Ethanol's Impact on Ag: Crops and Cattle

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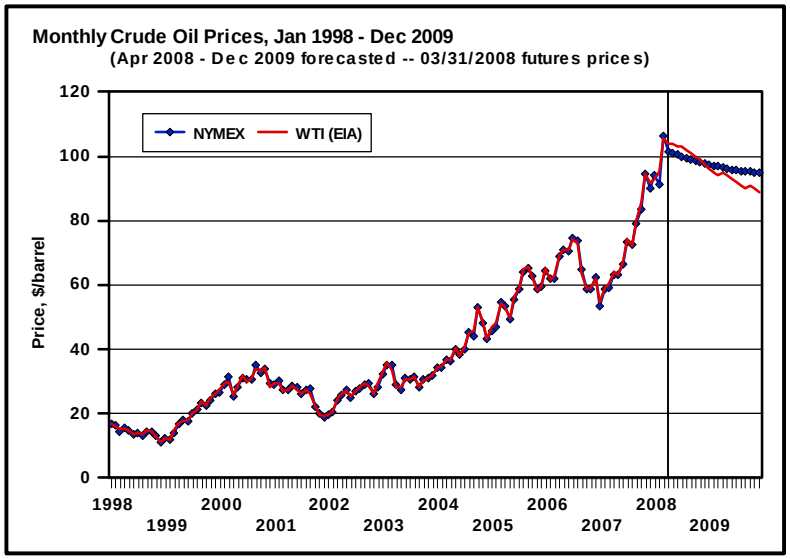
Feedlot Veterinary Advisory Council Meeting
Lost Pines, Texas
April 17-19, 2008

www.agmanager.info

Outlook

Forecasts for 2008-09 crude oil prices are down from recent month, but they are still at extremely high levels…



Futures-based forecast based on 3/31/08 closing futures prices

Historical and forecasted crude oil annual average prices…

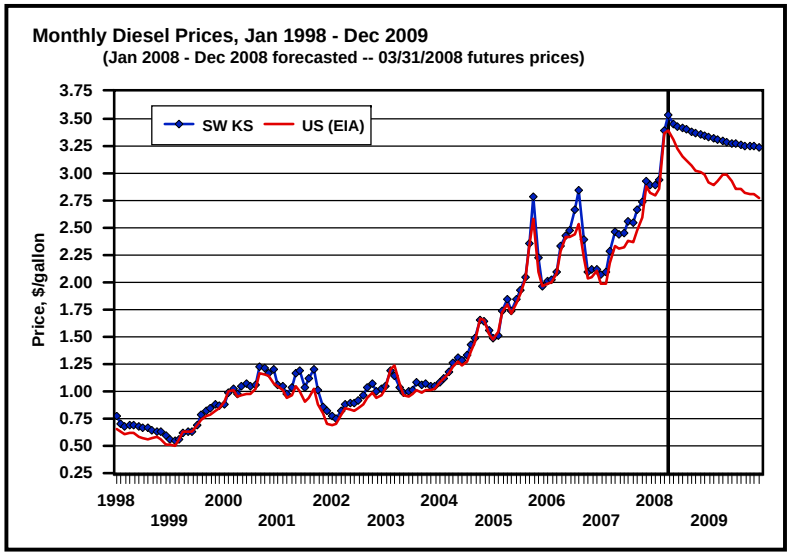
Crude Oil Prices

	Annual Average Price			Year-to-year percent change		
Year	NYMEX	US (EIA)	Average	NYMEX	US (EIA)	Average
2003	$31.28	$31.12	$31.20	-----	-----	-----
2004	$41.23	$41.44	$41.33	31.8%	33.2%	32.5%
2005	$56.26	$56.49	$56.38	36.5%	36.3%	36.4%
2006	$66.02	$66.02	$66.02	17.4%	16.9%	17.1%
2007	$71.48	$72.32	$71.90	8.3%	9.5%	8.9%
2008 (F)	$99.07	$100.61	$99.84	38.6%	39.1%	38.9%
2009 (F)	$96.00	$92.50	$94.25	-3.1%	-8.1%	-5.6%
2008 - 2007	$27.59	$28.29	$27.94	38.6%	39.1%	38.9%
08 - Avg(03-07)	$45.82	$47.13	$46.48	86.0%	88.1%	87.1%

F = forecast

Futures-based forecast based on 3/31/08 closing futures prices

Forecasts for 2008-09 diesel prices are for them to remain at extremely high levels…



Futures-based forecast based on 3/31/08 closing futures prices

Historical and forecasted diesel prices during principal farming months…

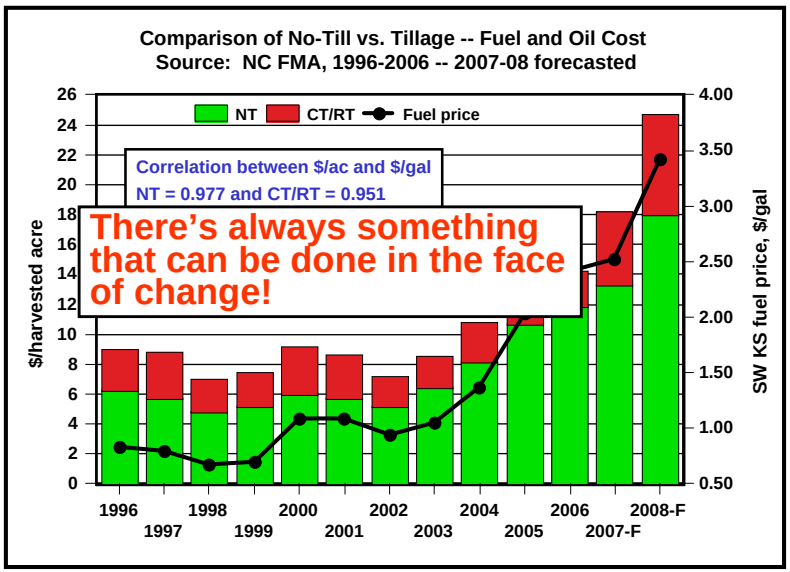
Off-road Diesel Fuel Prices

	Mar-Oct Diesel Price			Year-to-year percent change		
Year	SW KS	US (EIA)	Average	SW KS	US (EIA)	Average
2003	$1.05	$1.03	$1.04	-----	-----	-----
2004	$1.37	$1.34	$1.35	30.0%	29.6%	29.8%
2005	$2.04	$1.99	$2.01	48.5%	48.7%	48.6%
2006	$2.41	$2.30	$2.36	18.6%	15.9%	17.2%
2007	$2.52	$2.37	$2.44	4.4%	2.8%	3.6%
2008 (F)	$3.42	$3.20	$3.31	35.7%	35.3%	35.5%
2009 (F)	$3.27	$2.89	$3.08	-4.3%	-9.7%	-6.9%
2008 - 2007	$0.90	$0.84	$0.87	35.7%	35.3%	35.5%
08 - Avg(03-07)	$1.54	$1.40	$1.47	82.0%	77.4%	79.8%

F = forecast

Futures-based forecast based on 3/31/08 closing futures prices

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



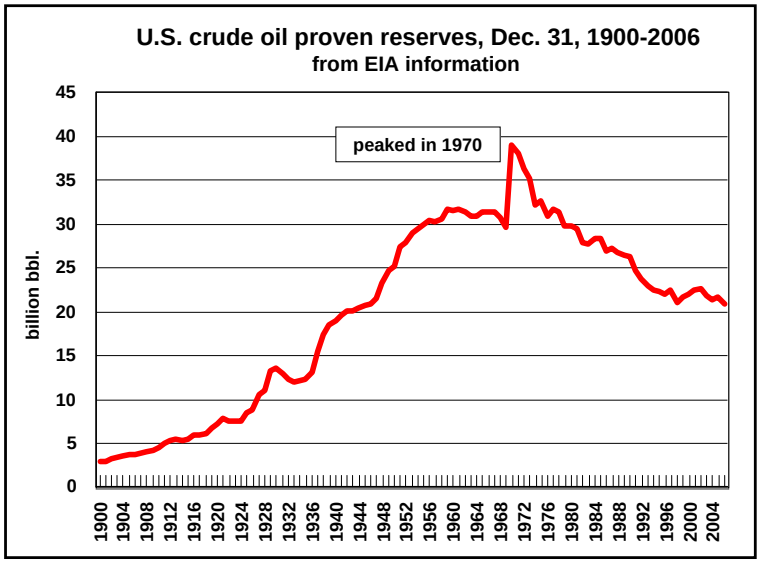
NT fuel generally 67-75% of CT/RT, savings could be as high as $6/acre at current diesel prices…

Running out of oil and U.S. energy independency

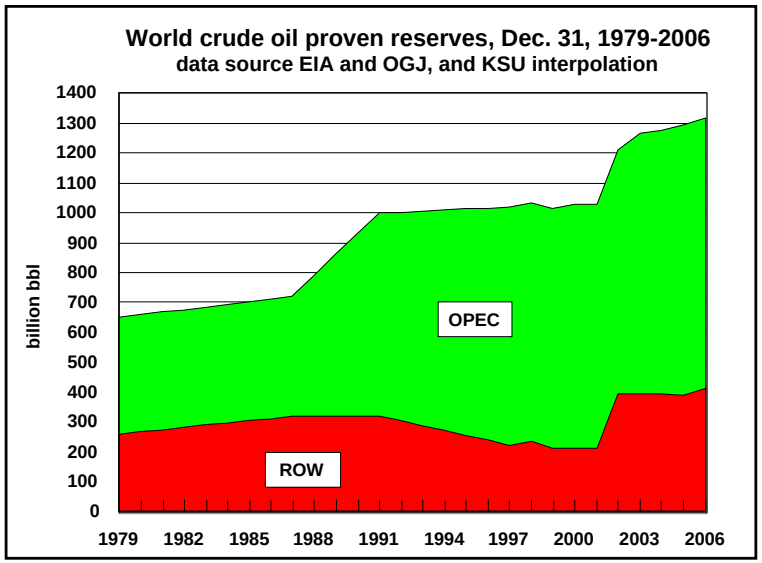
Scarce Energy?

- 1859: Drake discovers oil in Pennsylvania
- 1879: USGS formed to deal with running out of oil
- 1882: 95M bbl remain (Institute of Mining Engineers)
- 1918: 3 million cars on the road
- 1919: auto industry shouldn't ignore that only 20 years left (Scientific American)
- 1926: 4.5B bbl left in U.S. (Federal Oil Conservation Board)
- 1930: 18 million cars
- 1932: 10B bbl left in U.S. (Federal Oil Conservation Board)
- 1944: 20B bbl left in U.S. (Petroleum Administrator for War)
- 1950: 100B bbl left in world (American Pet. Institute)
- 1980: proven oil reserves 648B bbl
- 1993: proven oil reserves 999B bbl
- 2000: proven oil reserves 1016B bbl
- 2007: proven oil reserves 1317B bbl

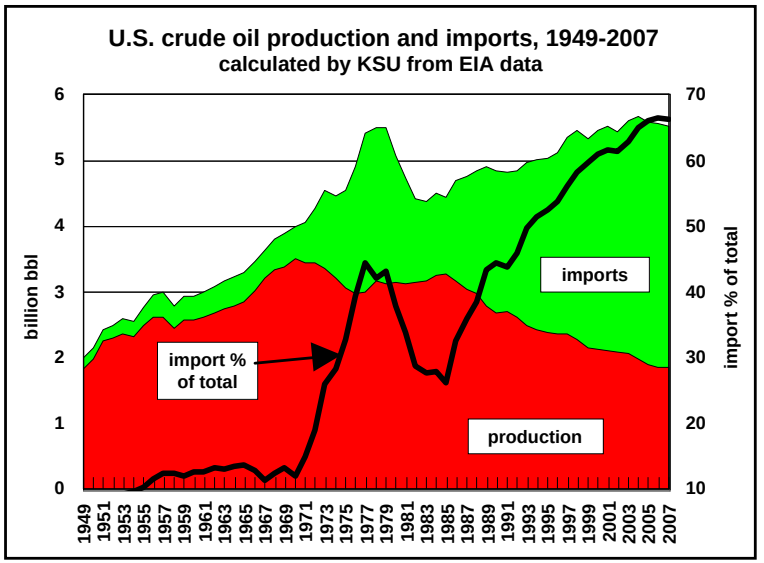
Scarcity is an economic issue, not a physical one



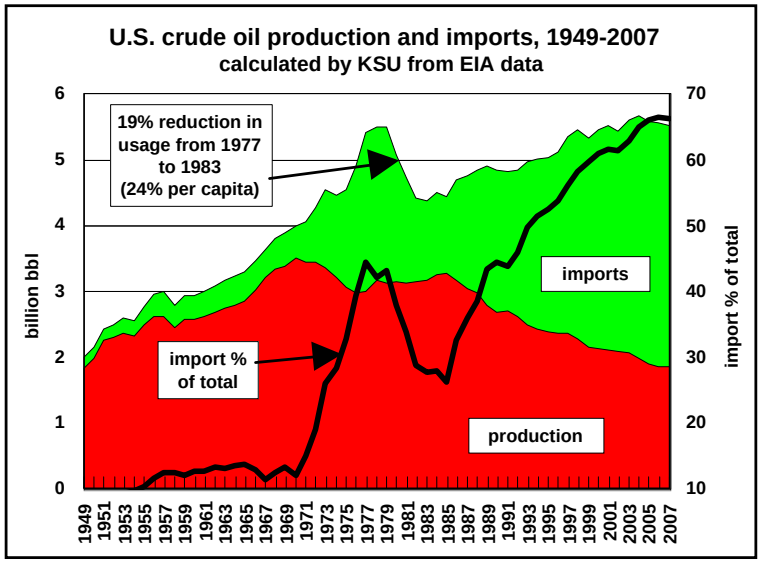
U.S. proven reserves are falling



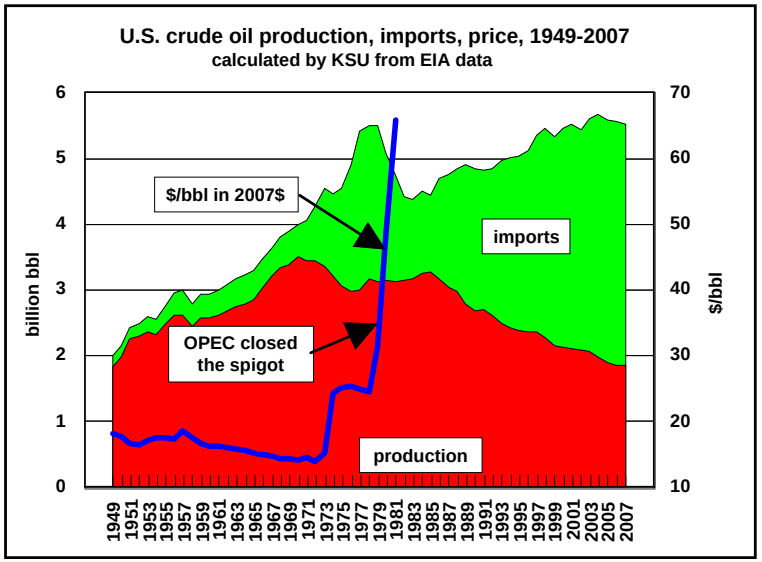
More dependency on OPEC, so also is a political issue



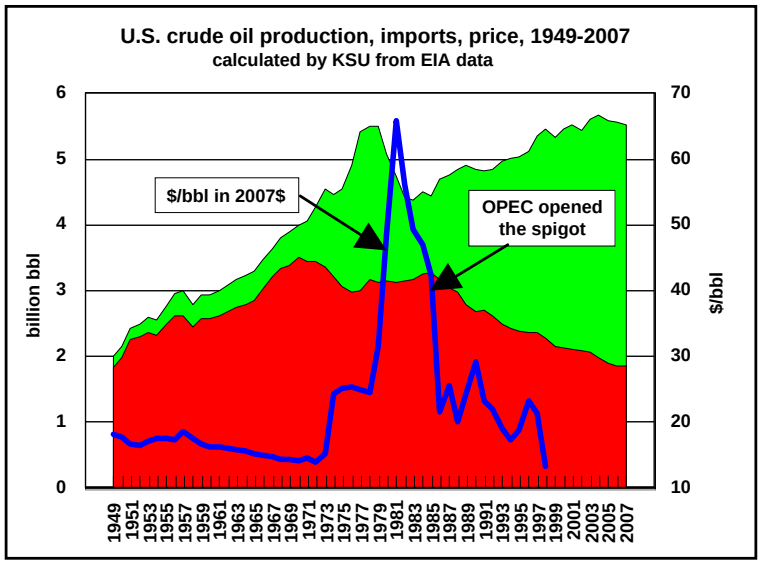
Dependency on imports has been growing



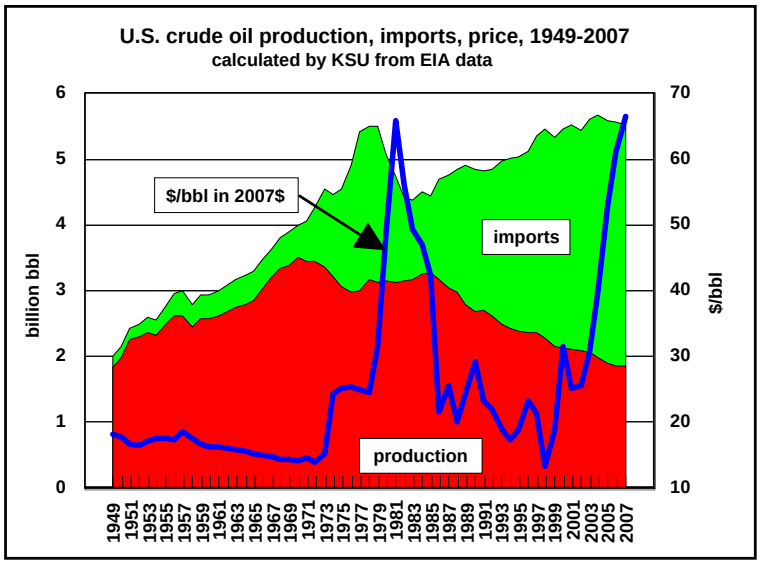
Imports dropped in early 1980s due to massive reductions in consumption wrought by policy changes (55mph in 1974 already) and subsidies to conserve energy.



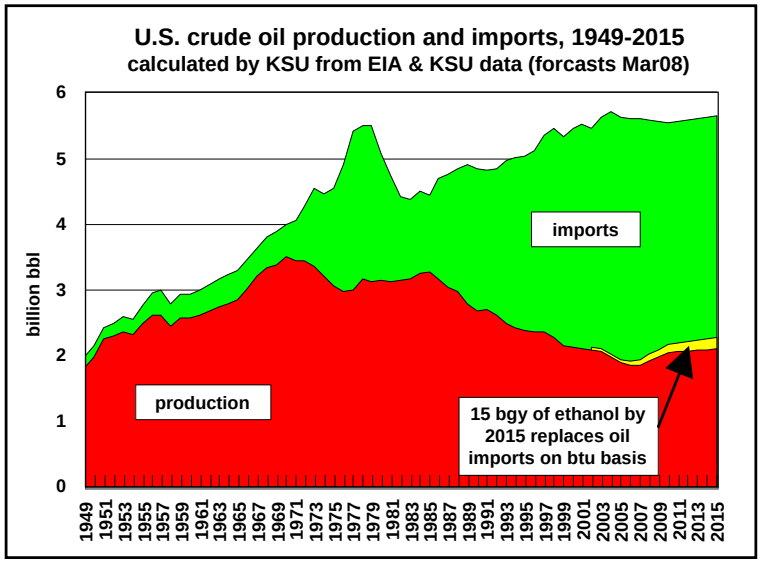
Consumption especially fell due to massive price increases as OPEC tried to gouge us.



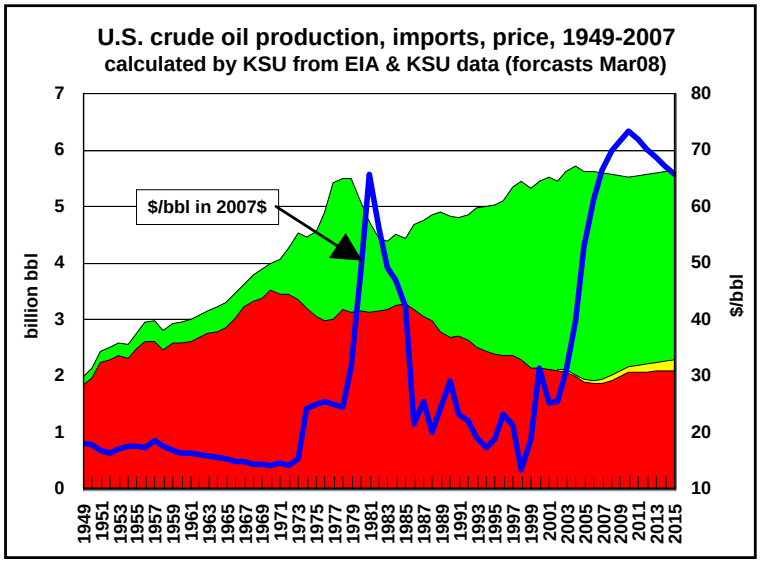
But cartels are short lived in the face of large true supplies . . . OPEC messed up.



Consumption is not dropping much this time of high prices.



This time we wish to reduce imports more via increased production, a la biofuels.



Not much respite on energy prices is expected in the near future – still $58 in 2020.

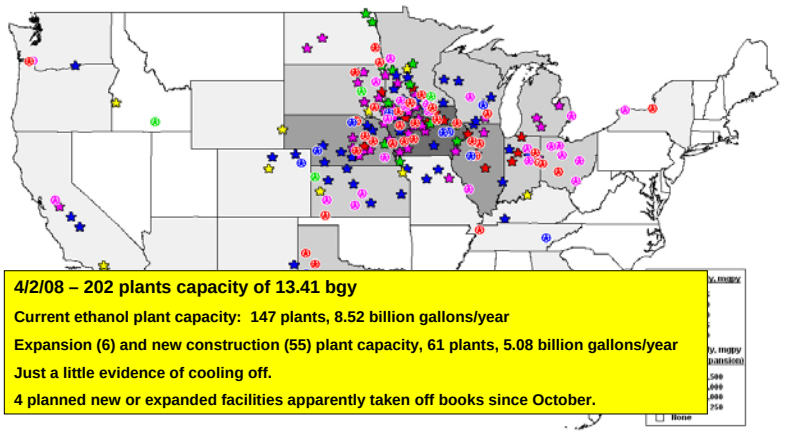
Renewable Energy

Drivers of the Biofuels Industry

- **Ethanol**
  - States ban or restrict MTBE
    - Phaseout began in 2000; production stopped in 2006
  - Subsidies
    - 4 cents/gal blending credit 1978; 51 cents started 2004
  - Federal & state mandates for ethanol inclusion
    - Fed: 4 bgy in 2006 and 7.5 bgy in 2012
    - 12/07 Energy Bill: 36 bgy by 2022 (21 from cellulose)
      - 15 bgy corn grain ethanol 2015 and cap?
  - High energy prices
- **Bio-diesel**
  - Low sulfur requirements for diesel
  - Subsidies
  - High energy prices

Existing and new ethanol plants

Source: Renewable Fuels Association (RFA)



4/2/08 – 202 plants capacity of 13.41 bgy

Current ethanol plant capacity: 147 plants, 8.52 billion gallons/year

Expansion (6) and new construction (55) plant capacity, 61 plants, 5.08 billion gallons/year

Just a little evidence of cooling off.

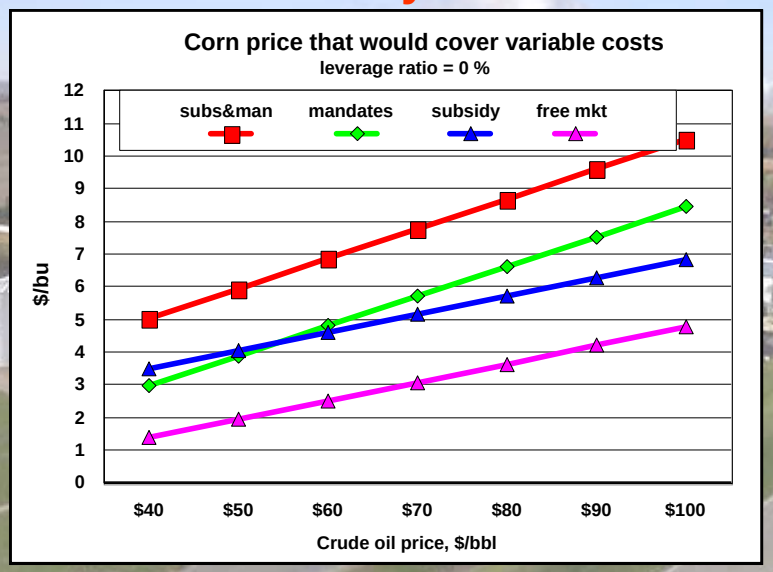
4 planned new or expanded facilities apparently taken off books since October.

10/9/07 – 202 plants / capacity of 13.45 bgy

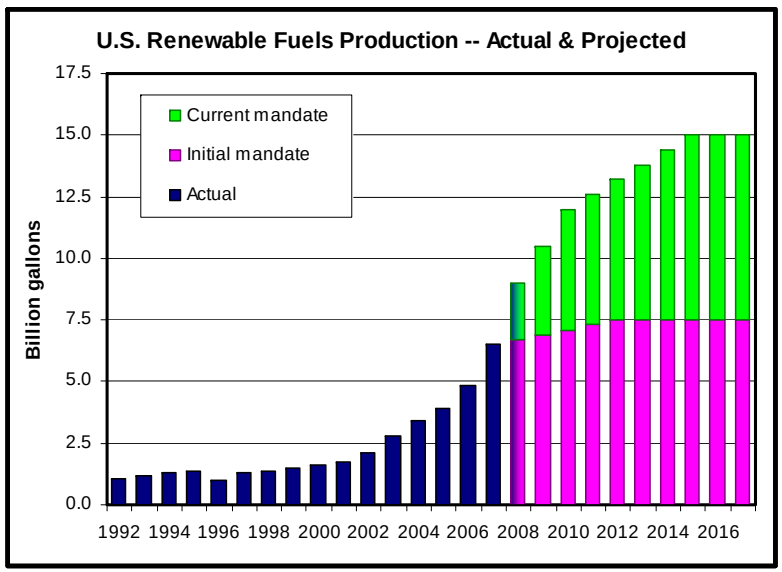
Current ethanol plant capacity: 132 plants, 6.93 billion gallons/year

Expansion (10) and new construction (70) plant capacity, 80 plants, 6.48 billion gallons/year

Ethanol Profitability…

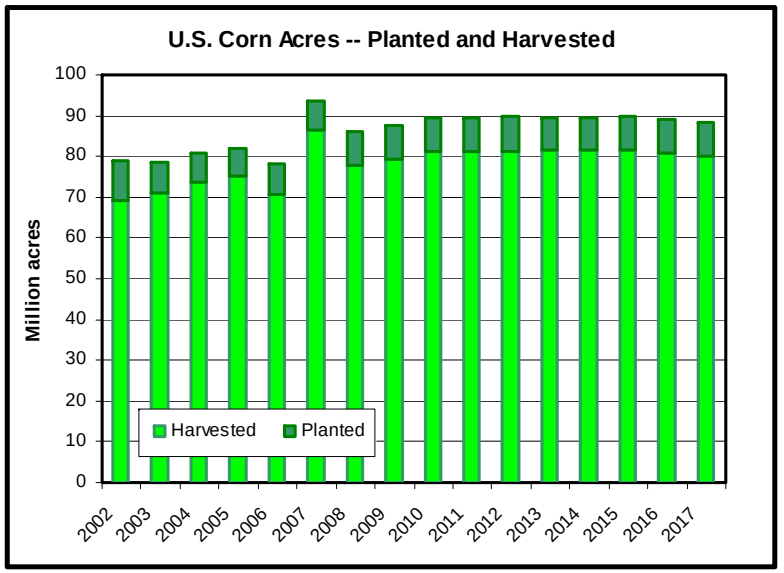


If mothballing costs are high, effective breakeven prices are higher



Projections based on levels in Energy Bill (December 2007)

Yield growth does not quite cover corn needs in short term…



Source: USDA -- 2002-07 and 2008 pa; KSU – 2008 ha and 2009-2017

Some negatives are creeping in . . .

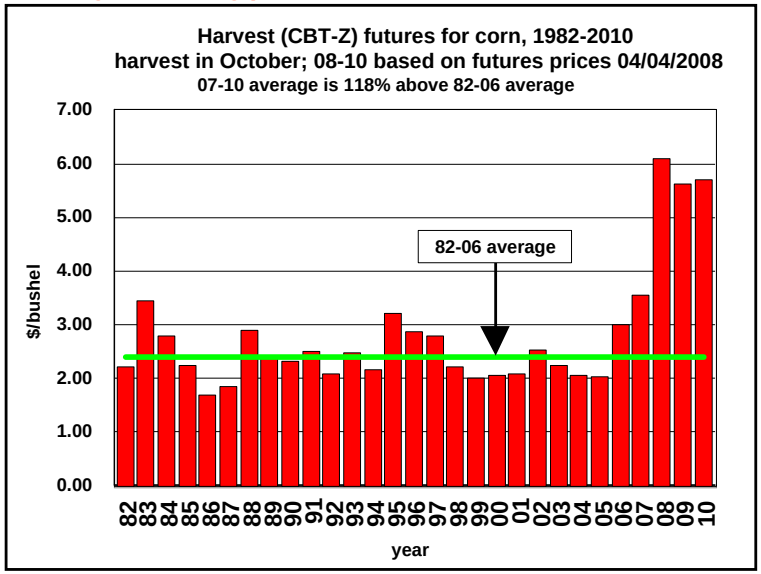
- Corn for ethanol increases food prices
  - Probably okay on this one (at least in the U.S.)
    - CARD: 30% higher corn price: 1.1% higher food prices
    - We likely can raise enough corn
- Ethanol is dirty environmentally
  - Slash & burn rainforest to raise corn?
  - Probably okay on this one (i.e., it is fairly clean)
- Livestock industries are getting louder?
  - Maybe . . . but cattlemen often have crop production
- Infrastructure & technical issues
  - Ethanol/gasoline separation; small refineries
  - Cars can use 10% (14 bgy); 5% (7 bgy) easily
    - 25% of cars will be FFV since foreign car makers aren't making that pledge (they sell half the cars)

But, some positives also are coming along . . .

- Petroleum industry is becoming more comfortable with the idea that ethanol will stay around
  - Investing in infrastructure
  - Investing in research
    - Shell – converting plant sugar directly to gasoline components
    - Biobutanol?
- Two studies (SD & MN):
  - E10 may not be as preferred as E20 or E30
- Research continues on:
  - cellulosic methods
  - DDGS usage and not just as an animal feed
- Despite negative rhetoric, supportive policies still growing (some states wanting increased mandates)

Result of ethanol push is higher commodity prices – but, increased world demand for grains also plays a large part

How long will strong prices stick around?



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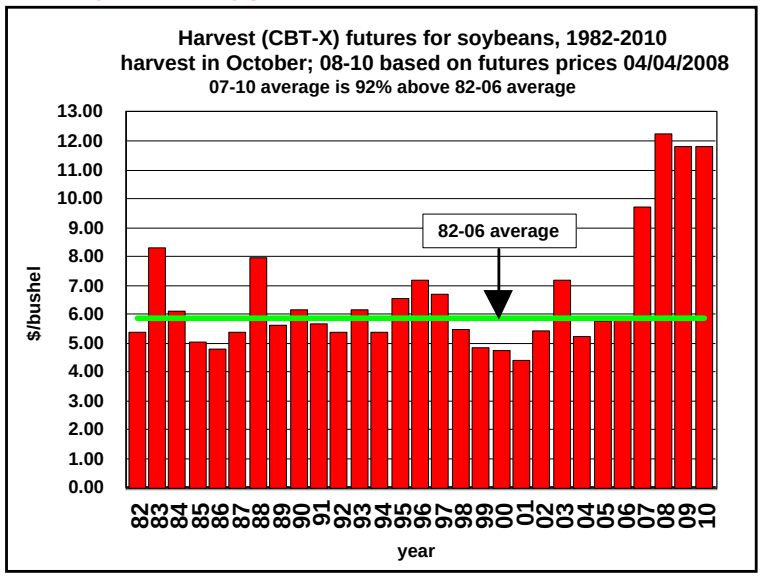
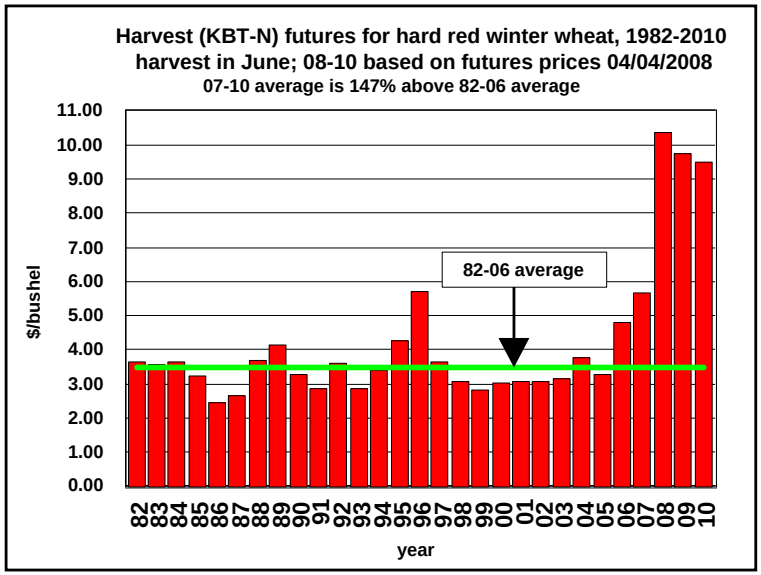


It's not just corn!

How long will strong prices stick around?



It's not just corn!

Ethanol is not the only cause of high crop prices

- Consider wheat (not used in ethanol) – high crop prices due to U.S. ethanol should come from acres converted from wheat to corn. But that's not happening (acres will be even higher in 2008).

Year	Acres Planted*	Acres Harvested*	Yield	Production	PPU	Value
2007	60,433	51,010	40.5	2,066,722	6.65	13,669,482
2006	57,344	46,810	38.7	1,812,036	4.26	7,710,014
2005	57,229	50,119	42	2,104,690	3.42	7,171,44

in thousands. Source: USDA, National Agricultural Statistics Service, January 2008

- Rather, due to back-to-back droughts in Australia
- and very tight grain stocks worldwide
- and very large grain demand worldwide

High feed cost problems for livestock producers likely wouldn't go away very quickly solely due to a demise of ethanol

Ethanol is not the only cause of high crop prices

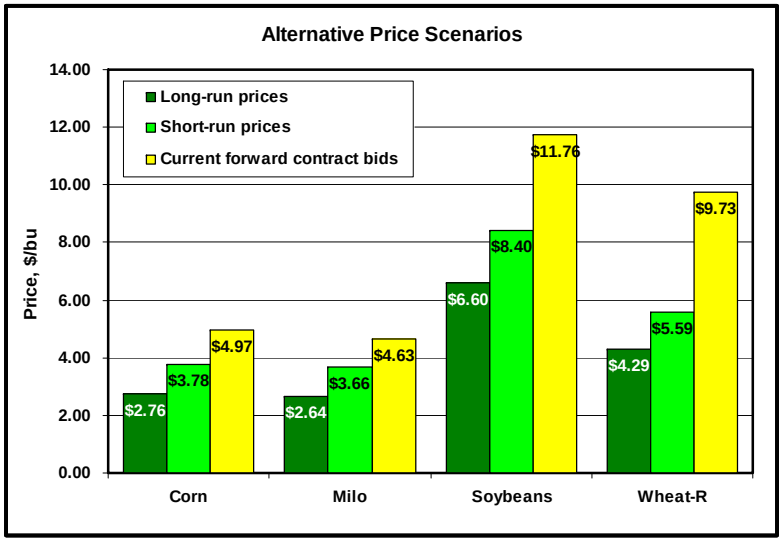
- End ethanol subsidy:
  - Corn price falls 2.3%
- End subsidy and Energy Bill's mandate
  - Corn price falls 22%
- No mandate but keep subsidy
  - 08/09 corn price $4.97/bu
- If bad drought in Corn Belt
  - $6.59 w/o mandate and $7.99 w/ mandate

------ McPhail & Babcock, CARD, March 2008

High feed cost problems for livestock producers likely wouldn't go away very quickly solely due to a demise of ethanol

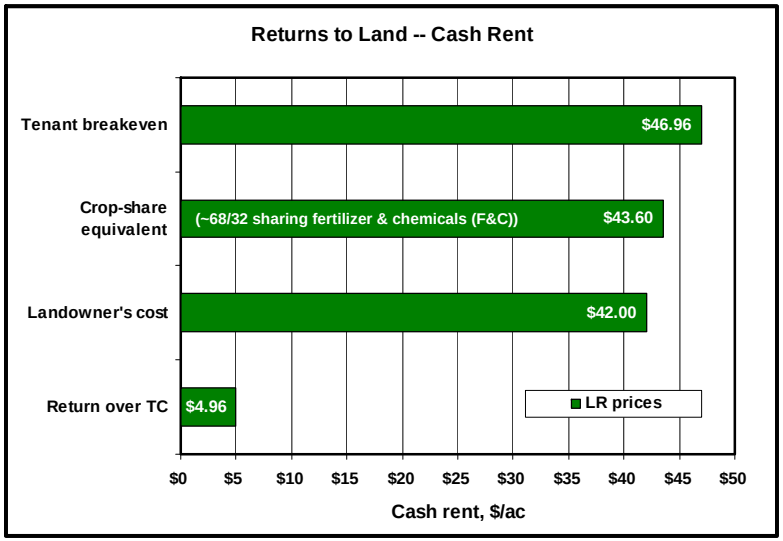
Higher crop prices lead to higher land rents for crop land AND pasture

Alternative Prices to Consider for Central Kansas



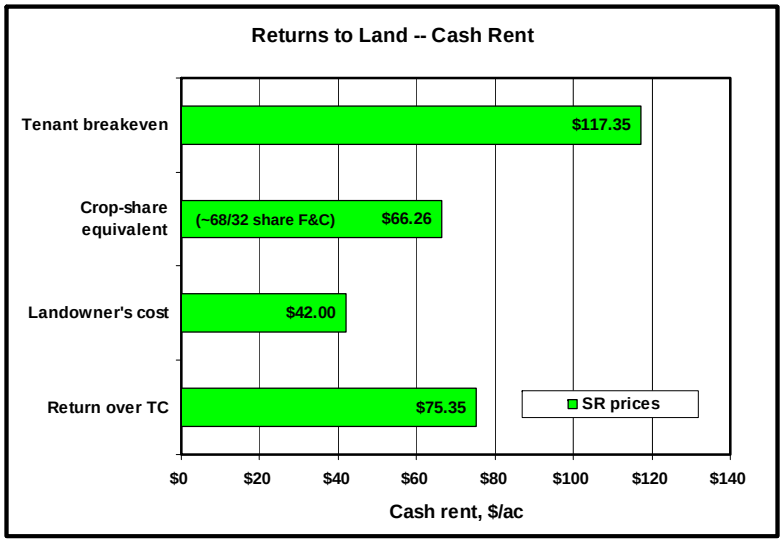
Long-run (08-12) and short-run (08) from MF-1013, current bids from Hutchinson (2/12/08)

Estimated cash rents for Central Kansas [long run (2008-2012) projected prices]



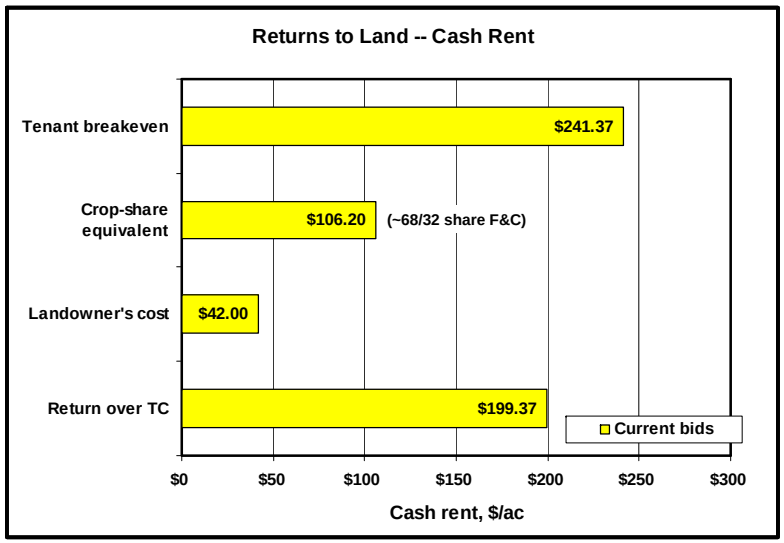
Based on KSU Farm Management Guides (October 2007) and KSU-Lease.xls (available at www.agmanager.info)

Estimated cash rents for Central Kansas [short-run (2008) projected prices]



Based on KSU Farm Management Guides (October 2007) and KSU-Lease.xls (available at www.agmanager.info)

Estimated cash rents for Central Kansas [forward contract bids (2/12/08) for 2008 harvest delivery]



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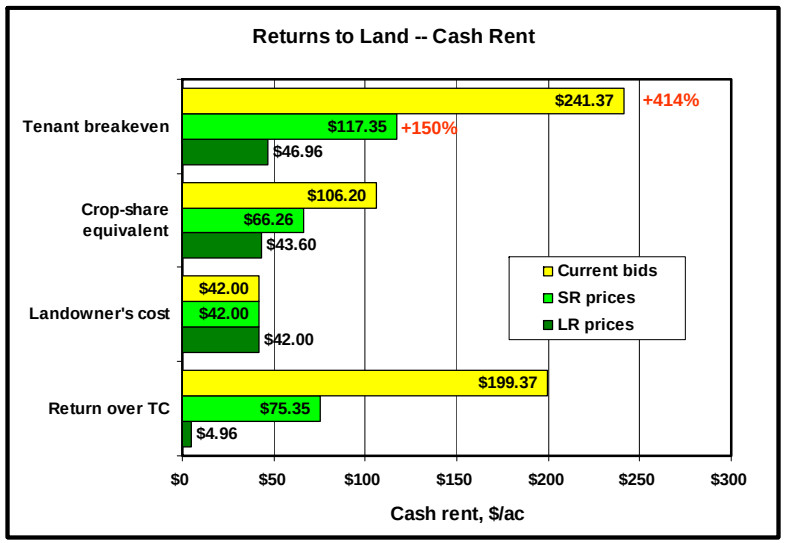
Estimated cash rents for Central Kansas (alternative price scenarios)



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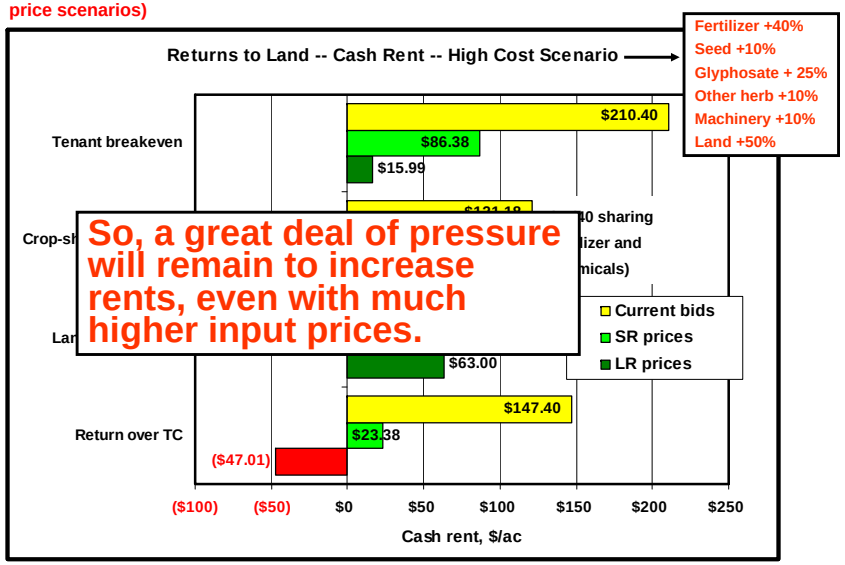
Really high rent potential . . .

- **Previous example suggested that price increases of 35% to 96% could mean a rent increase of 150% to 414% (elasticity of 4.3)**
- **Will this happen?**
- **No!**
  - **Farmers bid up production inputs as they try to increase acres or yield/a to get the high profits:**
    - **Fertilizer, chemicals, machinery, labor**

Estimated cash rents for Central Kansas (alternative price scenarios)

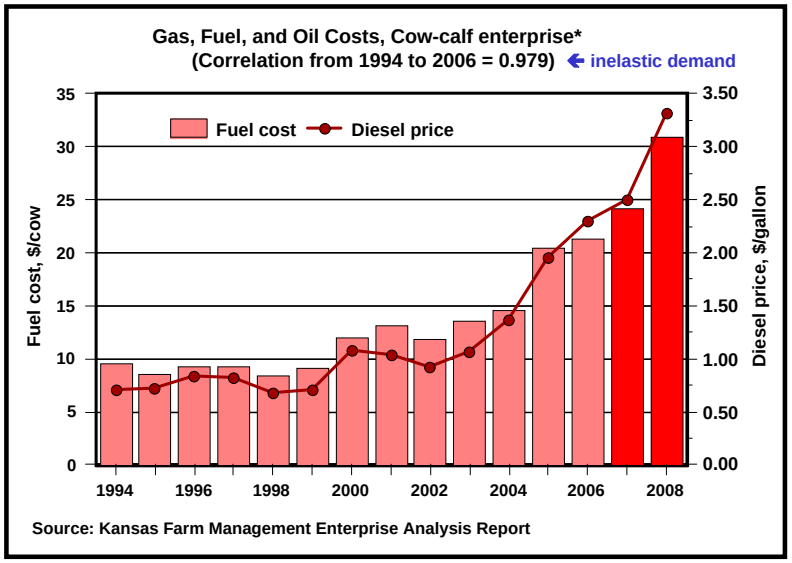


So, a great deal of pressure will remain to increase rents, even with much higher input prices.

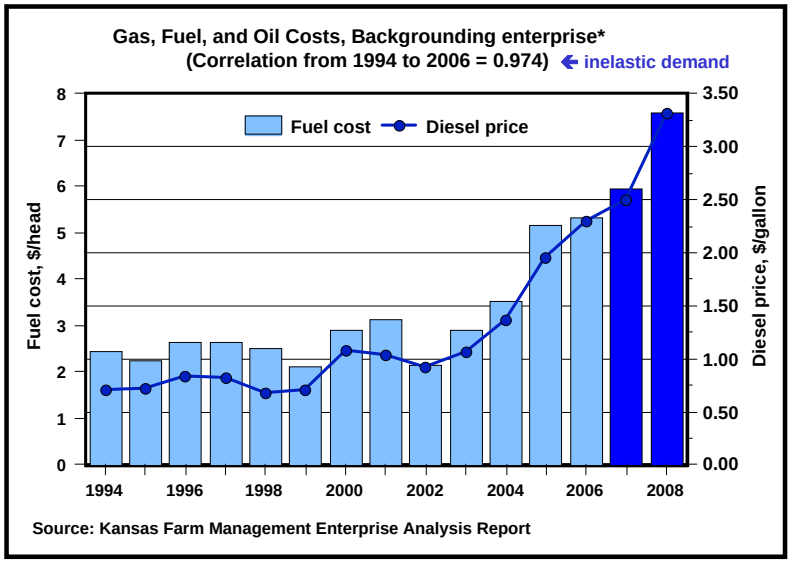
Based on KSU Farm Management Guides (October 2007) and KSU-Lease.xls (available at www.agmanager.info)

Pasture rents

What do these high oil and diesel prices mean to the cattleman?

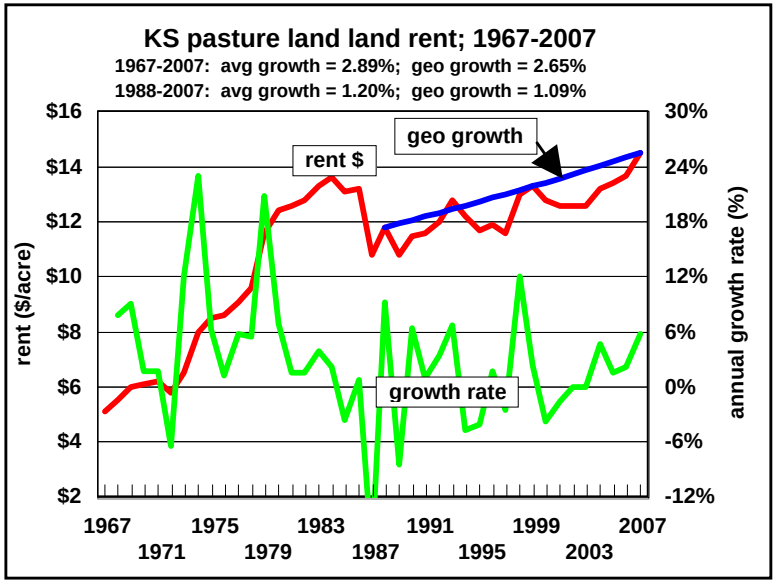


What do these high oil and diesel prices mean to the cattleman?



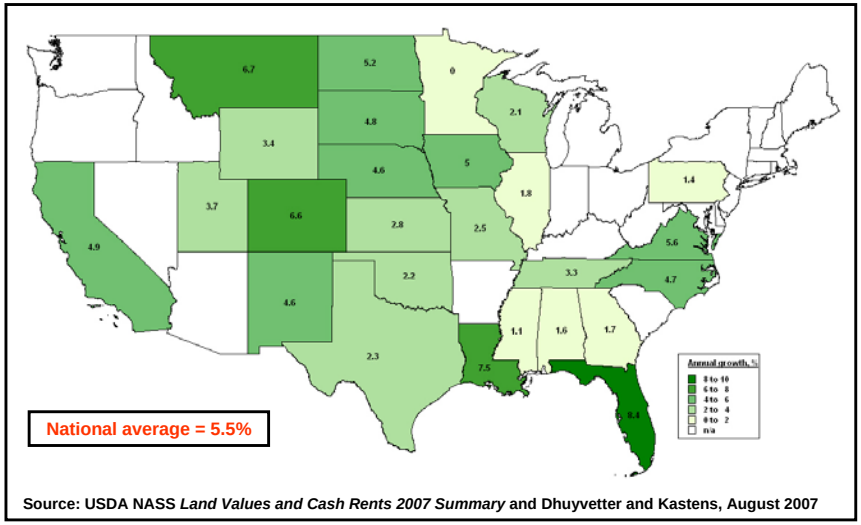
Impact of high fuel prices on livestock operation costs…

- Inelastic demand ➔ not much can be done to manage higher fuel costs
- While the impact increasing fuel costs have on costs of production cannot be ignored, this might just be the tip of the iceberg…
- Much bigger question is how will high commodity prices (as the result of high energy prices) impact grass rents…



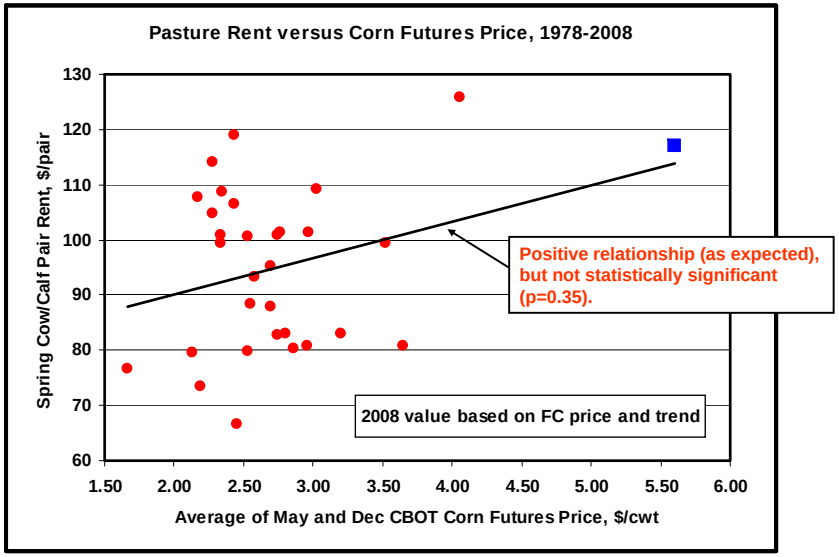
Suggested expected ag growth rate = 2.47% (but if ethanol continues . . . ?)

Pasture Rent Average Annual Growth Rate Jan 1, 2002 to Jan 1, 2007, percent (geo mean)



Source: USDA NASS *Land Values and Cash Rents 2007 Summary* and Dhuyvetter and Kastens, August 2007

What is the relationship between corn price and pasture rent?



Source: Kansas Ag Statistics *Bluestem Pasture Report* and Dhuyvetter, August 2007
Blue square is a model forecast for 2008 (not used in trend line establishment).

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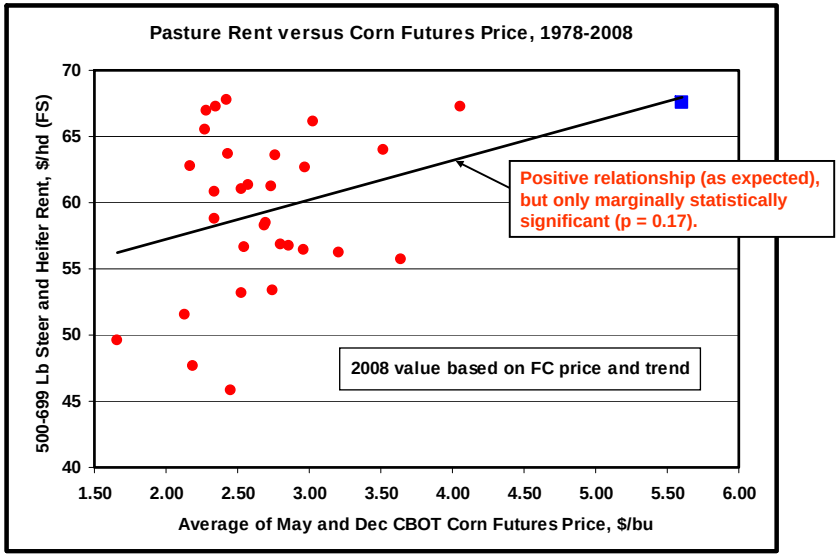


Source: Kansas Ag Statistics *Bluestem Pasture Report* and Dhuyvetter, August 2007

Blue square is a model forecast for 2008 (not used in trend line establishment).

Beef budgets used to estimate feed costs…

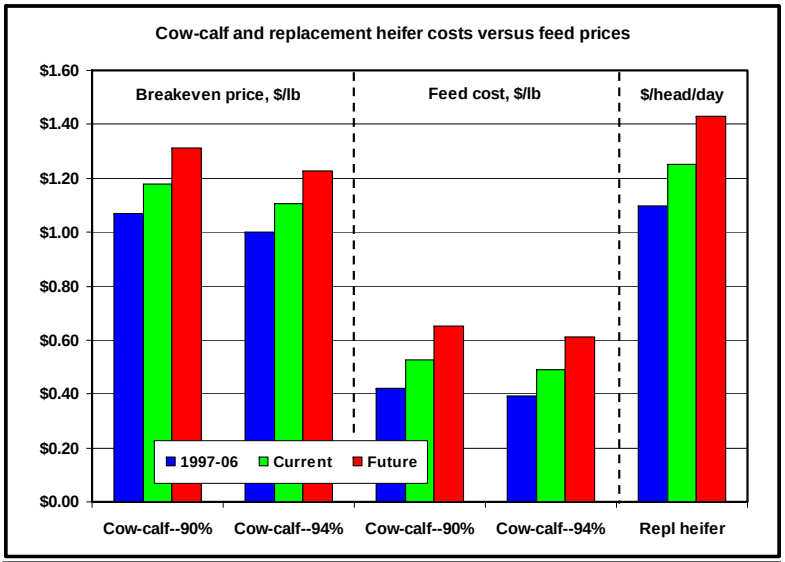
Budgets were simply used to calculate feed cost of gain and how it is impacted under various price scenarios to examine relative changes…

Budget feed price assumptions…

Feed prices	Unit	10-yr avg (1997-06)	2007	% chg	Future	% chg
Corn	$/bu	$2.30	$3.42	48.8%	$5.00	46.1%
Grain sorghum	$/bu	$2.05	$3.16	54.2%	$4.65	47.3%
Supplement	$/ton	$177.53	$224.63	26.5%	$323.10	43.8%
Sorghum silage	$/ton	$14.72	$21.90	48.8%	$32.00	46.1%
Alfalfa	$/ton	$83.13	$118.83	42.9%	$156.25	31.5%
Crop residue	$/ton	$12.00	$16.00	33.3%	$20.00	25.0%
Prairie hay	$/ton	$61.68	$81.17	31.6%	$111.33	37.2%
Cane hay	$/ton	$39.25	$58.41	48.8%	$85.33	46.1%
Pasture charges						
AUM	$/AUM	$11.23	$12.70	13.1%	$15.24	20.0%
Western KS -- SL	$/head	$55.66	$62.95	13.1%	$75.54	20.0%
Western KS -- IES	$/head	$42.10	$47.61	13.1%	$57.13	20.0%
Eastern KS -- SL	$/head	$65.49	$74.06	13.1%	$88.87	20.0%
Eastern KS -- IES	$/head	$49.52	$56.01	13.1%	$67.21	20.0%
Wheat grazing	$/cwt	$2.00	$2.40	20.0%	$2.88	20.0%
Wheat graze-out	$/cwt	$2.15	$2.60	20.9%	$3.12	20.0%

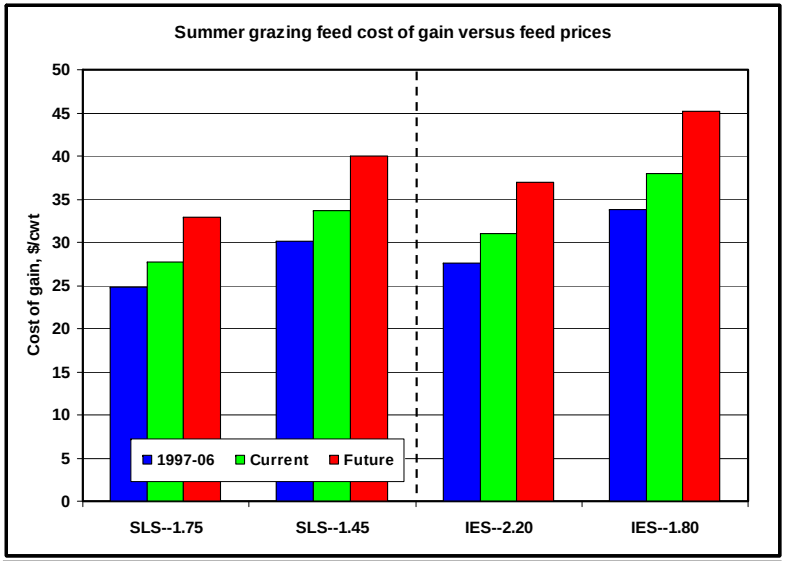
Percent increase used in 2008 FM Guides

Breeding enterprises…



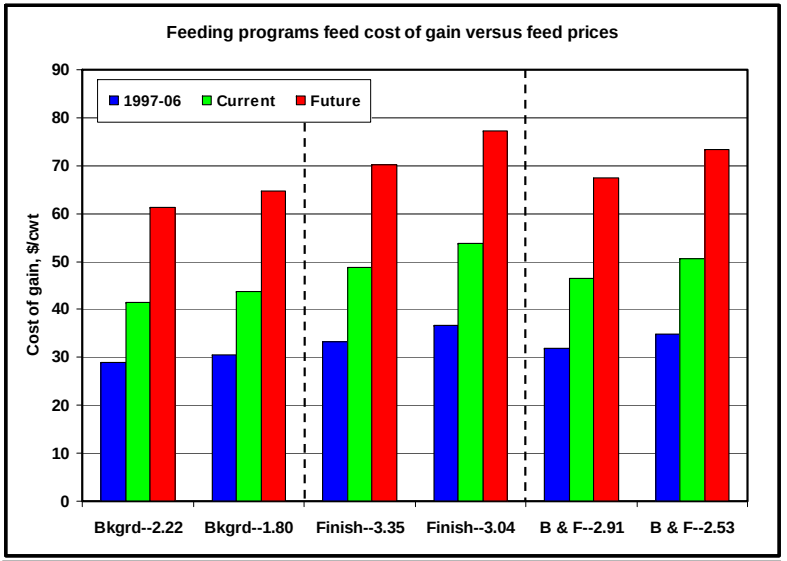
Increases (Future vs. 1997-06): BE = 22.6%, Feed cost = 55.2% and $/hd/day = 32.3%

Summer grazing enterprises…



Increases (Future vs. 1997-06): SLS = 32.8% and IES = 33.1%

Feeding enterprises…



Increases (Future vs. 1997-06): Bkgrd = 111.3%, Finish = 110.7%, and B&F = 110.8%

What does all this mean?

- Feed COG in feeding programs increase over 100% relative to historical time period
- This compares to ~33% for summer grazing programs (based on +120% assumption)
- What do you do about this?
  - Pay less for cattle

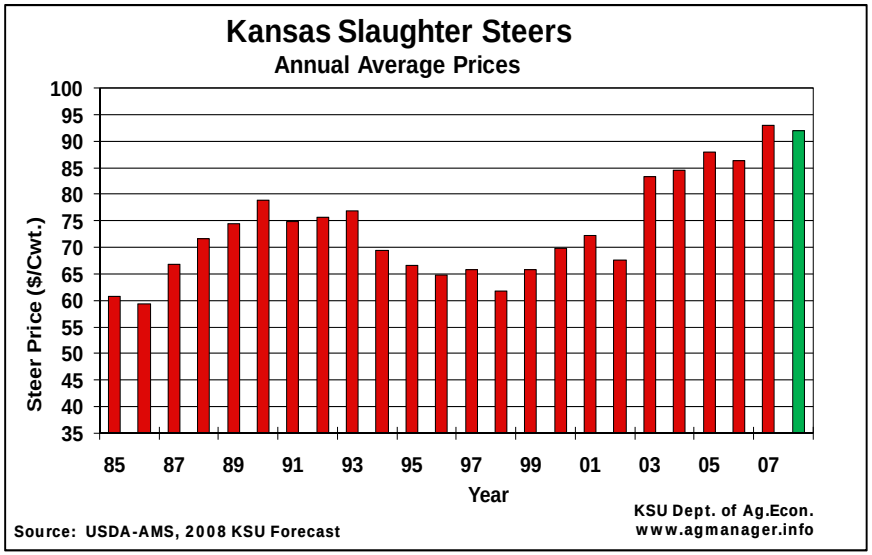
What does all this mean?

- Feed COG in feeding programs increase over 100% relative to historical time period
- This compares to ~33% for summer grazing programs (based on +120% assumption)
- What do you do about this?
  - Pay less for cattle
  - Find ways of putting on gain at lower cost
    - Leave cattle on grass longer
    - Background to heavier weights
    - Find alternative feedstuffs

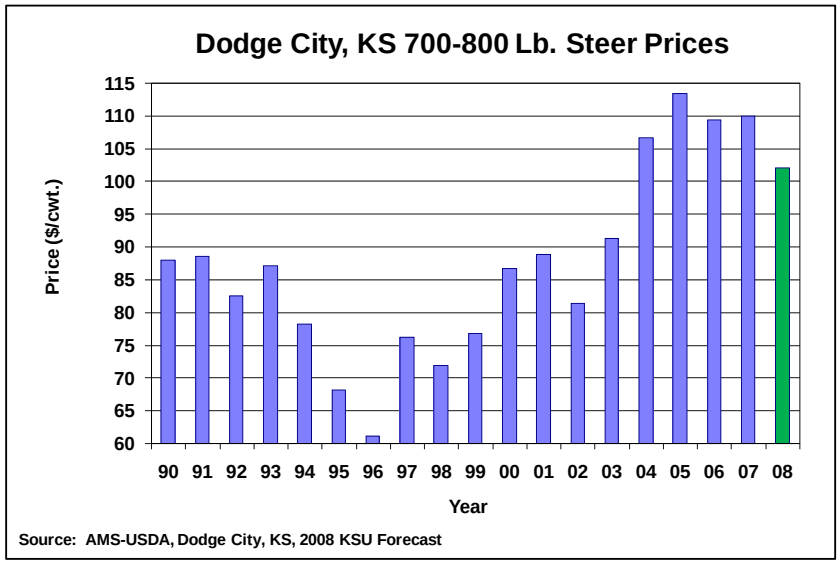
Find ways of putting on gain at lower cost…

- How high might grazing rates (summer grass SLS and IES programs) increase?
- Calculated pasture rates such that future feed COG relationships between feeding and grazing programs are similar to historical relationships
- Compared summer grass programs (west and east, SLS and IES) to drylot backgrounding programs
- Across all programs, increasing 2007 pasture rates 94% results in COG for grazing programs, relative to drylot backgrounding, that are proportional to what they were with 1997-2006 prices

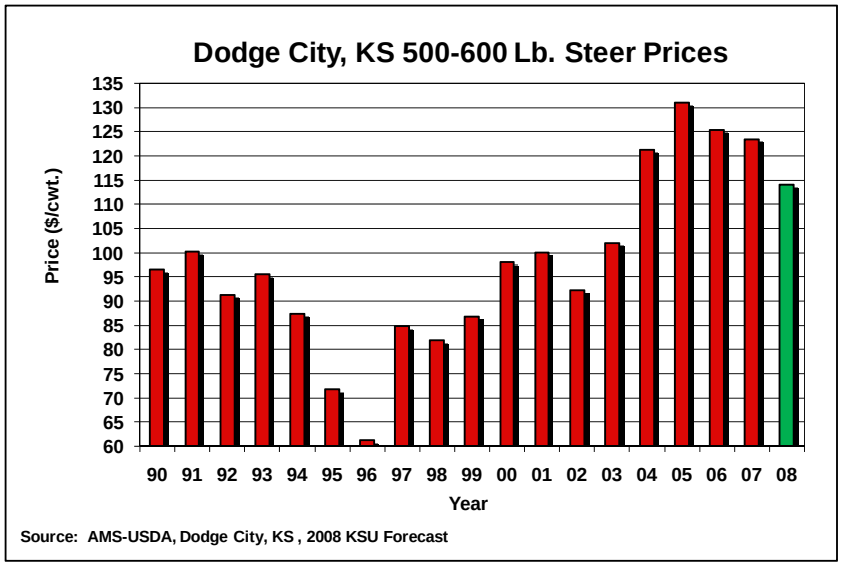
Slaughter Cattle Prices Expected To Remain Near Record Level



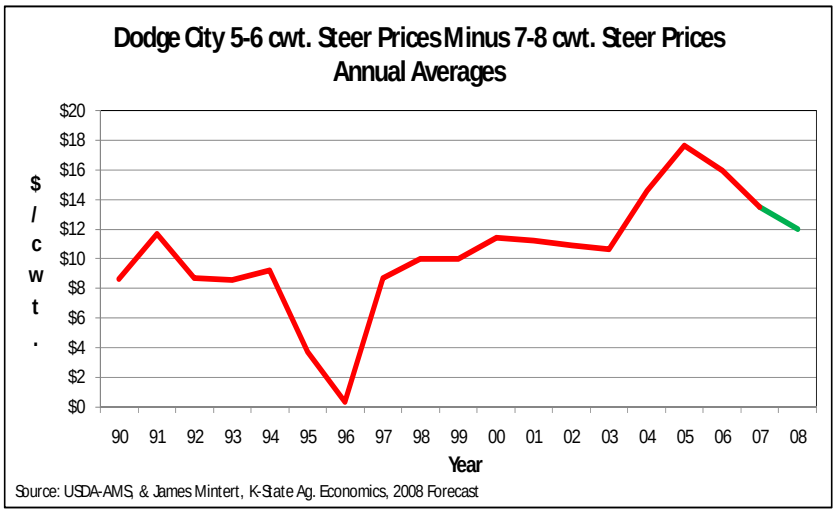
Feed Costs Will Be A Big Factor in Feeder Price Outlook

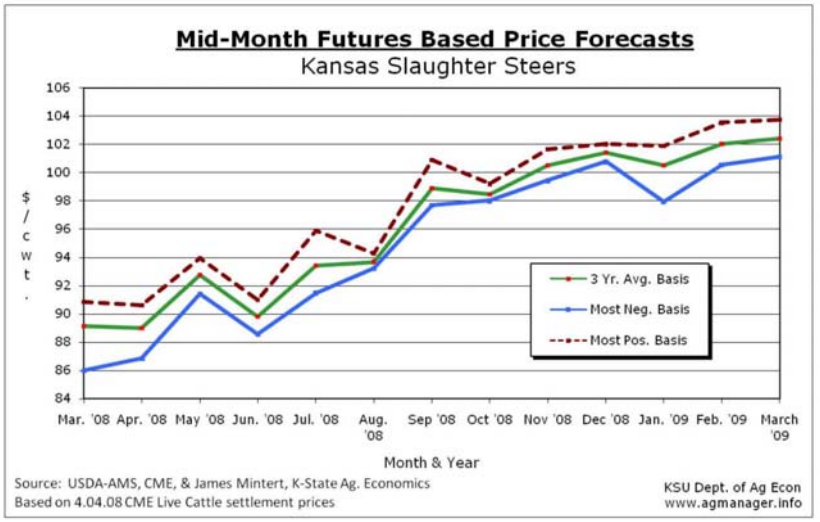


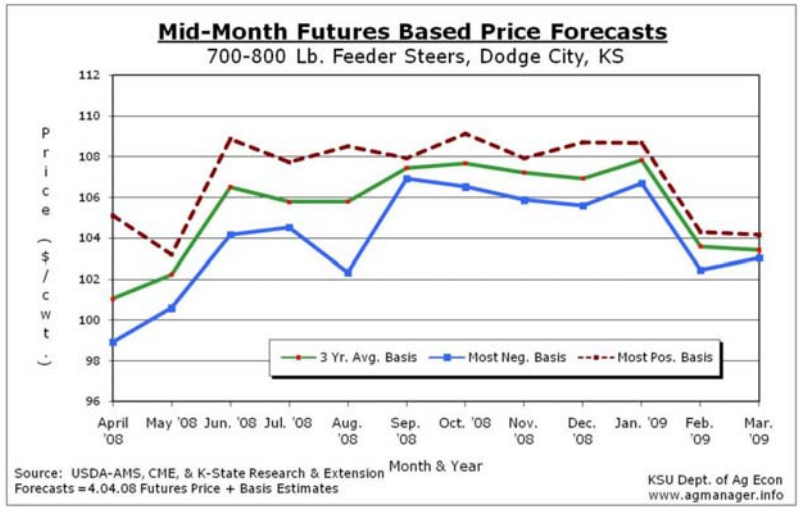
Feed Costs Will Be A Big Factor in Calf Price Outlook



Spread between calves and feeders continues to shrink







Cattle Thoughts . . .

- High feed cost not going away – get used to it
- AVERAGE cow-calf profits will be lower
  - Good managers will continue to make money
- Grass rent will be higher
  - Still greatly preferred to grain

- Enterprise (crops vs. cattle) thinking will be especially important
  - Cropland devoted to grain production?
  - More reliance on grazing native grass?