50) | (\$0.42) | -4.2% | -6.0% | -5.1% |
| 06 - Avg(00-04) | \$3.31 | \$3.60 | \$3.46 | 74.6% | 84.5% | 79.4% |

F = forecast

Based on 3/03/06 futures closing prices

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Nitrogen fertilizer prices are at historically high levels...



Based on 3/03/06 futures closing prices

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

Fertilizer Prices (Corn Belt)

| Percent of total | 50.0% | 25.0% | 25.0% | 0.0% | 0.0% | 100.0% | |
|------------------|---------------------------|-----------|------------|---------|---------|----------|----------|
| | Oct-May Fertilizer Price* | | | | | | Yr-to-yr |
| Year | NH3 (82%) | UAN (32%) | Urea (46%) | - P - | - K - | Wtd Avg | % change |
| 2000 | 222.80 | 130.49 | 188.59 | 218.40 | 177.78 | 191.17 | ---- |
| 2001 | 355.87 | 194.93 | 250.31 | 225.73 | 177.30 | 289.24 | 51.3% |
| 2002 | 231.93 | 139.39 | 171.91 | 210.48 | 172.43 | 193.79 | -33.0% |
| 2003 | 320.33 | 162.11 | 208.69 | 227.49 | 169.25 | 252.86 | 30.5% |
| 2004 | 357.91 | 185.50 | 240.79 | 243.71 | 169.45 | 285.53 | 12.9% |
| 2005 | 390.58 | 228.15 | 296.30 | 262.62 | 208.54 | 326.40 | 14.3% |
| 2006 (F) | 473.07 | 252.94 | 309.86 | 284.76 | 242.27 | 377.24 | 15.6% |
| 2006 - 2005 | \$82.49 | \$24.79 | \$13.56 | \$22.14 | \$33.73 | \$50.83 | 15.6% |
| 06 - Avg(00-04) | \$175.31 | \$90.45 | \$97.80 | \$59.60 | \$69.03 | \$134.72 | 55.5% |

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

F = forecast (based on 3/03/06 futures closing prices)

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

Fertilizer Prices (Corn Belt)

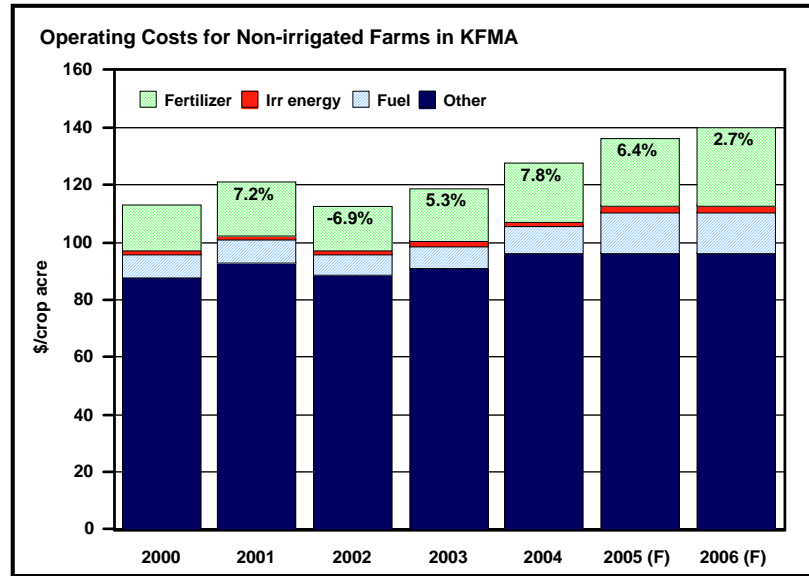
| Percent of total | 50.0% | 25.0% | 25.0% | 0.0% | 0.0% | 100.0% | |
|------------------|---------------------------|-----------|------------|---------|---------|---------|----------|
| | Oct-May Fertilizer Price* | | | | | | Yr-to-yr |
| Year | NH3 (82%) | UAN (32%) | Urea (46%) | - P - | - K - | Wtd Avg | % change |
| 2000 | 0.136 | 0.204 | 0.205 | 0.211 | 0.148 | 0.170 | ---- |
| 2001 | 0.217 | 0.305 | 0.272 | 0.193 | 0.148 | 0.253 | 48.5% |
| 2002 | 0.141 | 0.218 | 0.187 | 0.201 | 0.144 | 0.172 | -32.0% |
| 2003 | 0.195 | 0.253 | 0.227 | 0.209 | 0.141 | 0.218 | 26.7% |
| 2004 | 0.218 | 0.290 | 0.262 | 0.214 | 0.141 | 0.247 | 13.5% |
| 2005 | 0.238 | 0.356 | 0.322 | 0.223 | 0.174 | 0.289 | 16.9% |
| 2006 (F) | 0.288 | 0.395 | 0.337 | 0.240 | 0.202 | 0.327 | 13.3% |
| 2006 - 2005 | \$0.050 | \$0.039 | \$0.015 | \$0.018 | \$0.028 | \$0.039 | 13.3% |
| Percent chg | 21.1% | 10.9% | 4.6% | 7.9% | 16.2% | 13.3% | |
| 06 - Avg(00-04) | \$0.107 | \$0.141 | \$0.106 | \$0.035 | \$0.058 | \$0.115 | 54.4% |
| Percent chg | 58.9% | 55.7% | 46.1% | 16.8% | 39.8% | 54.4% | |

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

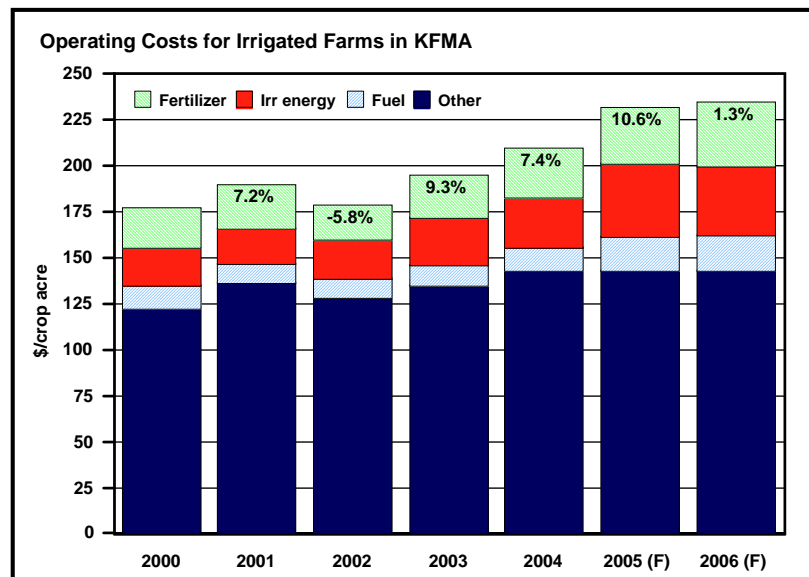
F = forecast (based on 3/03/06 futures closing prices)

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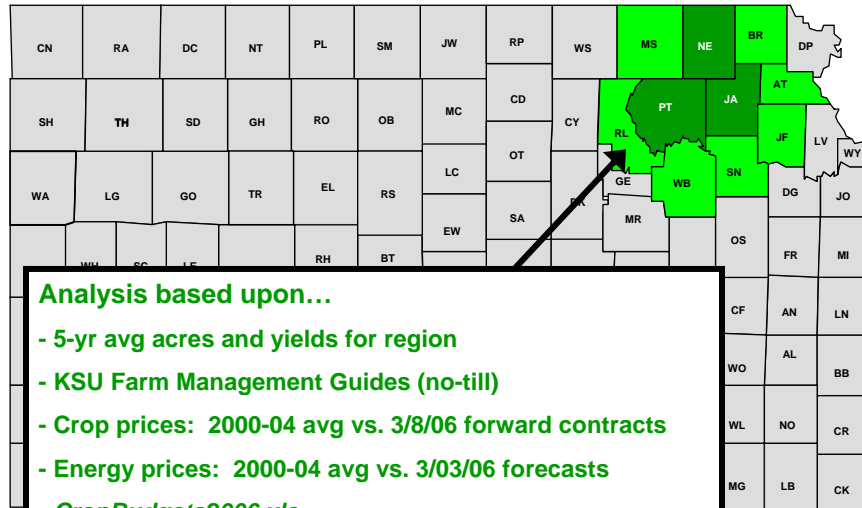
Costs per acre will be up in 2006 for fourth straight year...



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



Analysis of Crop Profitability



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Cost scenarios...

| Input | Average Prices | Current Prices |
|------------|------------------------------------|--------------------------------------|
| Machinery | 2000-04 time-adjusted custom rates | 2000-04 time-adjusted rates x 108.8% |
| Fertilizer | 2000-04 avg | 2006 forecast |
| N | \$0.212/lb | \$0.327/lb (+54%) |
| P | \$0.205/lb | \$0.240/lb (+17%) |
| K | \$0.144/lb | \$0.202/lb (+40%) |
| Irrigation | 2000-04 avg \$1.08/inch | 2006 forecast \$2.00/inch (+85%) |

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Microsoft Excel - KSU-CropBudgets2006 (DG Co - Dryland crops).xls

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 |
| Rotation (1 or 2, if none enter 0) | 1 | 1 | 1 | 1 | 1 | 1 | |
| Percent of rotation (total - 100%) | 15.0% | 29.0% | 12.0% | 44.0% | 0.0% | 0.0% | 100% |
| INCOME PER ACRE | | | | | | | |
| A. Yield per acre | 54.6 | 104.1 | 79.3 | 29.1 | 1,490.9 | 3.5 | --- |
| B. Price per unit | \$3.11 | \$2.00 | \$2.04 | \$5.13 | \$0.11 | \$72.00 | --- |
| C. Net government payments | \$15.00 | \$15.00 | \$15.00 | \$15.00 | \$15.00 | \$14.00 | \$15.00 |
| D. Indemnity payments | \$0.00 | \$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 | \$0.00 |
| F. Returns/acre ((A x B) + C + D + E) | \$184.68 | \$223.23 | \$176.84 | \$164.28 | \$179.00 | \$265.42 | \$185.94 |
| COSTS PER ACRE | | | | | | | |
| 1. Seed | \$10.80 | \$48.60 | \$13.78 | \$34.65 | \$18.04 | \$11.13 | \$32.61 |
| 2. Herbicide | 5.23 | 29.66 | 27.28 | 11.38 | 12.11 | 2.98 | 17.67 |
| 3. Insecticide / Fungicide | 0.00 | 0.00 | 0.00 | 0.00 | 14.33 | 6.69 | 0.00 |
| 4. Fertilizer and Lime | 32.71 | 38.63 | 28.44 | 10.25 | 23.68 | 21.84 | 24.03 |
| 5. Crop Consulting | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6. Crop Insurance | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7. Drying | 0.00 | 0.00 | 0.00 | 0.00 | 5.81 | 0.00 | 0.00 |
| 8. Miscellaneous | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 |
| 9. Machinery Expense | 46.60 | 52.27 | 58.81 | 45.09 | 54.08 | 115.25 | 49.04 |
| 10. Non-machinery Labor | 5.50 | 9.00 | 7.00 | 5.50 | 6.50 | 12.50 | 6.70 |
| 11. Irrigation | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12. Land Charge / Rent | 63.75 | 63.75 | 63.75 | 63.75 | 63.75 | 63.75 | 63.75 |
| G. SUB TOTAL | \$172.08 | \$249.41 | \$206.56 | \$178.11 | \$205.81 | \$241.64 | \$201.30 |
| 43. Interest on 1/2 Nonland Costs | 4.33 | 7.43 | 5.71 | 4.57 | 5.45 | 7.12 | 5.50 |
| H. TOTAL COSTS | \$176.42 | \$256.83 | \$212.27 | \$182.69 | \$211.26 | \$248.76 | \$206.80 |
| I. RETURNS OVER COSTS (F - H) | \$8.26 | (\$33.61) | (\$35.43) | (\$18.40) | (\$32.25) | \$16.66 | (\$20.86) |
| J. TOTAL COSTS/UNIT (H/A) | \$3.23 | \$2.47 | \$2.68 | \$6.28 | \$0.14 | \$71.24 | --- |
| K. RETURN TO ANNUAL COST ((I+13)/G) | 7.32% | -10.50% | -14.39% | -7.76% | -13.02% | 9.84% | -7.63% |

Dryland crops example – impact on costs summary ...

Comparison of Crop Returns under Various Input Price Scenarios

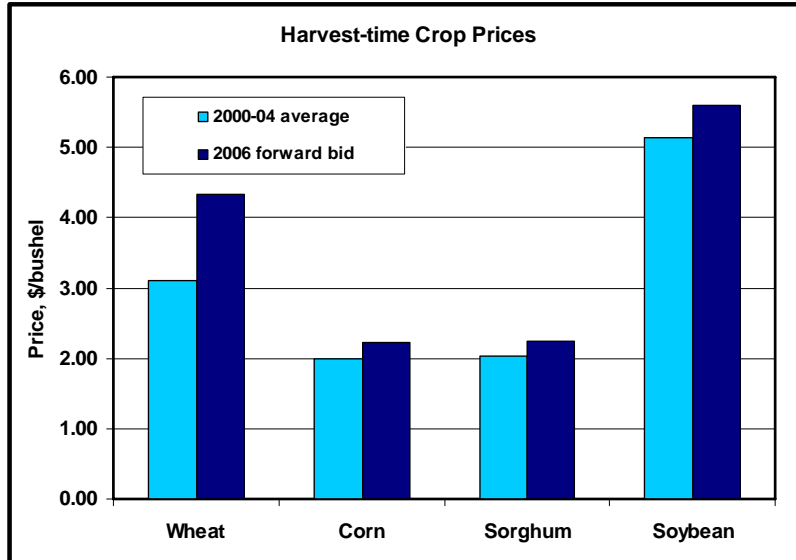
| Crop | Wheat | Corn | Sorghum | Soybean | Wtd Avg |
|--|----------|-----------|-----------|-----------|-----------|
| Base scenario ¹ | \$8.26 | (\$33.61) | (\$35.43) | (\$18.40) | (\$20.86) |
| At forecasted 2006 prices for... | | | | | |
| Fuel ² | \$4.03 | (\$38.36) | (\$40.78) | (\$22.50) | (\$25.31) |
| Fertilizer ² | (\$4.22) | (\$47.93) | (\$45.09) | (\$19.33) | (\$28.45) |
| Irrigation pumping ² | na | na | na | na | na |
| Fuel, fert, and irr pumping ² | (\$8.44) | (\$52.65) | (\$50.41) | (\$23.43) | (\$32.89) |

¹Returns based on current Farm Management Guide costs except fuel, fertilizer, and irrigation pumping (2000-04 avg) and long-run planning prices.

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

| | | | | | |
|--------------------|-----------|-----------|-----------|----------|-----------|
| Cost change, \$/ac | (\$16.70) | (\$19.05) | (\$14.98) | (\$5.03) | (\$12.04) |
|--------------------|-----------|-----------|-----------|----------|-----------|

While input prices are higher, so are crop prices...



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Dryland crops example – profitability summary ...

Comparison of Crop Returns under Various Input Price Scenarios

| Crop | Wheat | Corn | Sorghum | Soybean | Wtd Avg |
|--|----------------|------------------|------------------|------------------|------------------|
| Base scenario ¹ | \$8.26 | (\$33.61) | (\$35.43) | (\$18.40) | (\$20.86) |
| At forecasted 2006 prices for... | | | | | |
| Fuel ² | \$4.03 | (\$38.36) | (\$40.78) | (\$22.50) | (\$25.31) |
| Fertilizer ² | (\$4.22) | (\$47.93) | (\$45.09) | (\$19.33) | (\$28.45) |
| Irrigation pumping ² | na | na | na | na | na |
| Fuel, fert, and irr pumping ² | (\$8.44) | (\$52.65) | (\$50.41) | (\$23.43) | (\$32.89) |
| Crops² | \$55.94 | (\$31.68) | (\$35.57) | (\$11.25) | (\$10.02) |

¹ Returns based on current Farm Management Guide costs except fuel, fertilizer, and irrigation pumping (2000-04 avg) and long-run planning prices.

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

| | | | | | |
|---------------------------|------------------|------------------|------------------|-----------------|------------------|
| Cost change, \$/ac | (\$16.70) | (\$19.05) | (\$14.98) | (\$5.03) | (\$12.04) |
|---------------------------|------------------|------------------|------------------|-----------------|------------------|

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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 |
| Rotation (1 or 2, if none enter 0) | 1 | 1 | 1 | 1 | 1 | 1 | |
| Percent of rotation (total - 100%) | 0.0% | 76.0% | 0.0% | 24.0% | 0.0% | 0.0% | 100% |
| INCOME PER ACRE | | | | | | | |
| A. Yield per acre | 63.6 | 172.3 | 117.7 | 58.2 | 1,963.0 | 5.8 | --- |
| B. Price per unit | \$3.11 | \$2.00 | \$2.04 | \$5.13 | \$0.11 | \$72.00 | --- |
| C. Net government payments | \$28.75 | \$28.75 | \$28.75 | \$28.75 | \$28.75 | \$28.75 | \$28.75 |
| D. Indemnity payments | \$0.00 | \$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 | \$0.00 |
| F. Returns/acre ((A x B) + C + D + E) | \$226.56 | \$373.41 | \$268.87 | \$327.32 | \$244.68 | \$447.79 | \$362.35 |
| COSTS PER ACRE | | | | | | | |
| 1. Seed | \$10.80 | \$54.00 | \$17.70 | \$44.10 | \$18.04 | \$11.13 | \$51.62 |
| 2. Herbicide | 5.23 | 29.66 | 27.28 | 11.38 | 12.11 | 2.98 | 25.27 |
| 3. Insecticide / Fungicide | 0.00 | 0.00 | 0.00 | 0.00 | 14.33 | 6.69 | 0.00 |
| 4. Fertilizer and Lime | 36.74 | 65.95 | 43.26 | 15.60 | 31.44 | 21.84 | 53.87 |
| 5. Crop Consulting | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6. Crop Insurance | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7. Drying | 0.00 | 0.00 | 0.00 | 0.00 | 7.66 | 0.00 | 0.00 |
| 8. Miscellaneous | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 |
| 9. Machinery Expense | 64.52 | 85.05 | 84.93 | 68.47 | 55.15 | 151.51 | 81.07 |
| 10. Non-machinery Labor | 5.50 | 9.00 | 7.00 | 5.50 | 6.50 | 12.50 | 8.16 |
| 11. Irrigation | 60.72 | 67.46 | 62.78 | 65.81 | 66.08 | 51.64 | 67.06 |
| 12. Land Charge / Rent | 63.75 | 63.75 | 63.75 | 63.75 | 63.75 | 63.75 | 63.75 |
| G. SUB TOTAL | \$254.76 | \$382.36 | \$314.21 | \$282.10 | \$282.56 | \$329.54 | \$358.30 |
| 13. Interest on 1/2 Nonland Costs | 5.77 | 10.88 | 8.15 | 6.87 | 6.58 | 8.77 | 9.92 |
| H. TOTAL COSTS | \$260.54 | \$393.24 | \$322.36 | \$288.97 | \$289.14 | \$338.31 | \$368.22 |
| I. RETURNS OVER COSTS (F - H) | (\$33.98) | (\$19.83) | (\$53.49) | \$38.34 | (\$44.46) | \$109.48 | (\$5.87) |
| J. TOTAL COSTS/UNIT (H/A) | \$4.10 | \$2.28 | \$2.74 | \$4.97 | \$0.15 | \$58.13 | --- |
| K. RETURN TO ANNUAL COST ((I+13)/G) | -11.07% | -2.34% | -14.43% | 16.03% | -13.41% | 35.88% | 1.13% |

Irrigated crops example – impact on costs summary ...

Comparison of Crop Returns under Various Input Price Scenarios

| Crop | Wheat | Corn | Sorghum | Soybean | Wtd Avg |
|--|-------|-----------|---------|---------|-----------|
| Base scenario ¹ | na | (\$19.83) | na | \$38.34 | (\$5.87) |
| At forecasted 2006 prices for... | | | | | |
| Fuel ² | na | (\$27.56) | na | \$32.12 | (\$13.23) |
| Fertilizer ² | na | (\$45.87) | na | \$36.46 | (\$26.11) |
| Irrigation pumping ² | na | (\$29.59) | na | \$30.16 | (\$15.25) |
| Fuel, fert, and irr pumping ² | na | (\$61.92) | na | \$22.06 | (\$41.77) |

¹Returns based on current Farm Management Guide costs except fuel, fertilizer, and irrigation pumping (2000-04 avg) and long-run planning prices.

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

| | | | | | |
|--------------------|----|-----------|----|-----------|-----------|
| Cost change, \$/ac | na | (\$42.09) | na | (\$16.29) | (\$35.90) |
|--------------------|----|-----------|----|-----------|-----------|

Irrigated crops example – profitability summary ...

Comparison of Crop Returns under Various Input Price Scenarios

| Crop | Wheat | Corn | Sorghum | Soybean | Wtd Avg |
|--|---------------|------------------|---------------|------------------|------------------|
| Base scenario ¹ | na | (\$19.83) | na | \$38.34 | (\$5.87) |
| At forecasted 2006 prices for... | | | | | |
| Fuel ² | na | (\$27.56) | na | \$32.12 | (\$13.23) |
| Fertilizer ² | na | (\$45.87) | na | \$36.46 | (\$26.11) |
| Irrigation pumping ² | na | (\$29.59) | na | \$30.16 | (\$15.25) |
| Fuel, fert, and irr pumping ² | na | (\$61.92) | na | \$22.06 | (\$41.77) |
| Crops² | na | (\$29.51) | na | \$45.42 | (\$11.53) |
| Cost change, \$/ac | \$0.00 | (\$42.09) | \$0.00 | (\$16.29) | (\$35.90) |

¹Returns based on current Farm Management Guide costs except fuel, fertilizer, and irrigation pumping (2000-04 avg) and long-run planning prices.

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

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Management options...

- What can producers do in response to the 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...

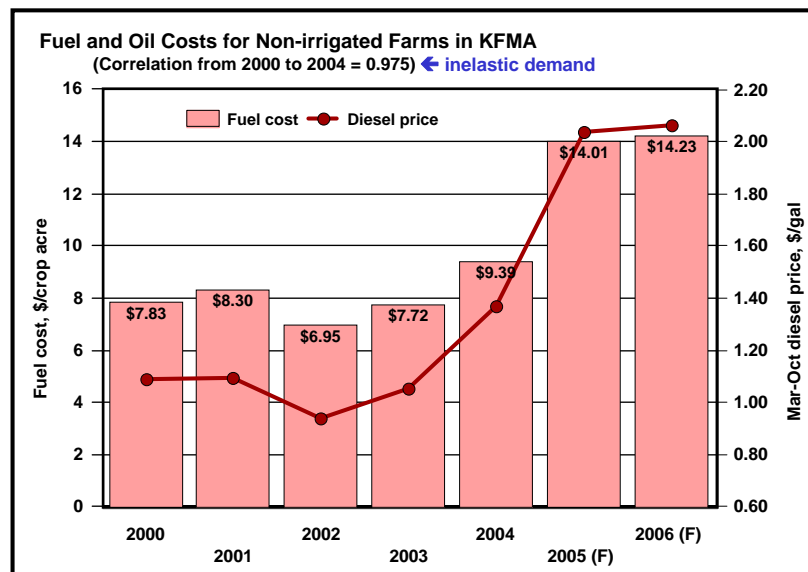
K-State Crop Budgets as resources

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



25

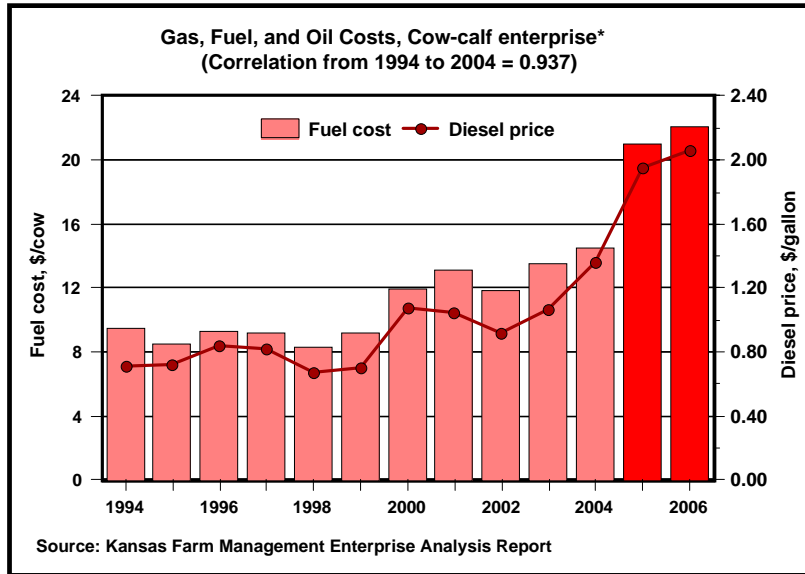
Fuel costs per acre versus diesel prices...



Without any change, costs in 2006 will be up slightly from high value of 2005.

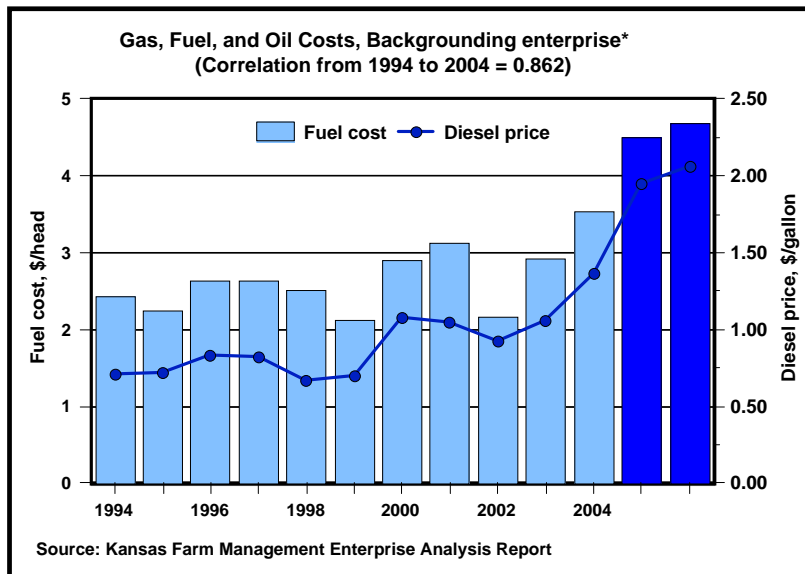
26

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



Without any change, costs in 2006 will be up slightly from high value of 2005.

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



Without any change, costs in 2006 will be up slightly from high value of 2005.

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...

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

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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!*

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USDA NRCS Energy Consumption Awareness Tool: Tillage

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

Energy Estimator

Energy Consumption Awareness Tool: Tillage

Home About Estimator Help Contact Us

You are here: Home

Welcome to 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 : 66547

Last Modified: 02/23/2006

NRCS Home | USDA.gov
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Impact of reducing tillage on fuel costs -- <http://ecat.sc.egov.usda.gov/Default.aspx>

USDA NRCS Energy Consumption Awareness Tool: Tillage

http://ecat.sc.egov.usda.gov/Cont.aspx?UnitPrice=2.06

Energy Estimator

Energy Consumption Awareness Tool: Tillage

Home About Estimator Help Contact Us

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

Step 4: Fuel Cost

If you want to check-out different fuel prices, enter a different price per gallon and click "RECALCULATE": \$ 2.06

Total Diesel Fuel Cost Estimate (in dollars per year) based on \$2.06/gallon

| Crop | Acres | Conventional Tillage | Reduc Till | Ridge Till | No Till |
|---|-------|----------------------|--------------|--------------|--------------|
| Corn | 29 | \$297 | \$220 | \$208 | \$165 |
| Sorghum | 12 | \$122 | \$91 | \$87 | \$47 |
| Soybeans | 44 | \$451 | \$328 | \$317 | \$177 |
| Wheat | 15 | \$183 | \$109 | | \$98 |
| Total Fuel Cost | | \$1,053 | \$746 | \$612 | \$447 |
| Potential Cost Savings over Conventional Tillage | | | \$307 | \$258 | \$604 |

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

| Crop | Acres | Conventional Tillage | Reduc Till | Ridge Till | No Till |
|---|-------|----------------------|------------|------------|------------|
| Corn | 29 | 144 | 107 | 101 | 80 |
| Sorghum | 12 | 5 | 44 | 42 | 23 |
| Soybeans | 44 | 219 | 159 | 154 | 66 |
| Wheat | 15 | 86 | 53 | | 28 |
| Total Fuel Use | | 510 | 363 | 297 | 217 |
| Potential Fuel Savings over Conventional Tillage Savings | | | 147 | 128 | 293 |
| | | | 29% | 25% | 57% |

Back Print Start Over

Last Modified: 02/23/2006

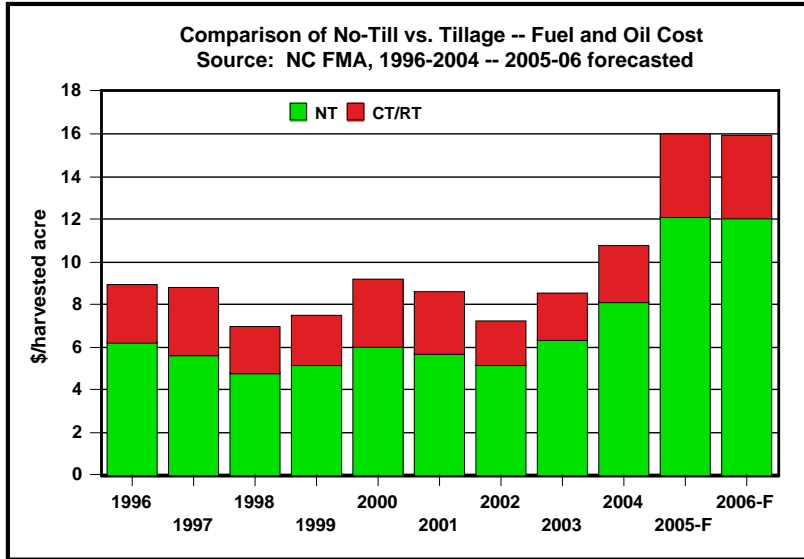
WAMEGO, KS 66547

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Savings of \$6.04/a vs CT (\$3.01 vs MT)

(based on average crop mix in region)

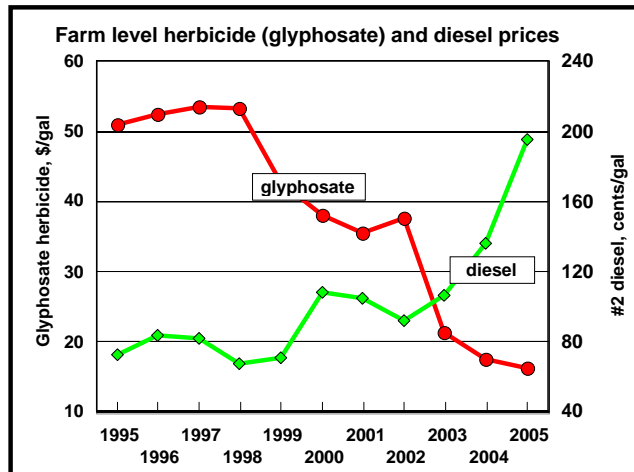
Fuel-savings benefit of no-till increases at higher prices...



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

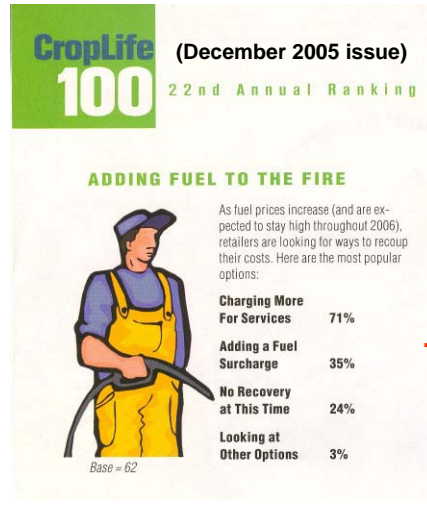
Economics of no-till...

- 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!



What can a producer do?

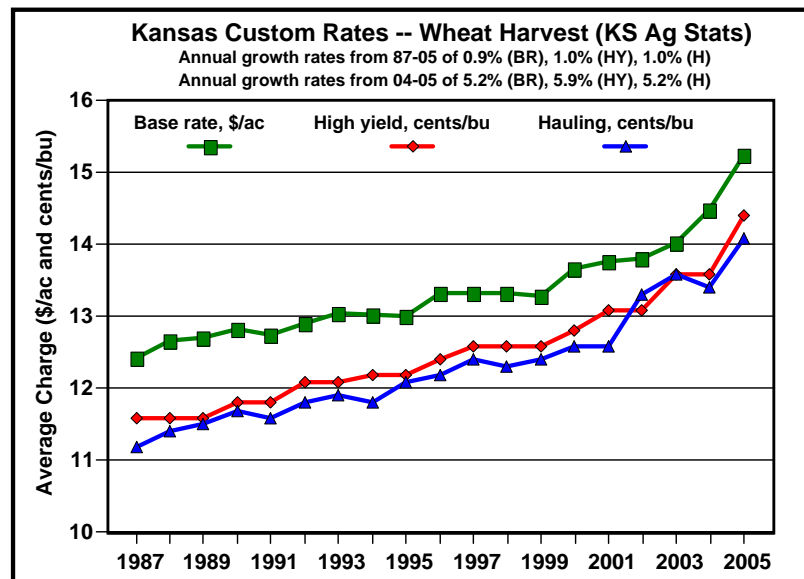
Hiring custom operators likely will not be the answer...



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

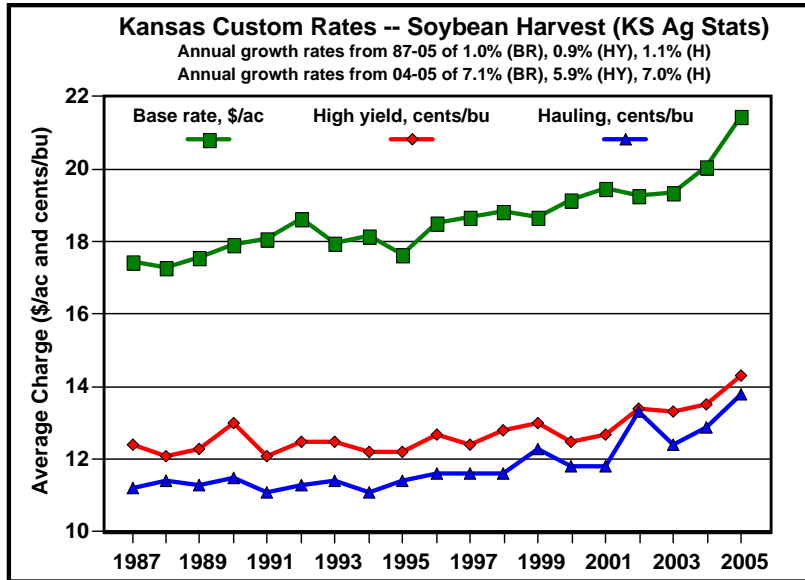
35

Custom harvesters raised their rates in 2005...



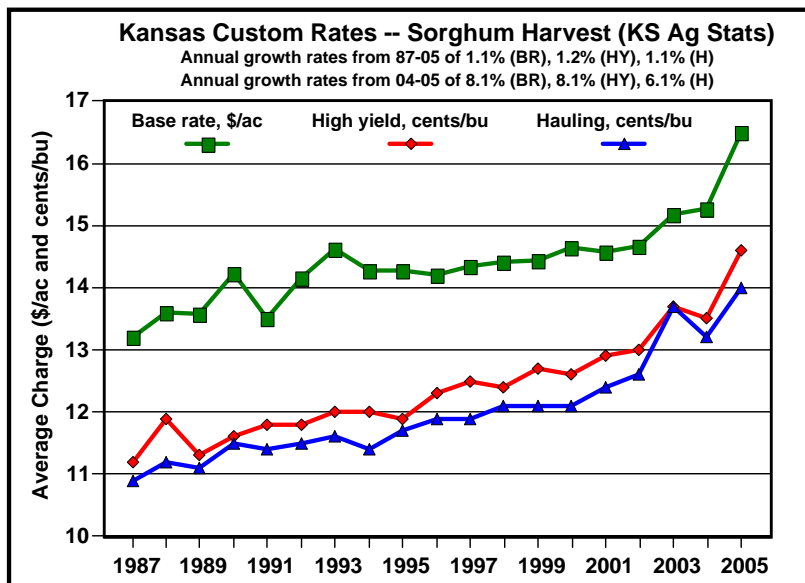
36

Custom harvesters raised their rates in 2005...



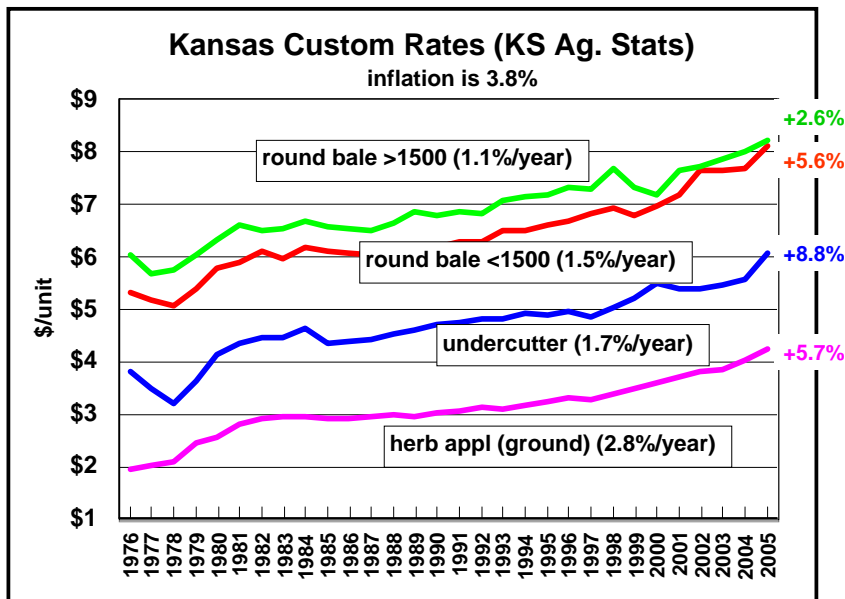
37

Custom harvesters raised their rates in 2005...



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



Soil Test Interpretations and Fertilizer Recommendations

Department of Agronomy

MF-2586

Nutrient Management

KSU nitrogen recommendations...

Corn and grain sorghum

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

Wheat

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

Sunflowers

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

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- Modifying Fertilizer Recs to Reflect Price**
December 2, 2005 by Kastens et al.

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

Department of Agricultural Economics

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Dryland optimal fertilizer N values – 5-yr avg N and crop prices

| 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% | 29.0% | 12.0% | 44.0% | 0.0% |
| Yield Goal (YG), bu/ac | 55.0 | 105.0 | 80.0 | 30.0 | 1500.0 |
| Enter 0 for Dryland or 1 for Irrigated | 0 | 0 | 0 | 0 | 0 |
| Annual rainfall | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 |
| Organic matter (OM), % | 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 |
| Other N adjustments, lbs/ac | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nitrogen fertilizer cost, \$/lb | \$0.212 | \$0.212 | \$0.212 | \$0.212 | \$0.212 |
| Irrigation energy cost, \$/inch | \$1.075 | \$1.075 | \$1.075 | \$1.075 | \$1.075 |
| KSU recommended nitrogen, lbs/ac | 102.0 | 118.0 | 78.0 | 0.0 | 62.5 |
| Econ Optimum fertN, lbs/ac | 101.5 | 115.4 | 77.7 | 0.0 | 61.6 |
| Econ Optimum Irrigation Amount, in | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Yield at optimal N and I, bu/ac | 54.6 | 104.1 | 79.3 | 29.1 | 1490.9 |
| B. Price per unit | \$3.11 | \$2.00 | \$2.04 | \$5.13 | \$0.11 |

Optimal rates are very close to KSU recommendations because 5-yr average prices are similar to long-term averages

Dryland optimal fertilizer N values – Current N and 5-yr avg crop prices

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% | 29.0% | 12.0% | 44.0% | 0.0% |
| Yield Goal (YG), bu/ac | 55.0 | 105.0 | 80.0 | 30.0 | 1500.0 |
| Enter 0 for Dryland or 1 for Irrigated | 0 | 0 | 0 | 0 | 0 |
| Annual rainfall | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 |
| Organic matter (OM), % | 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 |
| Other N adjustments, lbs/ac | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nitrogen fertilizer cost, \$/lb | \$0.327 | \$0.327 | \$0.327 | \$0.327 | \$0.327 |
| Irrigation energy cost, \$/inch | \$1.075 | \$1.075 | \$1.075 | \$1.075 | \$1.075 |
| KSU recommended nitrogen, lbs/ac | 102.0 | 118.0 | 78.0 | 0.0 | 62.5 |
| Econ Optimum fertN, lbs/ac | 94.5 | 106.3 | 70.7 | 0.0 | 56.5 |
| Econ Optimum Irrigation Amount, in | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Yield at optimal N and I, bu/ac | 54.0 | 102.9 | 78.4 | 29.1 | 1478.4 |
| B. Price per unit | \$3.11 | \$2.00 | \$2.04 | \$5.13 | \$0.11 |

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

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Dryland optimal fertilizer N values – Current N and crop prices

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% | 29.0% | 12.0% | 44.0% | 0.0% |
| Yield Goal (YG), bu/ac | 55.0 | 105.0 | 80.0 | 30.0 | 1500.0 |
| Enter 0 for Dryland or 1 for Irrigated | 0 | 0 | 0 | 0 | 0 |
| Annual rainfall | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 |
| Organic matter (OM), % | 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 |
| Other N adjustments, lbs/ac | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nitrogen fertilizer cost, \$/lb | \$0.327 | \$0.327 | \$0.327 | \$0.327 | \$0.327 |
| Irrigation energy cost, \$/inch | \$1.075 | \$1.075 | \$1.075 | \$1.075 | \$1.075 |
| KSU recommended nitrogen, lbs/ac | 102.0 | 118.0 | 78.0 | 0.0 | 62.5 |
| Econ Optimum fertN, lbs/ac | 100.1 | 108.9 | 72.6 | 0.0 | 58.3 |
| Econ Optimum Irrigation Amount, in | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Yield at optimal N and I, bu/ac | 54.5 | 103.3 | 78.7 | 29.1 | 1483.3 |
| B. Price per unit | \$4.33 | \$2.22 | \$2.25 | \$5.60 | \$0.13 |

Optimal rates vary crop by crop due to N/crop price relationship

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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 | 66 | 90 | 114 | 138 | 162 |
| N price | Price adjusted N rec, lbs/ac | | | | |
| \$0.25 | 67 | 91 | 116 | 140 | 164 |
| \$0.30 | 65 | 89 | 113 | 137 | 161 |
| \$0.35 | 64 | 87 | 111 | 134 | 158 |
| \$0.40 | 62 | 85 | 108 | 132 | 155 |
| \$0.45 | 61 | 83 | 106 | 129 | 151 |
| N price | Price adjusted N rec reduction | | | | |
| \$0.25 | -1.6% | -1.5% | -1.4% | -1.4% | -1.3% |
| \$0.30 | 0.8% | 0.7% | 0.7% | 0.6% | 0.6% |
| \$0.35 | 3.2% | 2.9% | 2.8% | 2.7% | 2.6% |
| \$0.40 | 5.6% | 5.1% | 4.9% | 4.7% | 4.6% |
| \$0.45 | 8.0% | 7.3% | 7.0% | 6.7% | 6.5% |

SOM=2.0; STN=10; Wheat price=\$4.33

45

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 | 46 | 94 | 142 | 190 | 238 |
| N price | Price adjusted N rec, lbs/ac | | | | |
| \$0.25 | 44 | 91 | 138 | 185 | 232 |
| \$0.30 | 42 | 88 | 134 | 180 | 226 |
| \$0.35 | 40 | 85 | 130 | 175 | 220 |
| \$0.40 | 38 | 82 | 126 | 170 | 213 |
| \$0.45 | 36 | 79 | 122 | 164 | 207 |
| N price | Price adjusted N rec reduction | | | | |
| \$0.25 | 4.6% | 3.3% | 3.0% | 2.8% | 2.6% |
| \$0.30 | 9.0% | 6.6% | 5.8% | 5.4% | 5.2% |
| \$0.35 | 13.4% | 9.8% | 8.7% | 8.1% | 7.8% |
| \$0.40 | 17.8% | 13.1% | 11.5% | 10.8% | 10.3% |
| \$0.45 | 22.2% | 16.3% | 14.4% | 13.5% | 12.9% |

SOM=2.0; STN=10; Corn price=\$2.22

46

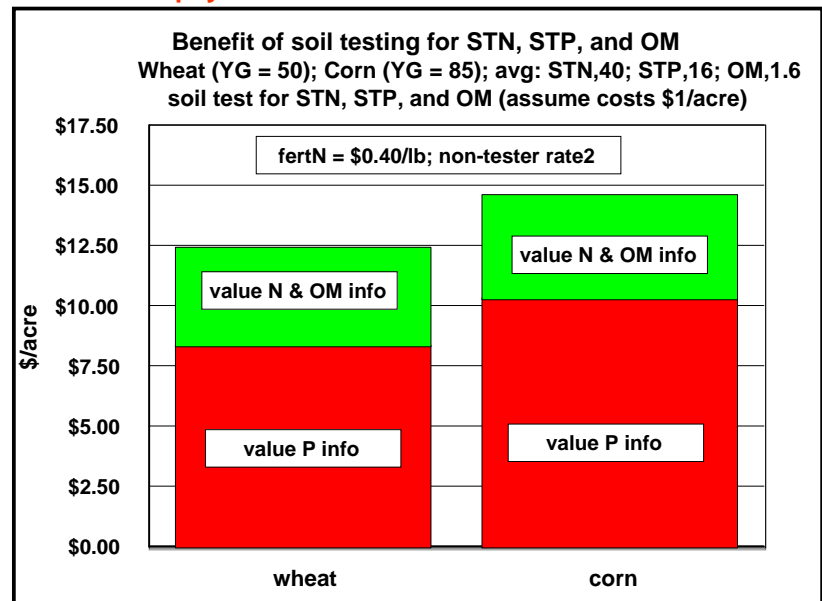
Modifying KSU nitrogen recommendations based upon prices...

Nitrogen Recommendations for Grain Sorghum

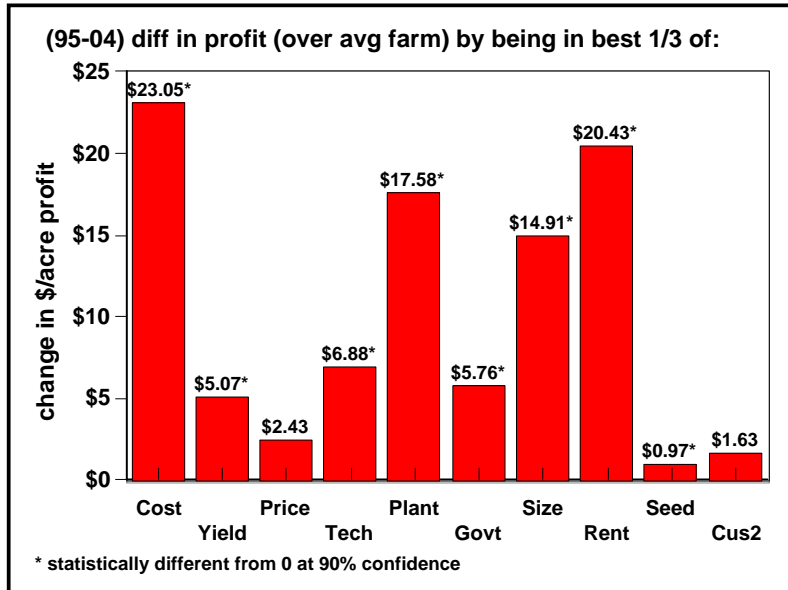
| Yield goal, bu/ac | 50 | 75 | 100 | 125 | 150 |
|-------------------|--------------------------------|-------|-------|-------|-------|
| KSU N rec, lbs/ac | 30 | 70 | 110 | 150 | 190 |
| N price | Price adjusted N rec, lbs/ac | | | | |
| \$0.25 | 29 | 69 | 109 | 148 | 188 |
| \$0.30 | 28 | 66 | 105 | 144 | 183 |
| \$0.35 | 26 | 64 | 102 | 140 | 178 |
| \$0.40 | 24 | 61 | 98 | 135 | 172 |
| \$0.45 | 22 | 59 | 95 | 131 | 167 |
| N price | Price adjusted N rec reduction | | | | |
| \$0.25 | 2.5% | 1.6% | 1.3% | 1.2% | 1.2% |
| \$0.30 | 8.2% | 5.3% | 4.5% | 4.1% | 3.9% |
| \$0.35 | 13.9% | 8.9% | 7.6% | 6.9% | 6.6% |
| \$0.40 | 19.6% | 12.6% | 10.7% | 9.8% | 9.3% |
| \$0.45 | 25.3% | 16.3% | 13.8% | 12.7% | 12.0% |

SOM=2.0; STN=10; Sorghum price=\$2.25

Soil test – it pays!



Good cost management will likely be even more valuable with high input prices...



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