

FarmEcon LLC

A source of information on global farming  
and food systems

Thomas E. Elam, PhD  
President

# *Outlook for Feed Commodities and Other Inputs for Poultry Production*



Dr. Thomas E. Elam  
President  
FarmEcon LLC  
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# *What went wrong in 2008?*

Just  
about  
everything

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# *Feed and Input Cost Outlook 2009/2010*



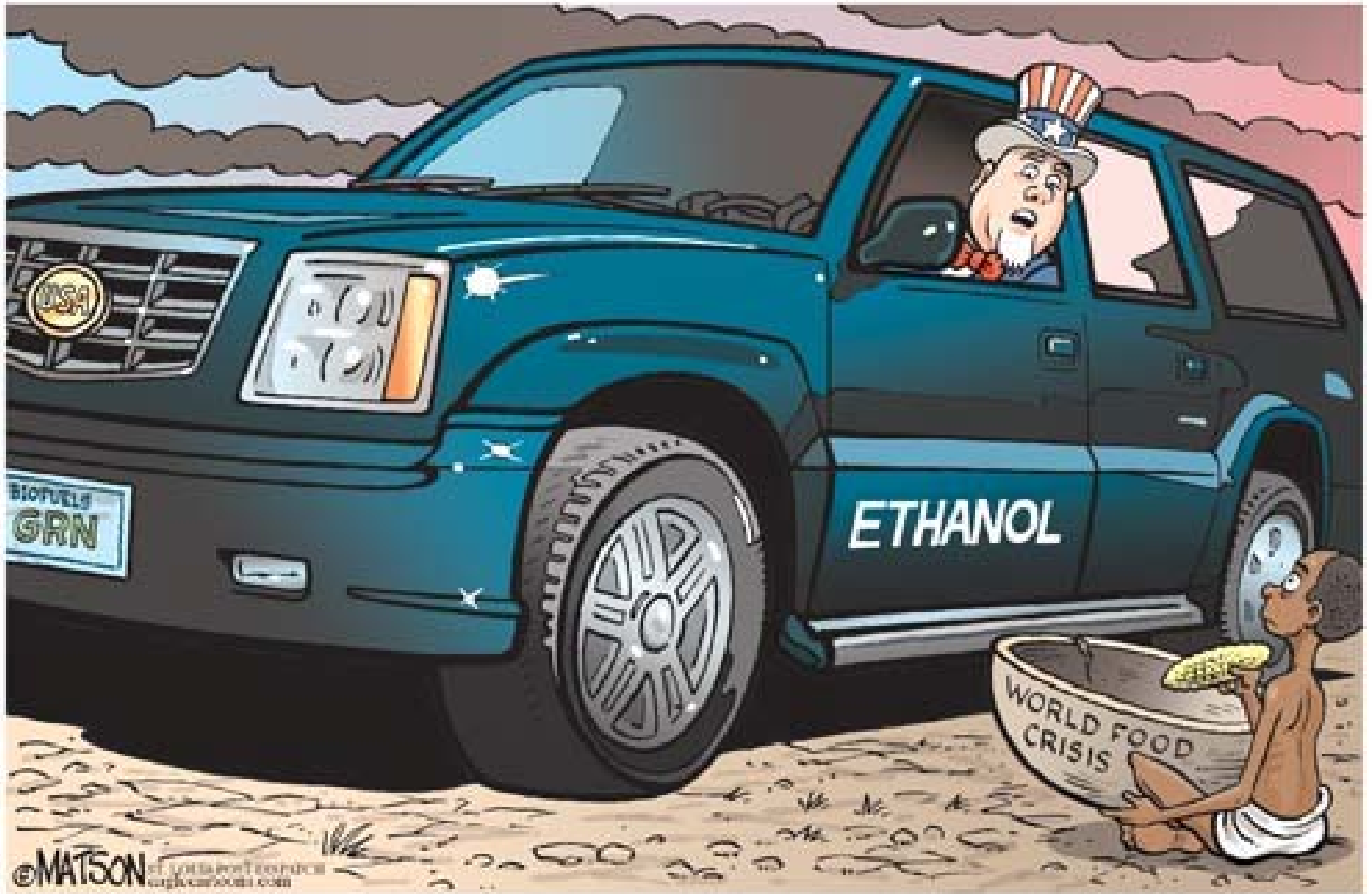
## *Feed outlook has become complex*

- Extremely volatile macroeconomic environment
- Biofuels a major player in feed market outlook
- Feed prices linked to volatile oil markets
- Exchange rates likely to be volatile
- Risk management = key to survival



## *Feed Outlook – Ethanol Links*

- Ethanol RFS is affecting corn and soybean markets
- Oil prices about 2.5 times more volatile than corn
- Ethanol producers/users caught in a trap
  - RFS demands 10.5 billion gallons in 2009
  - Value of ethanol reduced by low oil prices
  - Corn prices bid up to ethanol breakeven
  - All 2009 ethanol production will be used for RFS



"YOU GONNA EAT THAT?"



# 27 Current Idle Ethanol Plants

Plant Name	City	State	Feedstock	Capacity	Start Date
Abengoa Bioenergy Corp.	Portales	NM	Milo	30	Jul-05
Alchem LLP	Grafton	ND	Corn	11	1990
AltraBiofuels Coshocton Ethanol LLC	Coshocton	OH	Corn	60	Oct-07
AltraBiofuels Indiana LLC	Cloverdale	IN	Corn	88	N/A
Cascade Grain Products LLC	Clatskanie	OR	Corn	113	Dec-07
Central Wisconsin Alcohol	Plover	WI	Seed Corn / Whey	7	N/A
DENCO LLC	Morris	MN	Corn	24	Sep-99
E3 BioFuels LLC	Mead	NE	Corn	25	Dec-06
Gateway Ethanol LLC	Pratt	KS	Corn/milo	55	Jun-07
Greater Ohio Ethanol LLC	Lima	OH	Corn	54	Nov-07
Husker Ag LLC	Plainview	NE	Corn	67	Mar-03
Manindra Ethanol Corp.	Hamburg	IA	Corn / Wheat Starch	8	N/A
Melrose Dairy Proteins LLC	Melrose	MN	Cheese Whey	3	N/A
Pacific Ethanol Inc.	Madera	CA	Corn	40	Oct-06
Parallel Products	Bartow	FL	Beverage Waste	4	N/A
VeraSun Albert City LLC	Albert City	IA	Corn	100	Nov-06
VeraSun Albion LLC	Albion	NE	Corn	100	Oct-07
VeraSun Bloomingburg LLC	Bloomingburg	OH	Corn	100	Mar-08
VeraSun Central City LLC	Central City	NE	Corn	96	Apr-04
VeraSun Dyersville LLC	Dyersville	IA	Corn	110	Sep-08
VeraSun Hankinson LLC	Hankinson	ND	Corn	110	2008
VeraSun Janesville LLC	Janesville	MN	Corn	110	N/A
VeraSun Linden LLC	Linden	IN	Corn	100	Aug-07
VeraSun Marion LLC	Marion	SD	Corn	110	Feb-08
VeraSun Ord LLC	Ord	NE	Corn	45	May-07
VeraSun Welcome LLC	Welcome	MN	Corn	110	2008
VeraSun Woodbury LLC	Lake Odessa	MI	Corn	50	Sep-06
White Energy	Plainview	TX	Corn	100	Apr-08
<b>Total Idle</b>				<b>1,830</b>	



## *Ethanol Factoids*

- Nearly 20% of U.S. ethanol capacity is closed due to bankruptcy or poor margins
- The cost of a commercial scale cellulosic ethanol plant is \$10-20 gallon capacity
- Burning corn to replace natural gas and using that gas to power vehicles would generate over 2x the net energy of ethanol made from corn
- Over half the energy in the corn used to produce ethanol is wasted



# *Net fuel production from ethanol*

1 MT 14% Corn  
15.4 Million BTUs

329.5 Kg Ethanol  
8.4 Million BTUs

289.3 Kg DDGS  
5.9 Million BTUs

285.7 Kg CO<sub>2</sub>  
0 BTUs

140 Kg Water  
0 BTUs

-3.4 Mill BTUs  
Of Natural Gas

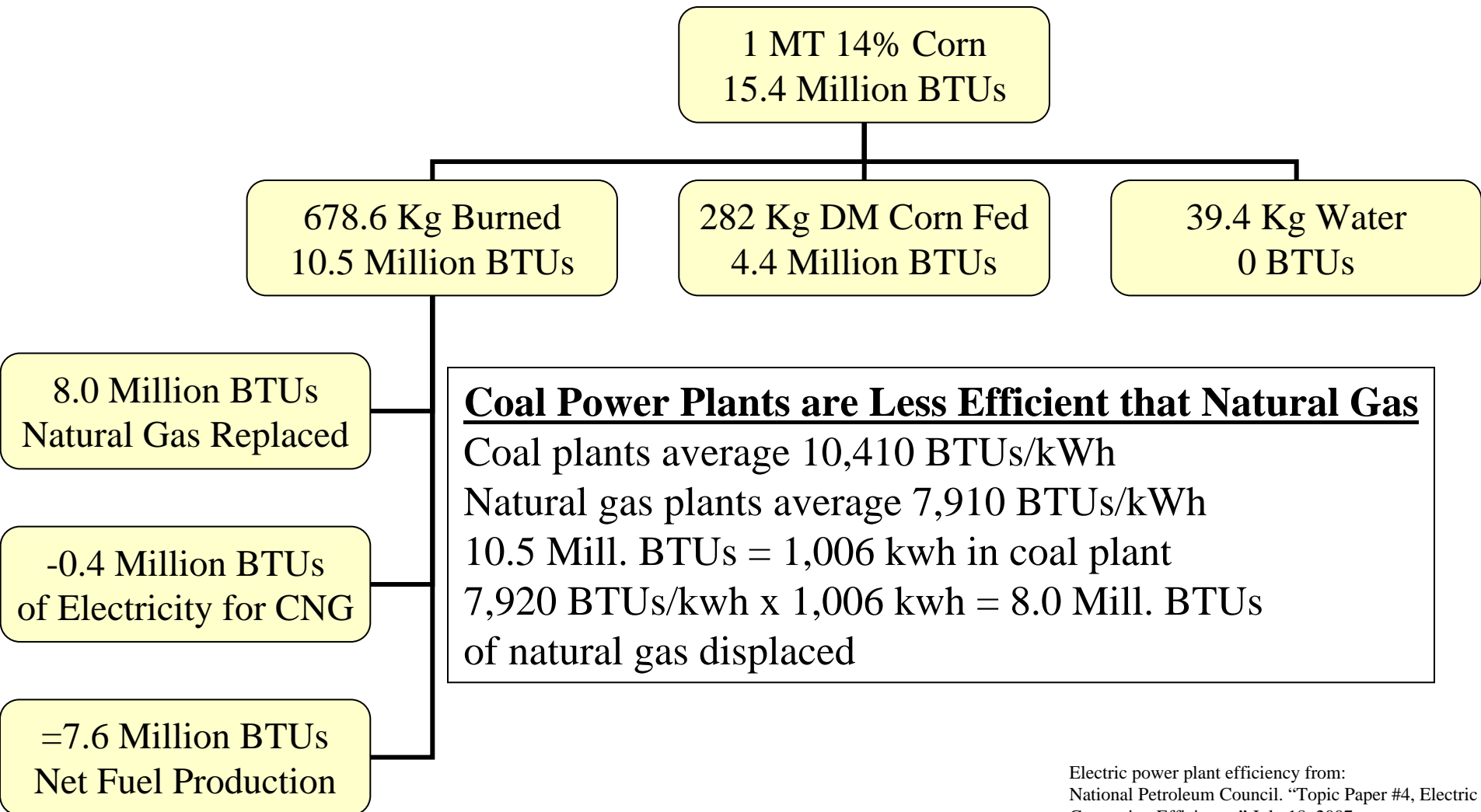
-0.3 Mill BTUs  
of Electricity

-0.1 Mill BTUs  
of Trucking Diesel

= 4.6 Mill Net BTUs  
for fuel



# Net fuel production from combustion



Electric power plant efficiency from:  
 National Petroleum Council. "Topic Paper #4, Electric  
 Generation Efficiency." July 18, 2007



## *Vs. Ethanol, Combustion Would...*

- Reduce total demand for natural gas
- Likely reduce total GHG emissions
- 66% net energy production increase and displacement of imported oil for each ton of corn used for fuel/feed
- Lower the cost of fuels
- Likely reduce or eliminate subsidies
- Increase corn available for food use

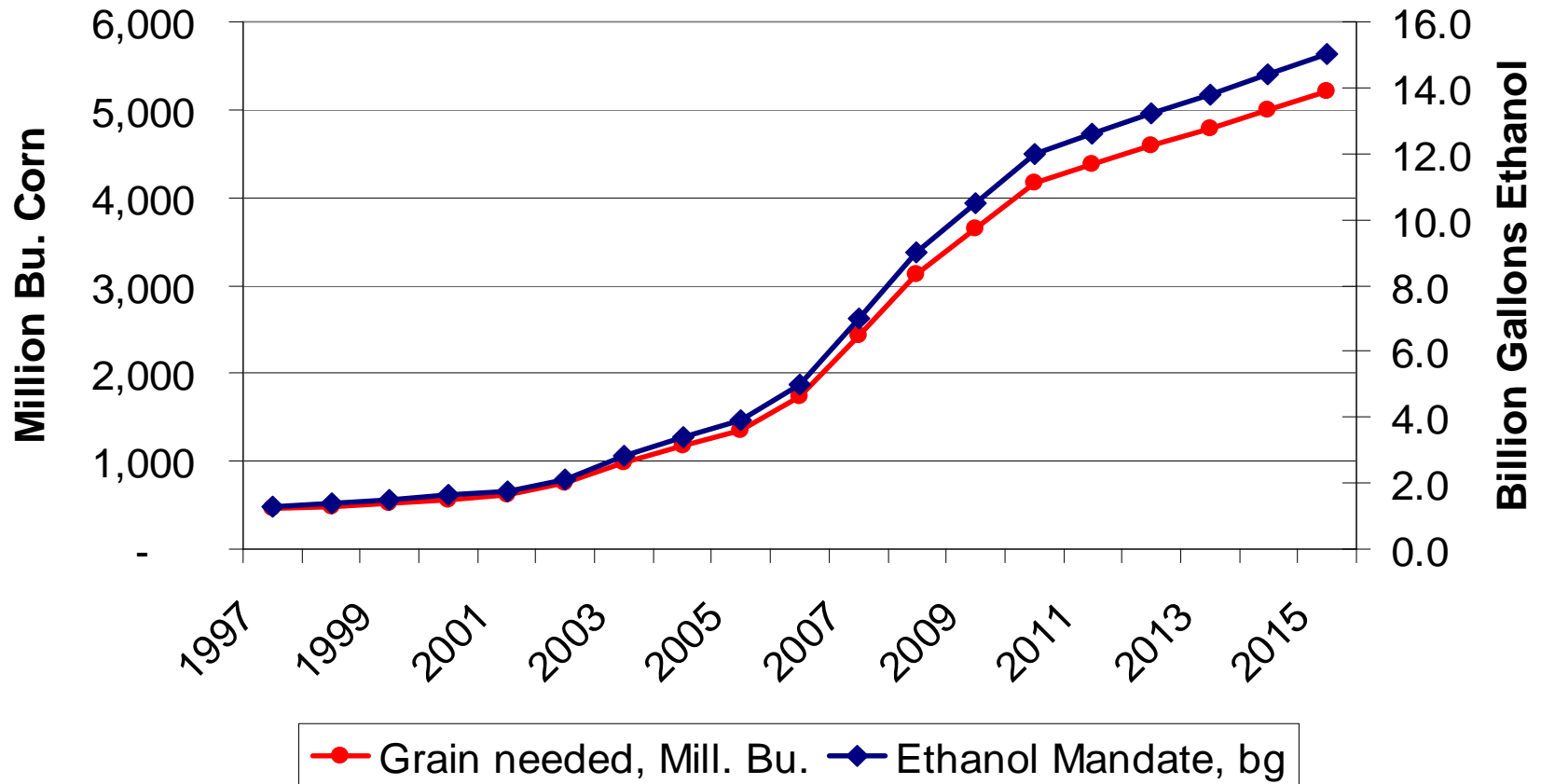


# *Ethanol Projections*

- Corn will always be a limiting factor
  - E85 could use 500+ million acres of corn
  - Natural gas may also be limiting
- Crude oil price and ethanol subsidy level will set long term corn prices
- Cellulosic ethanol will prove to be too expensive through at least 2010
  - Verenium - \$300 million for 36 mill. gallons/year

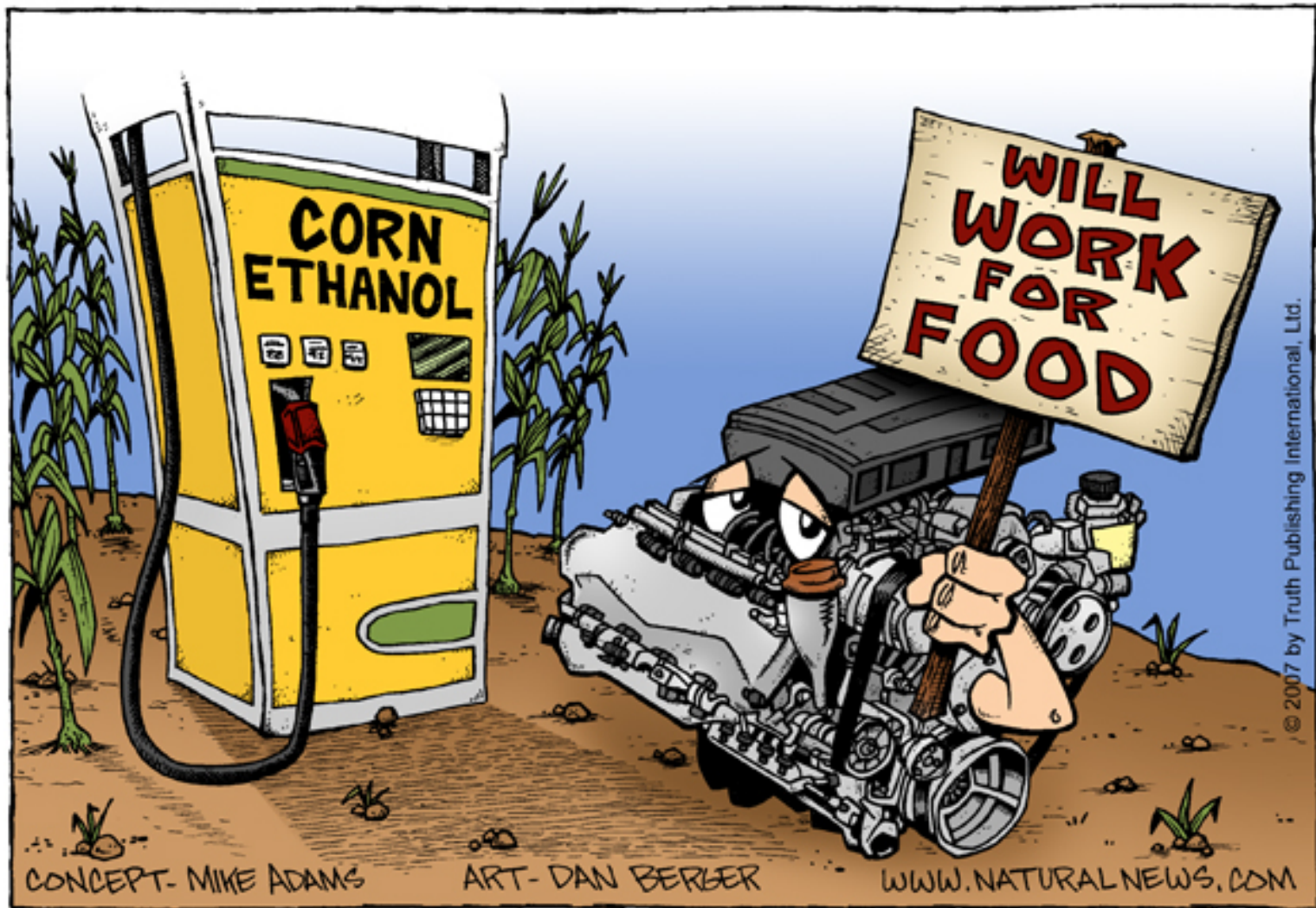


# *Mandated U.S. Corn-Based Ethanol Production and Corn Required*



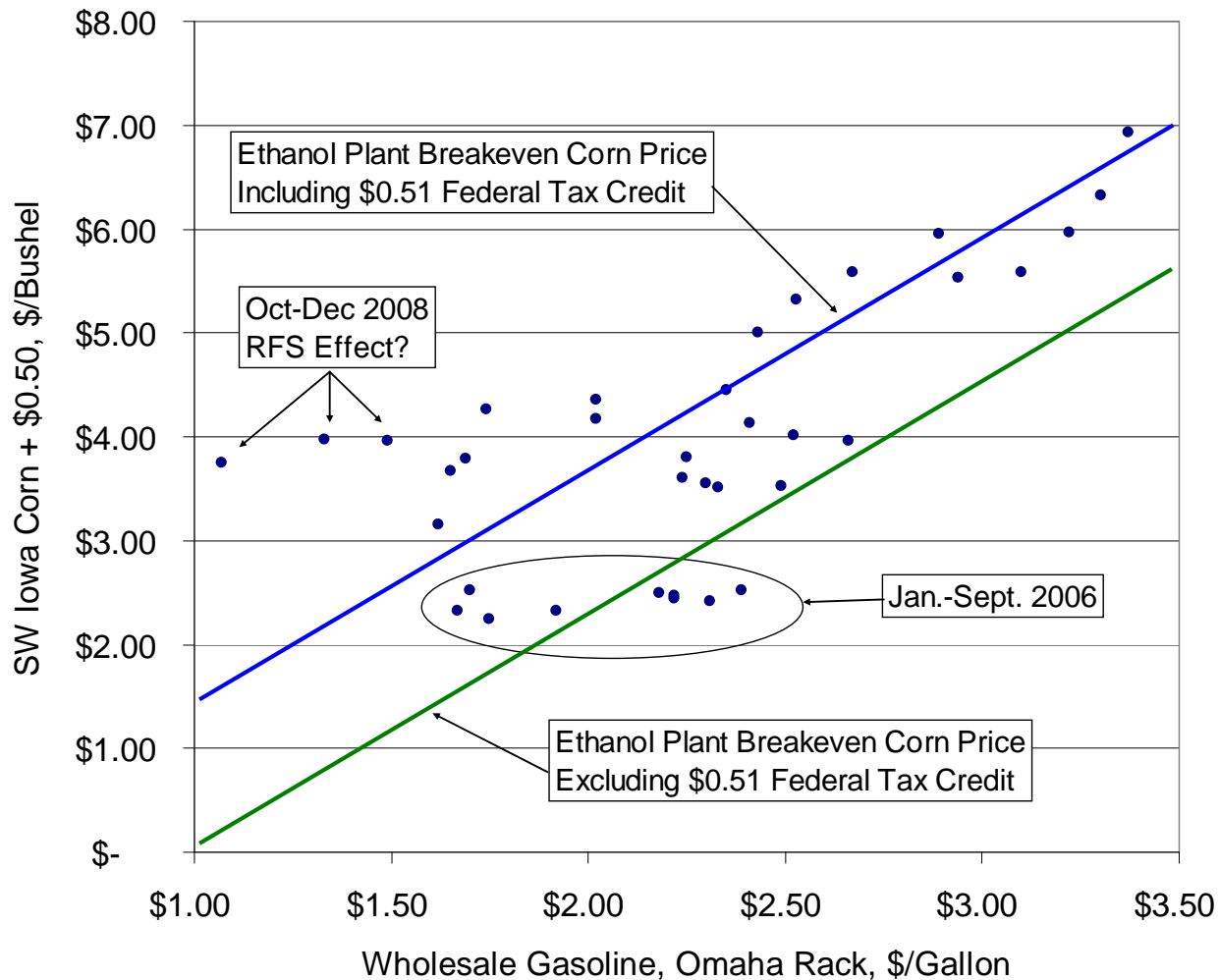


# COUNTERTHINK: FUEL VS. FOOD



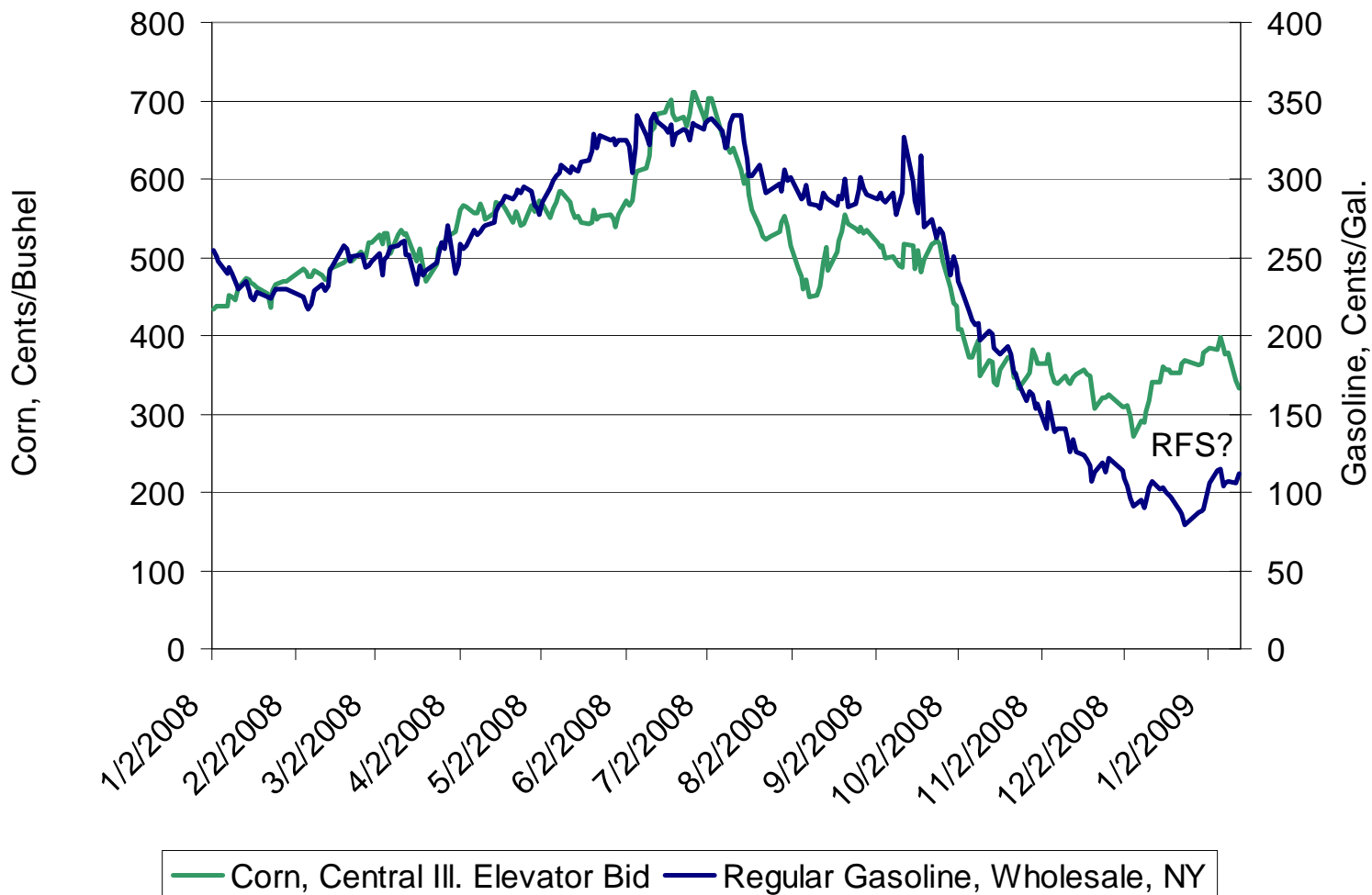


# Gasoline and Corn Price Link





# *Corn priced by energy*





## *Why the 2:1 Ratio?*

- Corn's energy value dominates corn demand as energy gets expensive
- Corn is the only variable cost in the short run
- 1 bu. corn = 2.7 gal. ethanol + 17 lb. DDGS
- 2.7 gal. ethanol = 1.8 gal. gasoline energy\*
  - So, almost 2:1 just with gasoline value
  - DDGS price also plays a role
- Corn up \$1/bu. = DDGS value up 20.4 cents/bu.\*\*

\*Based on same BTU content, ethanol has 66% energy of gasoline

\*\*Regression of monthly corn and DDGS prices from 1/2006 to 12/2008



## *Why the 2:1 Ratio?*

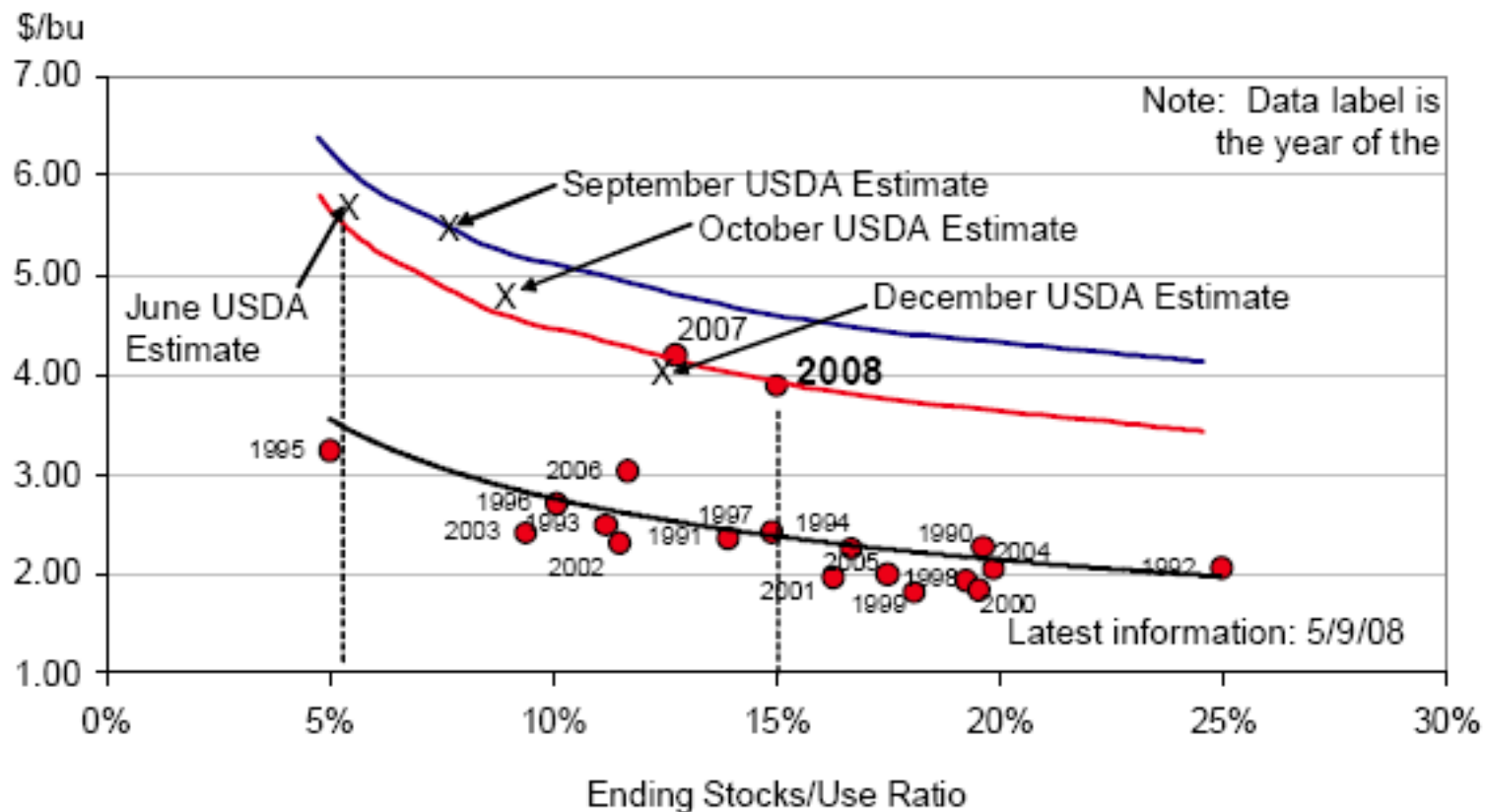
*Assume gasoline up by \$1.00/gal.*

- Corn energy value up by \$1.80/bushel
- DDGS price increases, adding to corn value
  - Adds another \$0.37/bu.
  - (\$1.80 corn price increase x \$0.204 value/bu.)
- Total corn value increase = \$2.17
- Not statistically different from \$2.00



# Corn Stocks/Price Curve Shifts Up

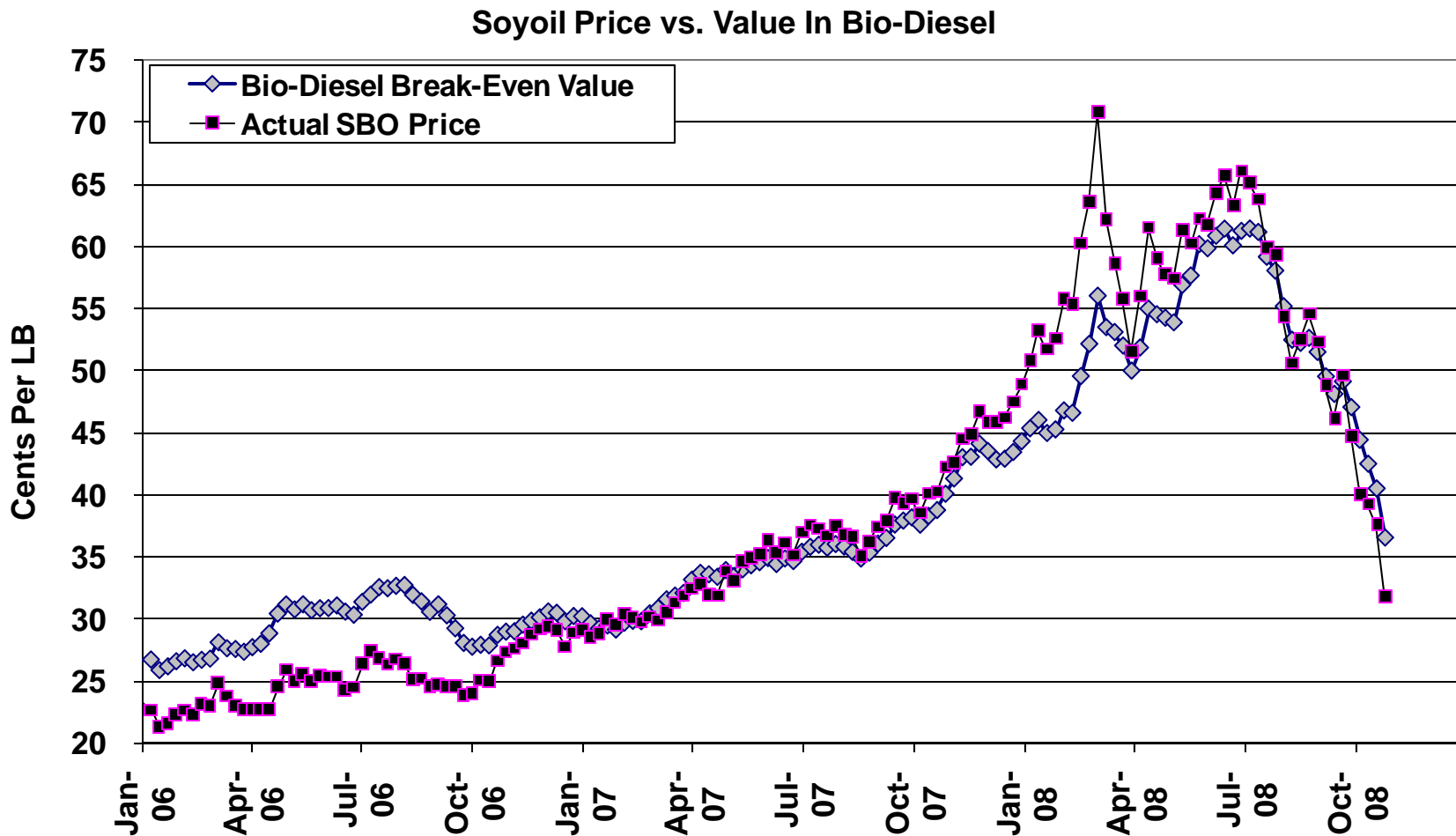
## U.S. CORN PRICE VS. S/U RATIO 1990-2008







# Soyoil and Biodiesel Prices



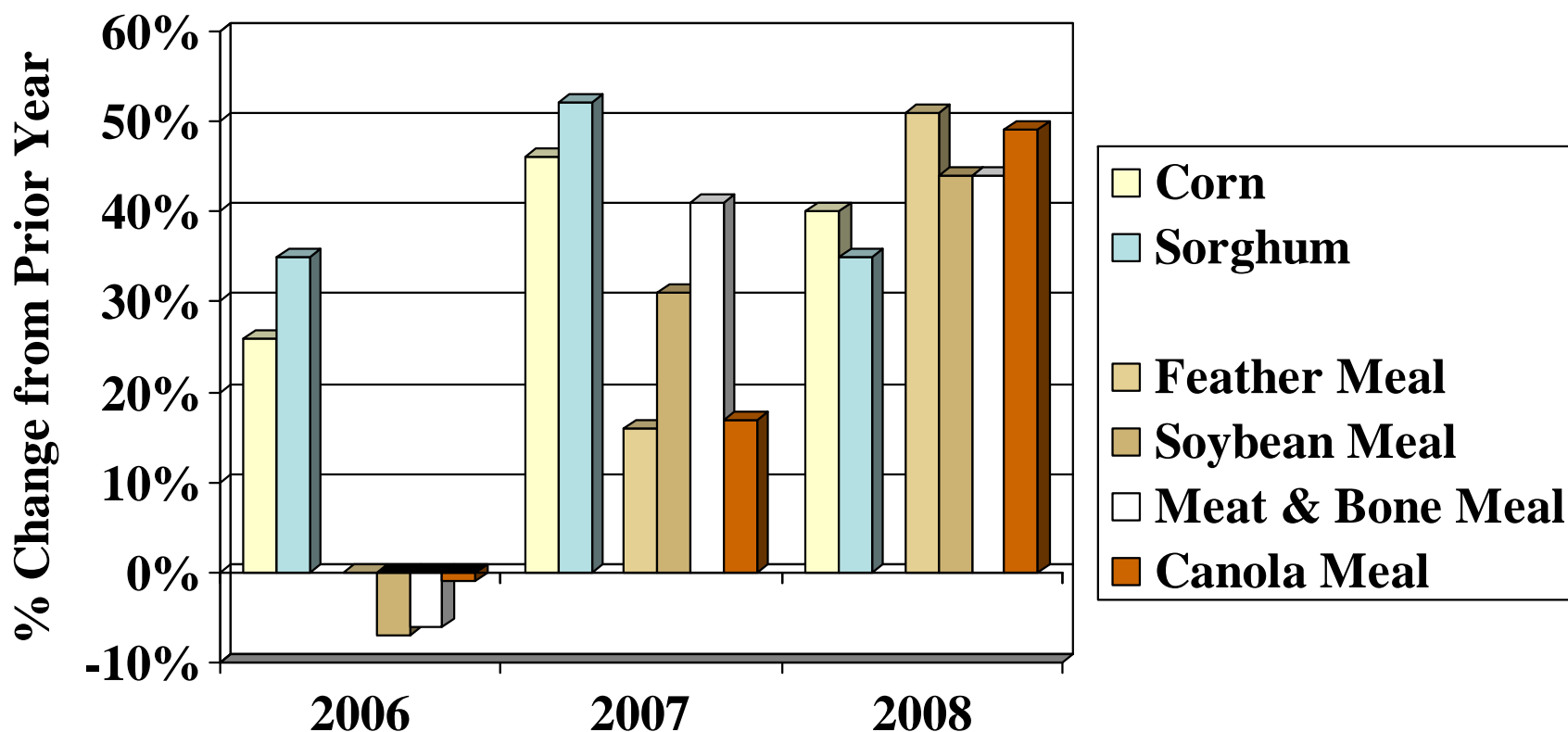


## *It's not just corn and beans!*

- All major feed ingredient prices move with corn and soybean meal
- Crops move because of acreage shifts and production effects (corn-soybeans-wheat)
- All ingredients move due to substitution potential



# *Carbohydrate and Protein Prices Move Together*





## *Corn Overview – 2009/2010*

- Potential ethanol demand for corn
  - About 3.6 billion bushels in CY 2009
  - Going to about 4.2 billion in CY 2010
- 2009 corn acres about same as 2008
- Mandated use creates corn price volatility
- 2009/10 corn price could go back to \$6-8
- Where oil prices go, so goes corn and all other carbohydrates



## *Protein Meal Overview – 2009/2010*

- 2009 soybean acres likely to increase
- Soybean/corn price of 2.5:1 or better normally causes a shift to soybeans
- If credit an issue 2009 cash costs are key
  - Corn cash cost about \$400/acre\*
  - Soybean cash cost about \$225/acre\*
- Current returns over cash costs plus risk factors slightly favor beans over corn



## *Corn/Meal Price Outlook – 2008/2009*

- Corn prices remain at \$3.25-\$4.50, meal at \$275-350, through May-June
- Weather and acres drive prices after that
- 2009-2010 cost outlook
  - Some relief vs. 2008
  - Much higher costs than 2000-2006
- Biofuel production will grow due to RFS
  - Ethanol use mandate = ethanol price mandate
  - Volatile energy prices are critical to outlook
  - More volatility in feed ingredients likely



# *Energy Price Outlook for 2009*

- Global recession likely to persist to 2010
- OPEC production cuts matched by lower demand
- Unlikely to see repeat of 2008 in 2009/2010
- Longer term outlook
  - Current oil prices too low when recession ends
  - However, any significant supply disruption would have major repercussions
  - Oil prices will remain sensitive to demand and supply shifts



# *What could change the game?*

- RFS schedule changes
- Biofuel tax credit changes
- New energy taxes
- Oil market disruption
- Weather
- Macroeconomics
  - Inflation/deflation
  - Employment/unemployment
- Other factors we have not even thought of!



# Corn Outlook – 2007/2008\*

	<i>2006/2007</i>	<i>2007/2008</i>	<i>Forecast 2008/2009</i>	<i>Forecast 2009/2010</i>
Planted Acres, Million	78.3	93.5	86.0	85.0
Harvested Acres, Million	70.6	86.5	78.6	78.0
Yield, Bu./Acre	149.1	150.7	153.9	152.0
Beginning Stocks, Mill. Bu.	1,967	1,304	1,624	1,790
Production, Mill. Bu.	10,531	13,038	12,101	11,856
Feed Use, Mill. Bu.	5,591	5,938	5,300	5,100
Exports, Mill. Bu.	2,125	2,436	1,750	1,650
Food, Seed, Industrial, Mill. Bu.	3,490	4,363	4,900	5,500
Fuel Ethanol, Mill. Bu.	2,119	3,026	3,600	4,200
Total Use, Mill. Bu.	11,207	12,737	11,950	12,250
Ending Stocks, Mill. Bu.	1,304	1,624	1,790	1,396
Average Farm Price, \$/Bu.	\$3.04	\$4.20	\$3.90	\$4.25

\* September 1 Crop Year



# Soybean Outlook – 2007/2008\*

	2006/2007	2007/2008	Forecast 2008/2009	Forecast 2009/2010
Planted Acres, Million	75.5	64.7	75.7	78.0
Harvested Acres, Million	74.6	64.1	74.6	77.0
Yield, Bu./Acre	42.9	41.7	39.6	42.0
Beginning Stocks, Mill. Bu.	449	574	205	225
Production, Mill. Bu.	3,197	2,677	2,959	3,234
Crush Use, Mill. Bu.	1,808	1,801	1,685	1,800
Exports, Mill. Bu.	1,116	1,161	1,100	1,150
Seed	80	93	90	90
Residual	77	-	73	75
Total Use, Mill. Bu.	3,081	3,056	2,948	3,115
Ending Stocks, Mill, Bu.	574	205	225	344
Soymeal Average Price, \$/Ton	\$205	\$336	\$290	\$275
Soybean Average Price, \$/Bu.	\$6.43	\$10.10	\$9.25	\$8.50

\* September 1 Crop Year



# Broiler Feed Cost Outlook – 2009

	2005	2006	2007	2008	2009
Corn Price, Central Ill. (\$/Bu.) + \$0.50	\$2.40	\$2.91	\$4.01	\$5.40	\$5.10
Soybean Meal Price (\$/ton , 47%) +\$20	\$211	\$197	\$256	\$357	\$325
Other Costs (\$/ton)	\$400	\$400	\$400	\$450	\$450
Broiler Feed Costs (¢/lb, Live)	15.7¢	16.1¢	20.2¢	26.6¢	24.6¢
Broiler Feed Costs (¢/lb, RTC)	23.5¢	24.1¢	30.1¢	39.6¢	36.7¢
Lowest Month Broiler Feed Costs (¢/lb, RTC)	21.7¢	22.3¢	27.8¢	32.1¢	na
Highest Month Broiler Feed Cost (¢/lb, RTC)	25.6¢	27.8¢	35.6¢	47.3¢	na
Broiler Feed Costs (¢/lb, RTC) Range	3.9¢	5.5¢	7.8¢	<b>15.3¢</b>	na

If broiler producers can adjust to almost doubled feed costs can they also cope with 4x the volatility of costs?

**Added \$0.50/bu. for corn and \$20/ton for soybean transportation and handling**  
**Based on 1.9:1 FCR, 55% corn, 35% SBM, 10% Other**



# Turkey Feed Cost Outlook – 2009

	2005	2006	2007	2008	2009
Corn Price, Central Ill. (\$/Bu.) + \$0.50	\$2.40	\$2.91	\$4.01	\$5.40	\$5.10
Soybean Meal Price (\$/ton , 47%) +\$20	\$211	\$197	\$256	\$357	\$325
Meat and Bone Meal, Diluth/Ton +\$20	\$197	\$188	\$256	\$358	\$320
Grease, Diluth/Ton +\$20	\$340	\$306	\$477	\$590	\$525
Turkey feed costs (¢/lb, Live)	20.2¢	21.2¢	27.7¢	36.0¢	32.4¢
Turkey feed costs (¢/lb, RTC)	25.5¢	26.8¢	35.1¢	45.6¢	41.0¢
Lowest Month Turkey feed cost (¢/lb, RTC)	23.9¢	24.6¢	32.7¢	33.7¢	na
Highest Month Turkey feed cost (¢/lb, RTC)	27.4¢	32.8¢	40.2¢	55.4¢	na
Turkey feed cost (¢/lb, RTC) Range	3.4¢	8.2¢	7.5¢	<b>21.7¢</b>	na

**Added \$0.50/bu. for corn and \$20/ton for soybean transportation and handling**

**Based on 2.6:1 FCR, 65% corn, 22.5% SBM, 5% meat and bone meal, 5.5% grease diet**



## *Summary:*

- Global poultry still adjusting to higher feed costs
- The 2009 “Double-Whammy”
  - Lower production needed for higher prices to cover costs
  - Also need to reduce meat and poultry inventories at the same time
  - Need to take 2009 production down more than needed in the long run
- Second half of the year better than the first half
- Volatility of feed and energy costs an ongoing issue