

U.S. Ethanol Market Outlook

Kansas Farm Managers &
Rural Appraisers Annual Meeting

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Ethanol Policy & Markets

- A. U.S. Ethanol Policy
- B. U.S. Ethanol Industry Capacity
- C. U.S. Ethanol Prices, Costs & Profits
- D. Ethanol's Impact on U.S. Corn Markets
- E. Key Ethanol-Related Research
- F. Thoughts on the Future of U.S. Ethanol



U.S. Ethanol Policy: Gasohol & MTBE

- **Gasohol (10% ethanol)** available in U.S. since late 1970s
- **MTBE & The History of Ethanol**
 - Demand for grain based ethanol spurred by the discovery that **MTBE (methyl tertiary butyl ether)** was contaminating groundwater supplies
 - MTBE use as an oxygenate additive was widespread due to mandates of the **U.S. Clean Air Act amendments of 1992** intended to reduce carbon monoxide emissions in U.S. cities & elsewhere.
 - MTBE use in gasoline was banned in almost 20 states by 2006.
 - U.S. gasoline suppliers worried about widespread, costly litigation
 - In 2005 the **U.S. Congress** refused to provide legal protection for MTBE

Concerns re: MTBE Water Contamination

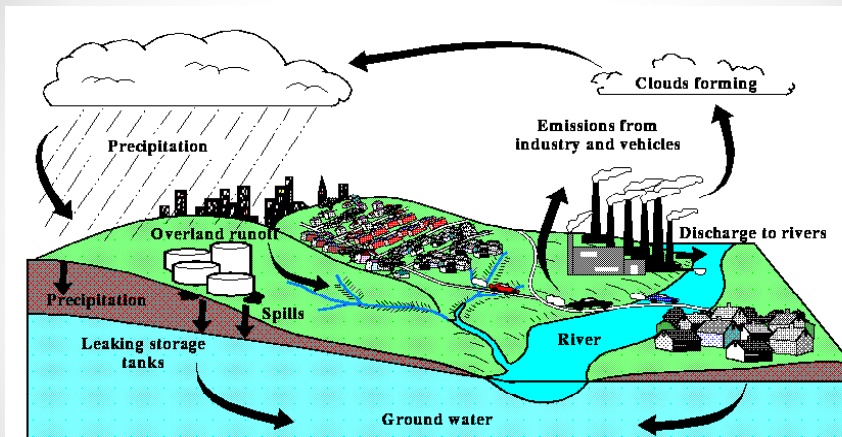


Figure 2. The movement of MTBE in the environment.

U.S. Ethanol Policy: Ethanol Expands

• **Result: Expanding U.S. Ethanol Production Capacity**

- Corn based-ethanol is the primary substitute for MTBE
- Low U.S. corn prices during 2000-2006, staying near \$2.00 per bu.
- Supported by U.S. Energy Policy initiatives

• **2005 U.S. Energy Policy Act**

- Expansion of ethanol driven by federal legislation aimed to reduce oil consumption & enhance energy security
- Established a nationwide **renewable fuels standard (RFS)** requiring use of 7.5 billion US gallons of renewable fuel by 2012

• **2007 Energy Independence & Security Act**

Energy Independence & Security Act of 2007

- Raised the RFS to 36 billion gal. of annual renewable fuel use by 2022
- **Corn-based ethanol** (conventional biofuel) is essentially capped at 15 billion gallons by 2015

U.S. Ethanol: Import Tariffs



• **Ethanol Import Tariff**

- Since 1980s, U.S. ethanol producers have been protected by a **\$0.54 / gallon tariff on imports** - mainly intended to curb Brazilian sugarcane ethanol imports.
- The tariff has been intended to offset the federal tax credit that is applied to ethanol no matter its country of origin

• **Caribbean Basin Initiative (CBI) Import Tariff Exclusion**

- Several Caribbean countries have been importing Brazilian hydrated ethanol, reprocessing it into anhydrous ethanol, and then re-exporting it to the United States
 - They avoid the 2.5% duty and the \$0.54 /gal. tariff
- Quota set at 7% of U.S. ethanol consumption – approved by CBI & free trade agreements

U.S. Ethanol: Blender's Credits



• **Ethanol Blender's Credit**

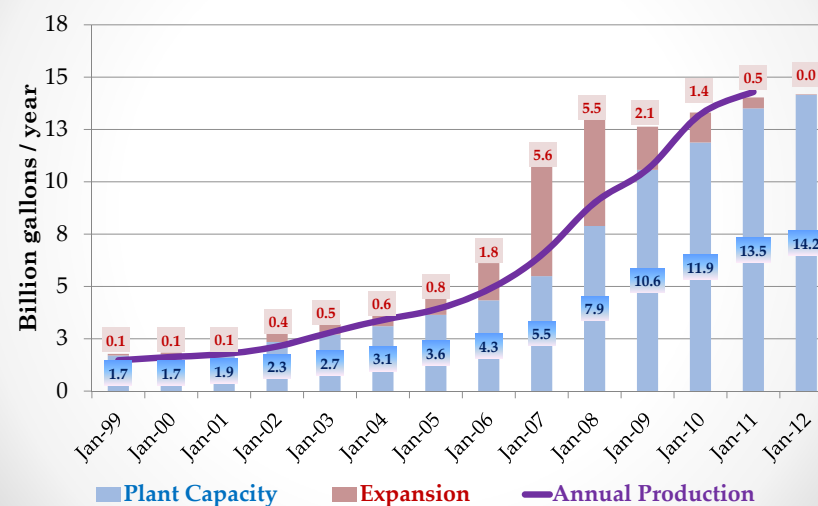
- Since 2004 blenders of transportation fuel had received a **tax credit** for each gallon of ethanol they mix with regular gasoline.
- Blenders received a US\$0.45 per gallon tax credit for ethanol that is blended with gasoline, regardless of the feedstock
- Small ethanol producers received an additional US\$0.10 on the first 15 million US gallons produced

• **U.S. Policy Regarding Ethanol Tax Credits**

- Current tax credits are based on the **2005 Energy Policy Act**, the **2008 Food, Conservation and Energy Act**, and the **2008 Energy Improvement & Extension Act**
- On June 16, 2011, the U.S. Congress approved voted to **repeal** both the tax credit and the tariff on ethanol, but this bill failed
- The tax credit expired on December 31, 2011

U.S. Ethanol Capacity & Production

Source: Renewable Fuels Association

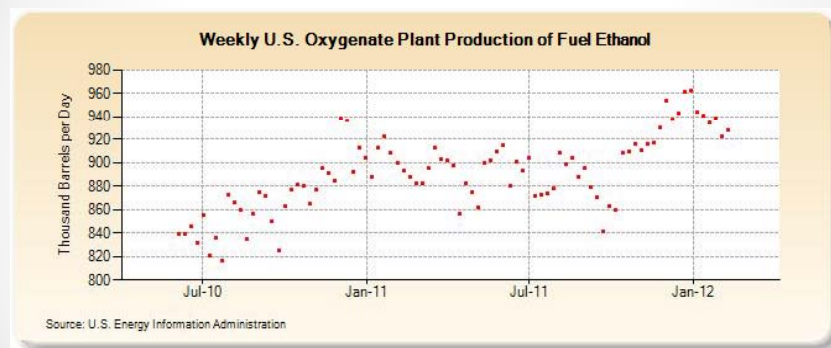


EPA Blending Mandates for 2012

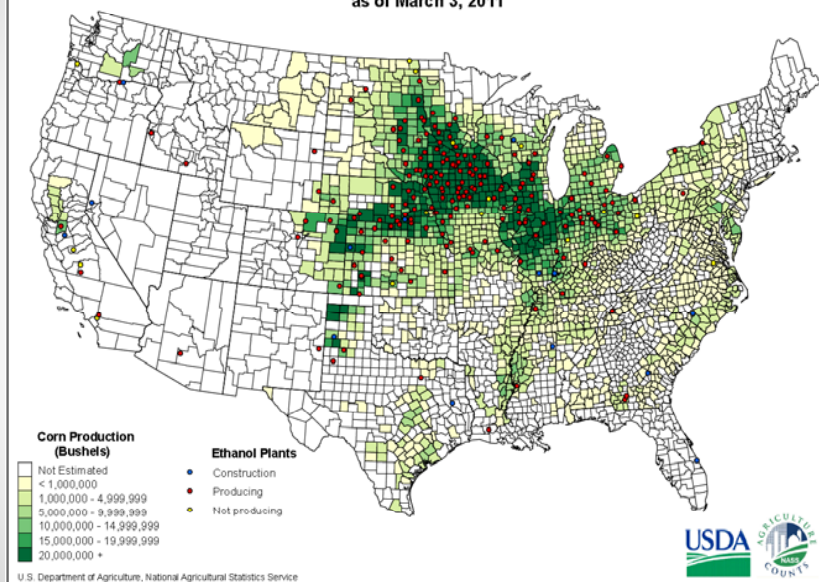
	Actual Gallons	EPA Corn-Starch Equivalent Gallons
Total Renewable Fuels		
+ Corn-starch Ethanol	13.2 bln. gal.	13.2 bln. gal.
+ Advanced Biofuels (see below)	2.0 bln. gal.	2.0 bln. gal.
= Total Renewable Fuels	15.2 bln. gal.	15.2 bln. gal.
Advanced Biofuels		
+ Biomass-based Diesel	1.0 (1.33) bln. gal.	*1.5 (1.99) bln. gal.
+ Cellulosic Biofuel	8.65 million gal.	10.45 million gal.
≈ Advanced Biofuels	2.0 bln. gal.	2.0 bln. gal.

U.S. Fuel Ethanol Production

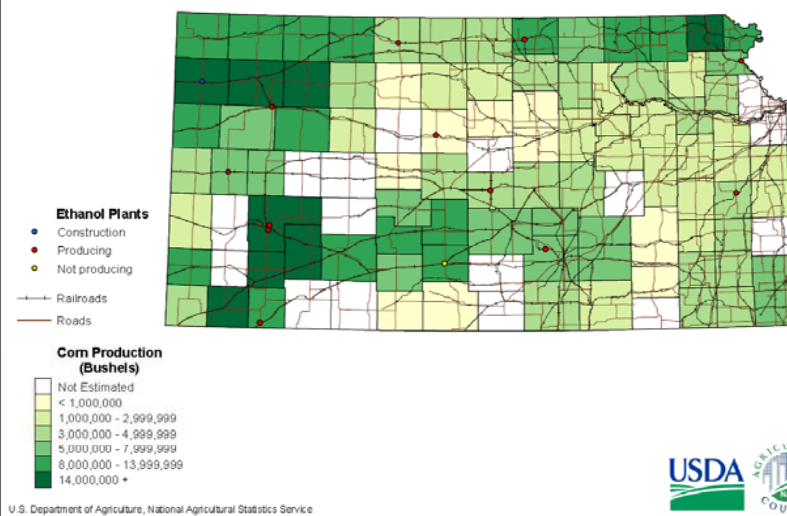
Weekly, June 4, 2010 thru February 10, 2012



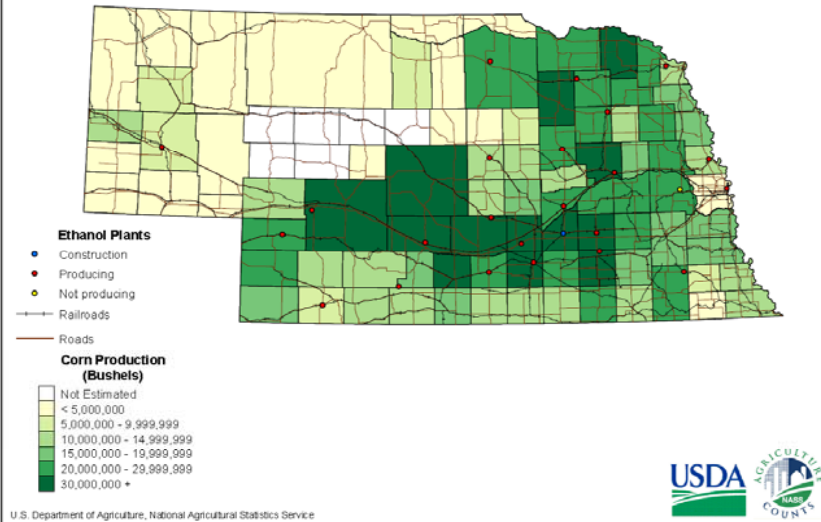
Corn for Grain 2010
Production by County and Location of Ethanol Plants
as of March 3, 2011



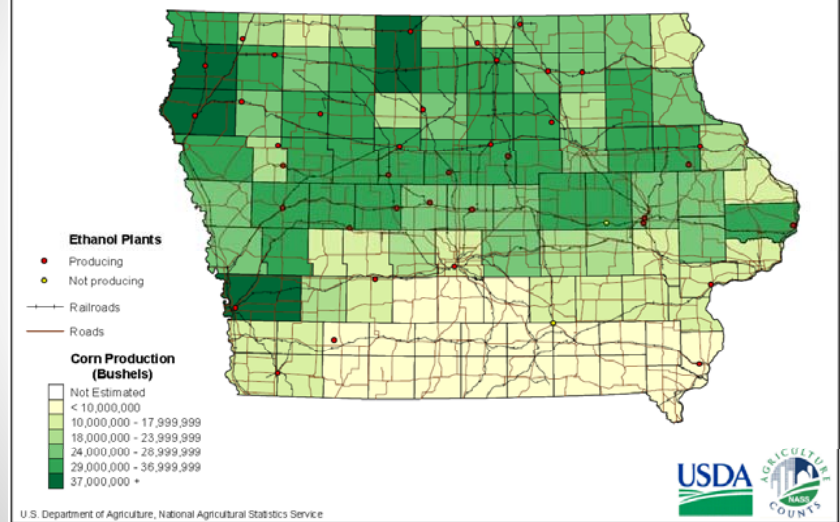
Kansas Corn for Grain 2010
Production by County and Location of Ethanol Plants
as of March 3, 2011



Nebraska Corn for Grain 2010
Production by County and Location of Ethanol Plants
as of March 3, 2011

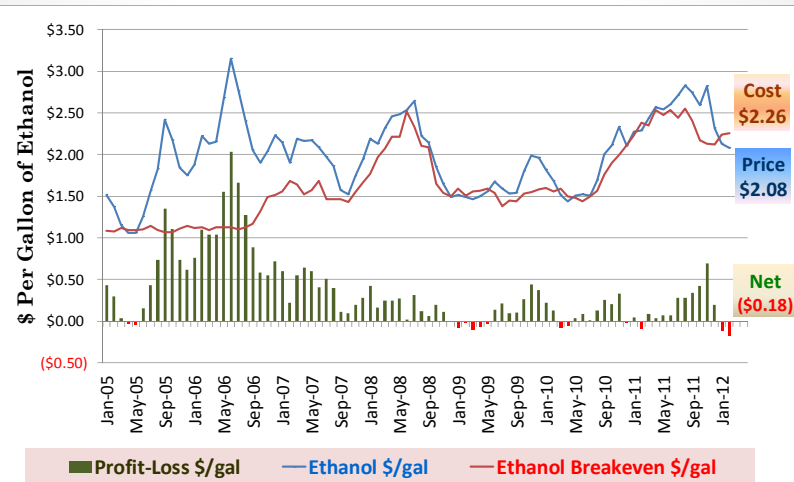


Iowa Corn for Grain 2010
Production by County and Location of Ethanol Plants
as of March 3, 2011



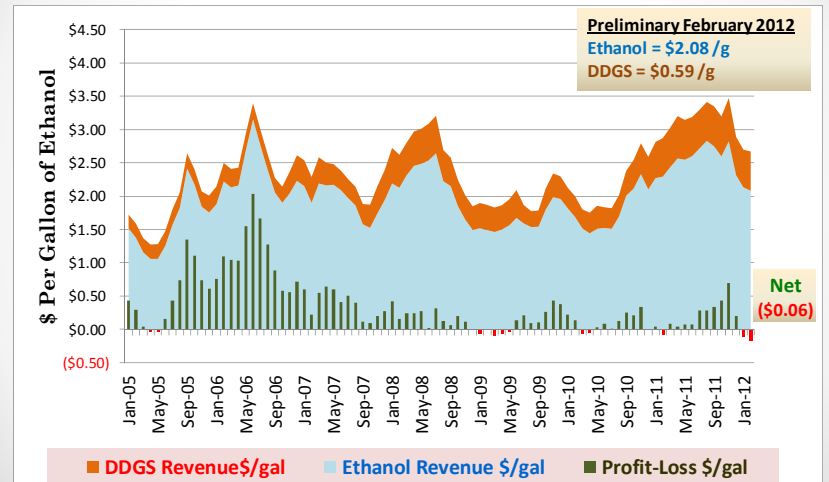
Ethanol Price, Cost & Profits

ISU Ethanol Plant Model (January 2005 – February 17, 2012)



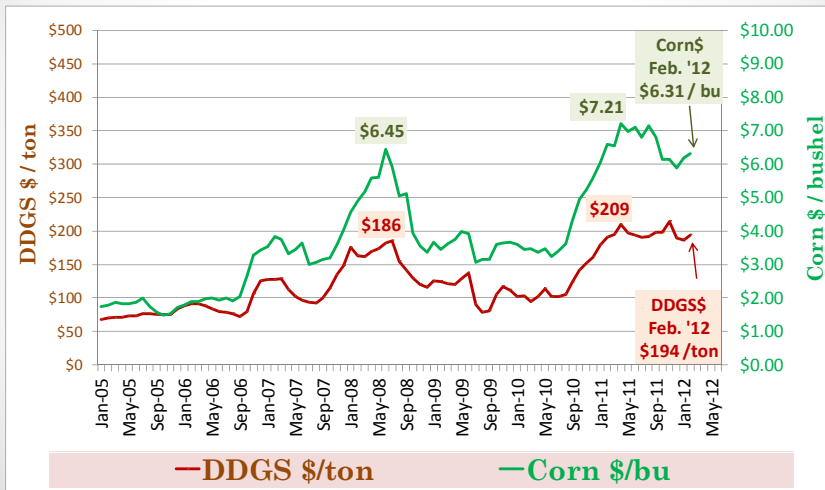
Ethanol Revenues & Net Returns

ISU Ethanol Plant Model (January 2005 – February 17, 2012)



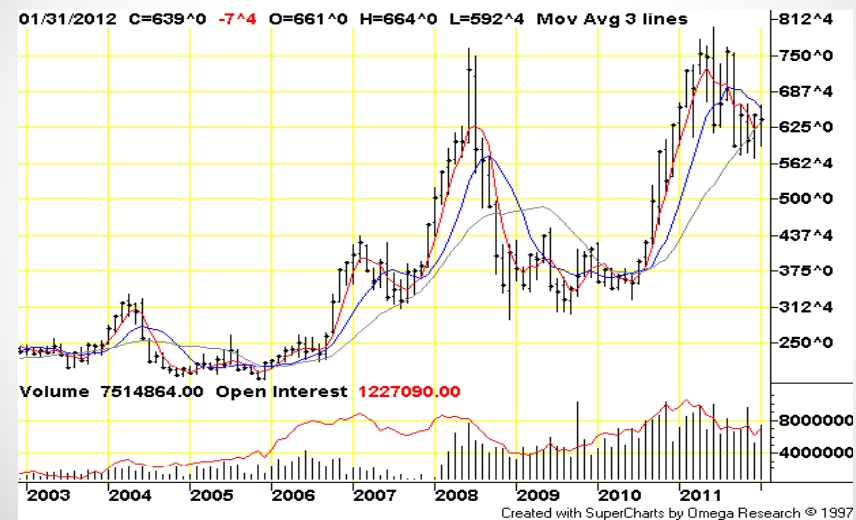
Ethanol DDGS & Corn Input Prices

ISU Ethanol Plant Model (January 2005 – February 17, 2012)



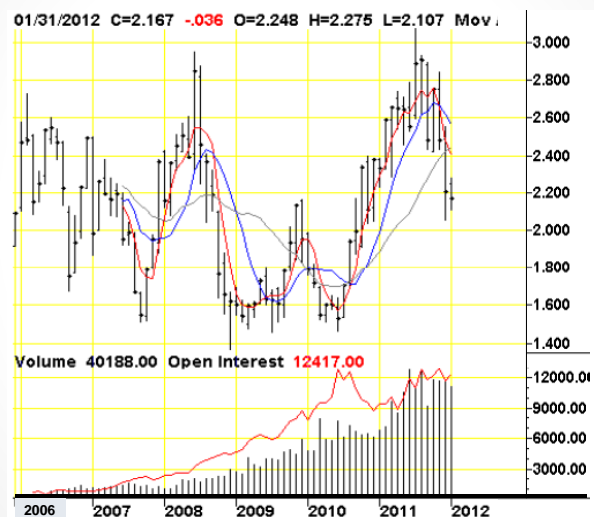
Monthly CBOT Corn Futures

Monthly Continuous Chart: December 2002 – January 2012



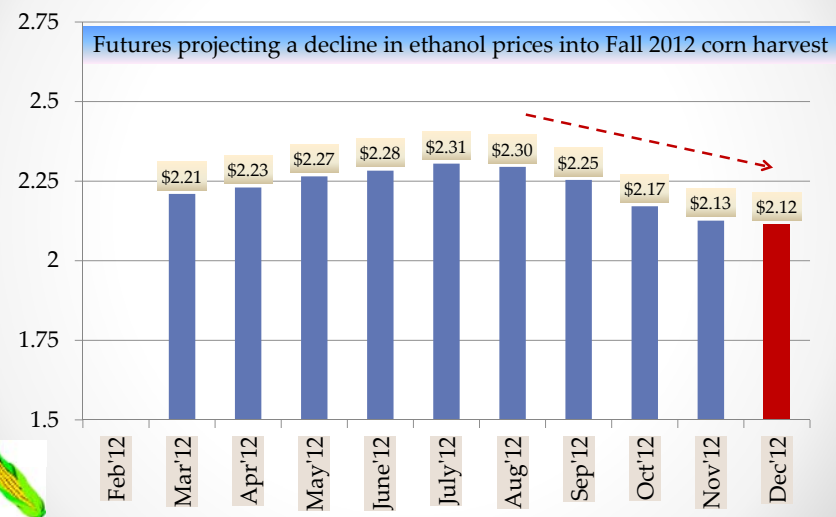
Monthly CBOT Ethanol Futures

Monthly Continuous Chart: December 2002 – January 2012



CBOT Ethanol Futures

Closes on February 23, 2012



JULY 2012 eCBOT Ethanol Futures

July 8, 2009 through February 22, 2012



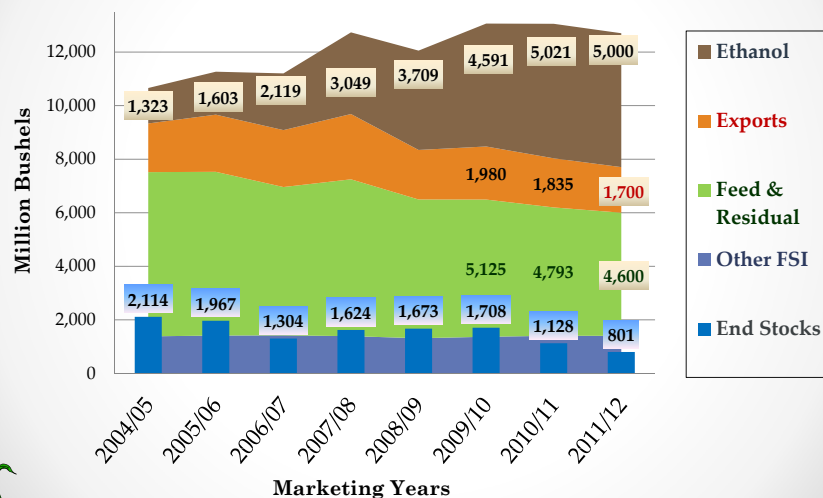
U.S. Corn Supply-Demand

USDA WASDE Report: February 9, 2012

	MY 2009/10	MY 2010/11	MY 2011/12
Planted Ac. (mln.)	86.4	88.2	91.9
Harvested Ac (mln.)	79.5	81.4	84.0
Yield (bu./ac.)	Record High 164.7	152.8	147.2
Beginning Stocks	1,673	1,708	1,128
Production	Record 13,092	12,447	12,358
Total Supplies	Record 14,774	14,182	13,501
Ethanol	4,591	5,021	5,000
Other Food, Seed, Ind.	1,370	1,407	1,410
Exports	1,980	1,835	1,700
Feed & Residual	5,125	4,793	4,600
Total Use	13,066	13,055	12,705
End Stocks (%S/U)	(13.1%) 1,708	(8.6%) 1,128	(6.3%) 801
U.S. Avg. Farm \$	\$3.55	\$5.18	\$5.80-\$6.60

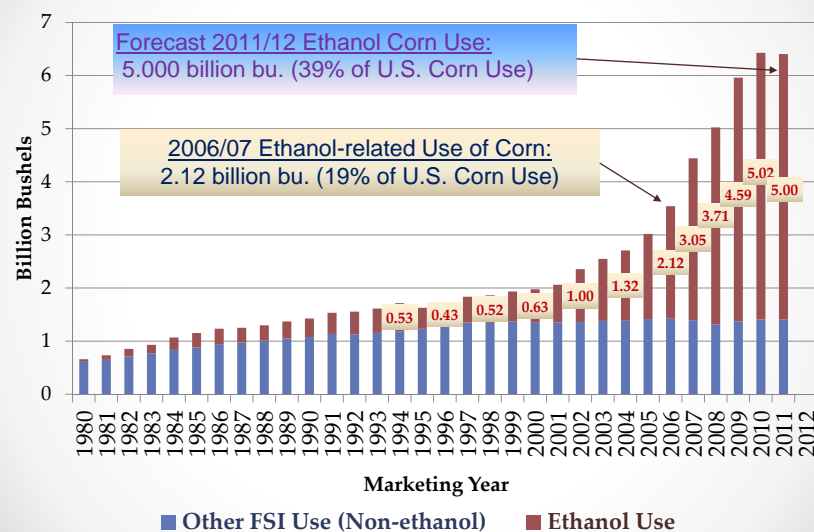
U.S. Corn Use & End Stocks

MY 2004/05 thru MY 2011/12 February 9, 2012 USDA WASDE Report

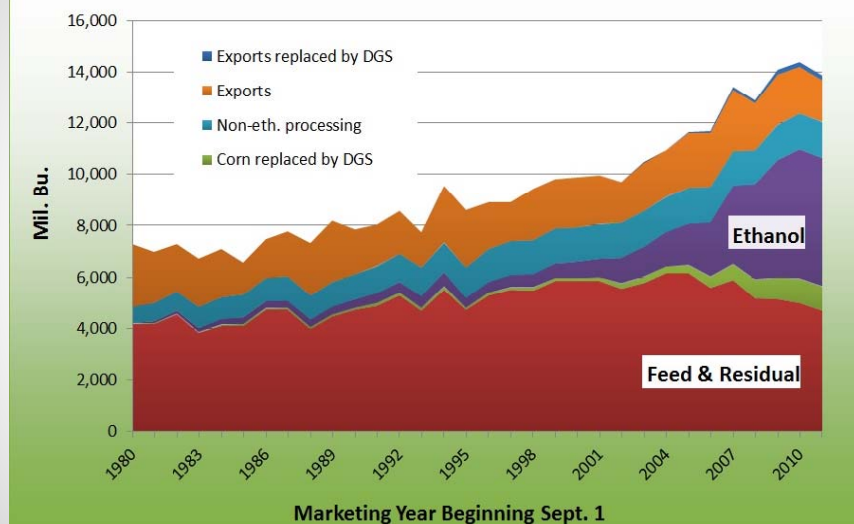


U.S. Corn Ethanol - FSI Use

February 9, 2012 USDA WASDE Report



Corn Utilization Trends



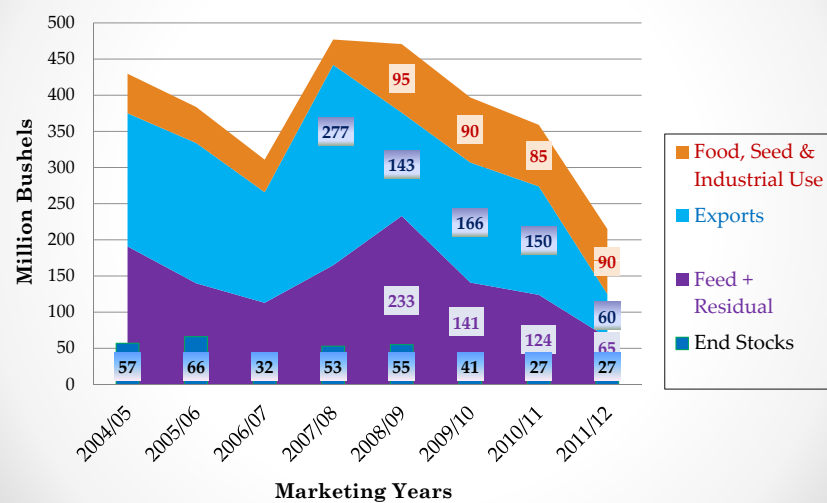
U.S. Grain Sorghum Supply-Demand

USDA WASDE Report: February 9, 2012

	MY 2009/10	MY 2010/11	MY 2011/12
Planted Acres (mln.)	6.6	5.4	5.5
Harvested Ac. (mln.)	5.5	4.8	3.9
Yield (bu./ac.)	69.4	71.8	54.6
Beginning Stocks	55	41	27
Production	383	346	214
Total Supplies	438	387	242
Food, Seed, Industrial	90	85	90
Exports	166	150	60
Feed & Residual	141	124	65
Total Use	396	359	215
End Stocks (%S/U)	(10.4%) 41	(7.5%) 27	(12.5%) 27
U.S. Avg. Farm \$	\$3.22	\$5.02	\$5.70-\$6.50

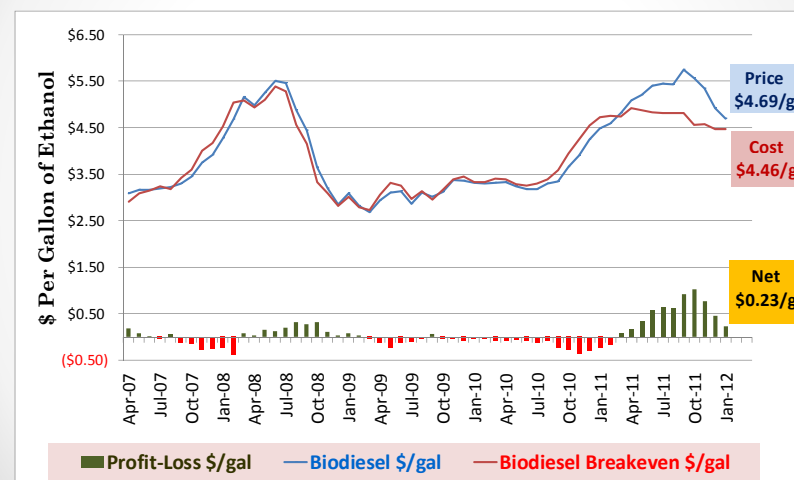
U.S. Milo Use & End Stocks

MY 2004/05 thru MY 2011/12 February 9, 2012 USDA WASDE Report



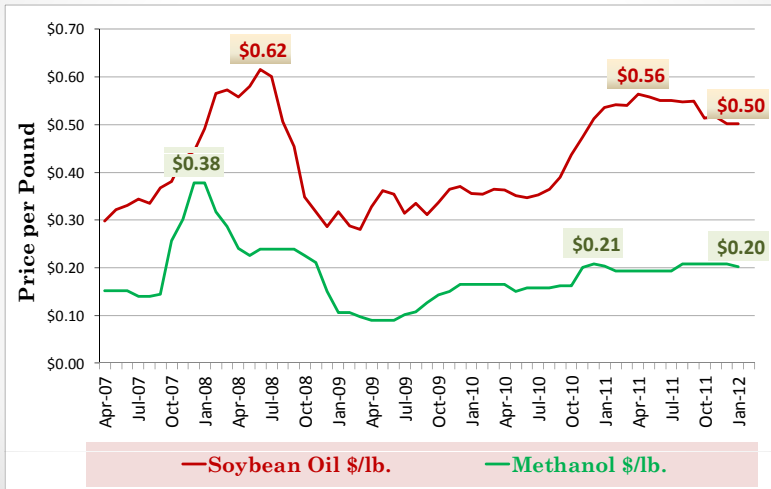
Biodiesel Price, Cost & Profits

ISU Biodiesel Plant Model (April 2007 – January 2012)



Biodiesel Input Prices

ISU Biodiesel Plant Model (April 2007 – January 2012)



Impact of VEETC Removal on E-10 & E-85 (Wisner, ISU)

Table 1. Example impact of VEETC removal on E-10 price

	With VEETC	Without VEETC
VEETC (Blenders' tax credit)	\$0.450	\$0.000
Ethanol at \$2.90 wholesale/gallon	2.900	2.900
Gasoline at \$2.88 wholesale/gallon	2.880	2.880
Gasoline cost of E-10	2.592	2.592
Ethanol cost w/o VEETC	0.290	0.290
Totals	2.882	2.882
Less VEETC (.1 x .45)	0.045	0.000
Net Price for E-10	\$2.837	\$2.882
E-10 Price, % of Gasoline	-1.5%	100.1%

Likely a small impact on E-10
Larger impact on E-85 markets

Table 2. Example impact of VEETC removal on E-85 price

	With VEETC	Without VEETC
VEETC (Blenders' tax credit)	\$0.450	\$0.000
Ethanol at \$2.90 wholesale/gallon	2.900	2.900
Gasoline at \$2.88 wholesale/gallon	2.880	2.880
Gasoline cost of E-85	0.432	0.432
Ethanol cost w/o VEETC	2.465	2.465
Totals	2.897	2.897
Less VEETC (.85 x .45)	0.383	0.000
Net Price for E-85	\$2.515	\$2.897
E-85 Price, % of Gasoline	-12.7%	100.6%

Brazilian Ethanol Imports / Exports

- **Impact of Brazilian Ethanol Exports on the U.S.**
 - The flow of ethanol either into (imports) or out of (exports) Brazil is a key issue of economic profitability for the U.S. ethanol industry
 - Brazilian ethanol exports to the U.S. **count against the U.S. RFS** (Renewable Fuels Standard) – competing directly with the U.S. domestic ethanol production industry for RFS “coverage”
- **Brazil has Not Exported Large Amounts of Ethanol Recently**
 - Due to high World sugar market prices - It is more profitable for Brazil to produce sugar for human consumption for the Brazilian sugar cane industry than to produce ethanol for domestic & export purposes
- **IF Brazilian Ethanol Exports Become Profitable....**
 - Would likely hurt market prices & profitability of U.S. ethanol industry

The Impact of Ethanol & Ethanol Subsidies on Corn Prices: Revisiting History

Bruce Babcock & Jacinto Fabiosa, Iowa State University / CARD

- The rise & fall of U.S. corn prices during 2006-2009 would have happened **even without** U.S. ethanol production expansion
- The 2005-2007 U.S. ethanol expansion would have occurred **even without** U.S. ethanol subsidies due to...
 - Low corn prices
 - The phase-out of MTBE
 - High crude oil prices



The Impact of Ethanol & Ethanol Subsidies on Corn Prices: Revisiting History (more)

- C. U.S. corn prices rose from \$2.06 /bu. in 2004 by an average of \$1.65 /bu in 2006-09
- D. Of the \$1.65 /bu increase in 2006-09.....
- \$0.14 /bu (8%) from ethanol subsidies
 - \$0.45 /bu (28%) from market-based expansion in U.S. ethanol industry
 - \$1.06 /bu (64%) from all other non-ethanol related market factors



U.S. Biofuels Baseline & Impact of Extending \$0.45/gal Blenders Credit

Meyer, Binfield & Westhoff, June 2011, University of Missouri / FAPRI

- 2011 FAPRI (MO) Baseline Grain & Biofuel Market Projection
- Assumed Current U.S. Biofuels Policy, with **expiration in January 2012** of....
 - \$0.45 /gallon ethanol tax credit (i.e., "Blenders Credits")
 - \$0.54 / gallon special ethanol import tariff
 - \$1.00 / gallon diesel fuel credit
 - Cellulosic ethanol production credits
- Question:** Impact of extending ethanol blenders credits & import tariffs??



2011 FAPRI Study Results depend on.....

- Macroeconomic conditions
 - As of January 2011 in this study
- How biofuels policies are implemented & market development occurs
- Annual waivers of cellulosic biofuels mandate
 - Total and advanced biofuels mandates reduced in concert
 - Issuance of waiver credits setting price for cellulosic ethanol RIN certificates
- Most of U.S. advance biofuels **not included** in either cellulosic ethanol or bio-based diesel mandates is **imported sugarcane ethanol**



Impact of Extending Blender's Credits

More results from Study by Meyer, Binfield & Westhoff, June 2011

- Extending the **Blenders Credit** & **Import Tariff** leads to ...
 - Expanded U.S. ethanol production** – up 1.2 billion gallons per year, using an addition 440 million bu. annually
 - Higher U.S. corn prices** – increased \$0.18 / bushel
 - More U.S. corn area** – up 1.7 million acres per year
 - Less U.S. soybean area** – down 800,000 acres per year (biodiesel credits not extended)



Impact of Extending Blender's Credits

II. Extending the ethanol Blenders Credit & Import Tariff leads to ...



a) Higher Ethanol Wholesale "Rack" prices

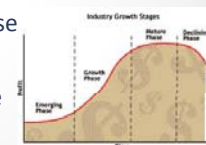
b) Lower Ethanol Retail prices

- A share of the blenders credit is passed "**back**" to biofuel producers, while a share is passed "**on**" to consumers.
 - Some of the decline in retail prices is a result of saturation of the low-level ethanol blends markets
 - *For the E-85 market to expand, the E-85 retail price paid by consumers must move below energy equivalence for a period of time*



Thoughts: The Future of U.S. Ethanol

- Less U.S. government financial support for domestic ethanol production in the future
 - Tighter federal budgets
 - Uncertainty about the U.S. public's acceptance of government / EPA environmental & energy regulation in the future
- Expansion of U.S. ethanol production likely to moderate / slow down in the future
 - Impact of declining financial support & protectionist policy from the U.S. government in coming years
 - U.S. ethanol industry likely to enter a "maturity" phase
 - Low cost, efficient producers or those with strategic input/output market advantages survive



More Thoughts Re: Ethanol

- Future Economics of Ethanol Dependent on Long Term Health of U.S. Economy
 - Energy prices & ethanol profits follow +/- trends in U.S. economy
 - IF a second recessionary phase occurs in the U.S. in next few years, THEN demand & price of gasoline would be negatively affected
 - Could hurt U.S. ethanol industry profitability as did U.S. economic problems in later 2008-early 2009
- The U.S. Ethanol Industry is an "Uber-Competitive" Group of "Entrepreneurs"
 - Even with likely cutbacks in U.S. government support, U.S. ethanol industry would be expected to **strongly compete & innovate** to gain technical efficiencies for the sake of its economic sustainability



Questions?



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K-State Research & Extension

Grain Market Analysis information
is available on
www.agmanager.info

