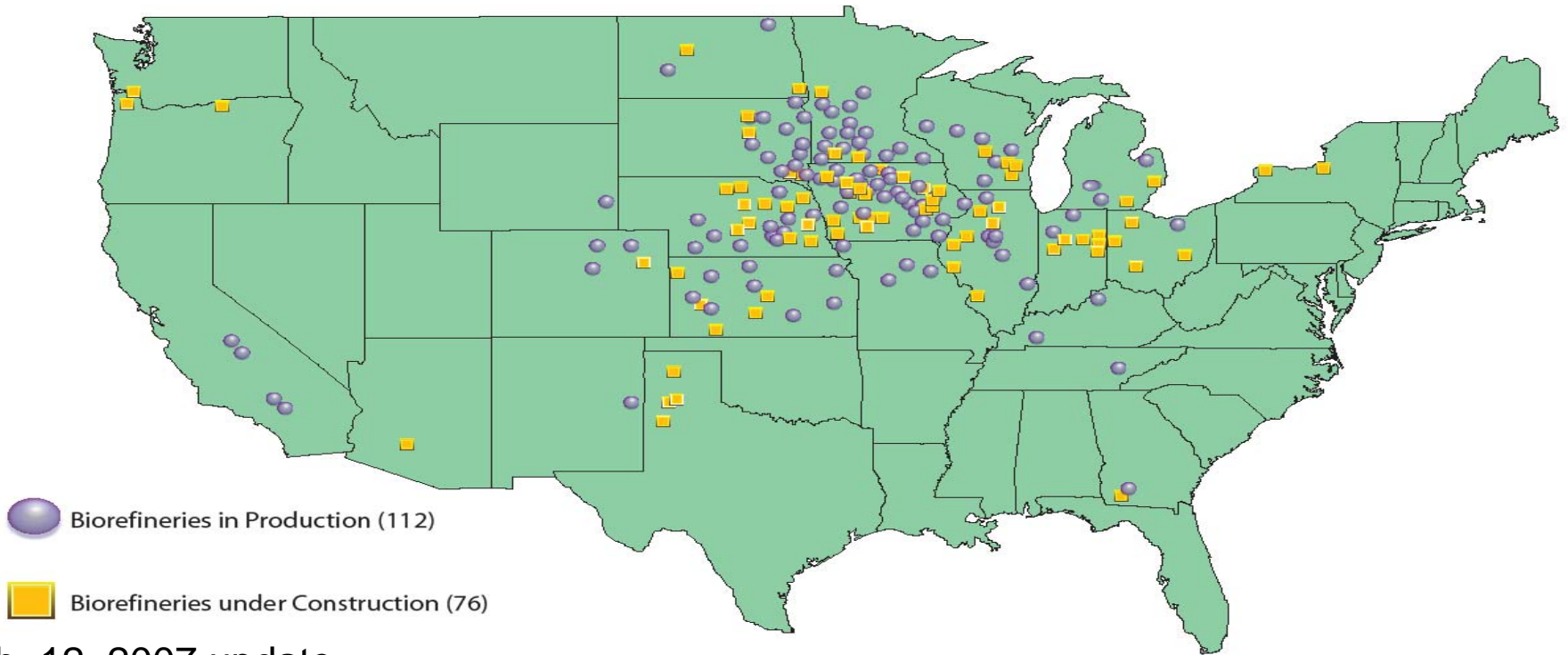


Expanding Ethanol Industry & Outlook

Glynn Tonsor
Dept. of Agricultural Economics
Michigan State University

GreenStone Farm Credit Services Informational Meeting
Ovid, MI
February 27, 2007

U.S. Ethanol Biorefinery Locations

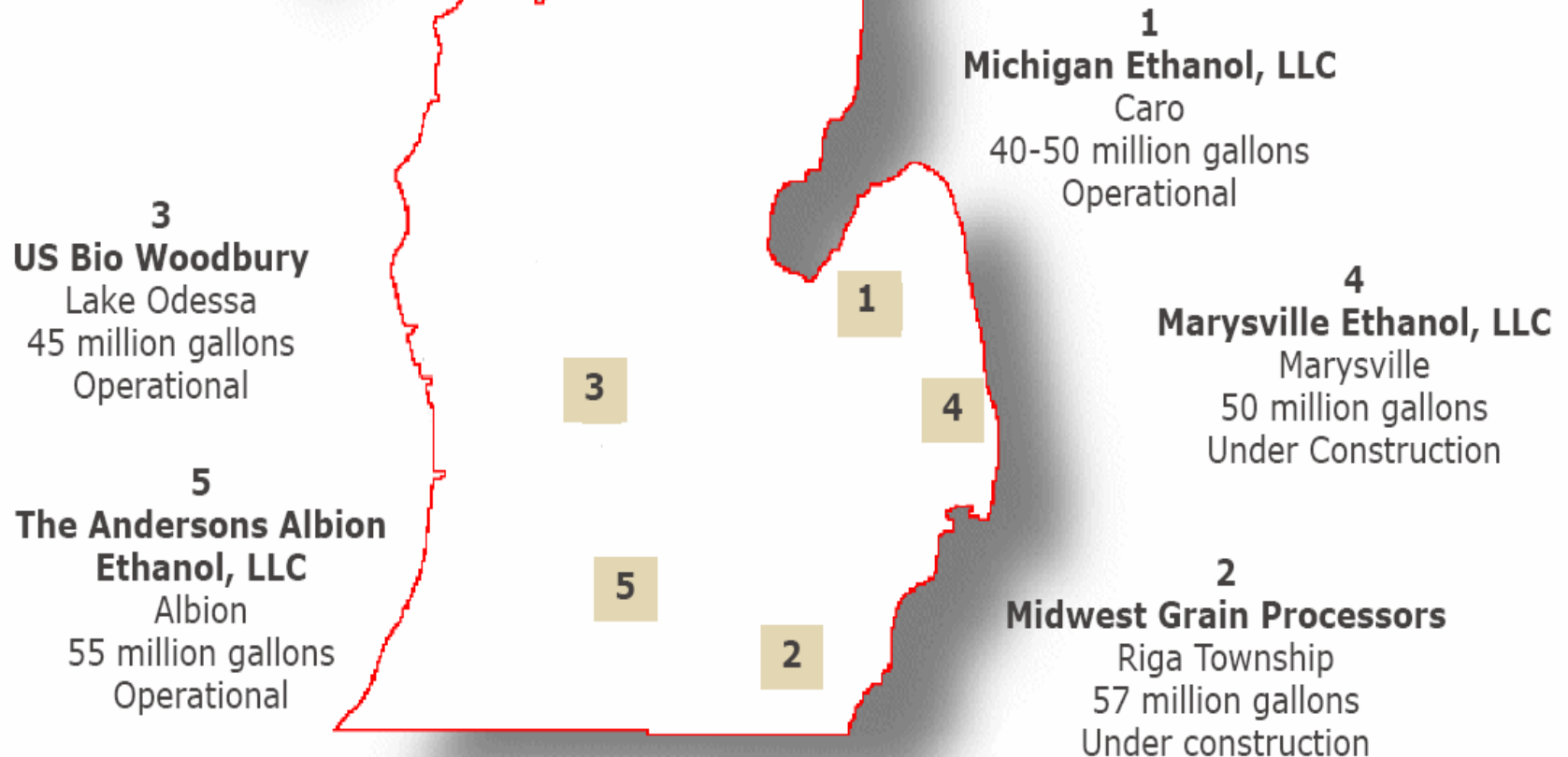


Source: Renewable Fuels Association
1.29.07

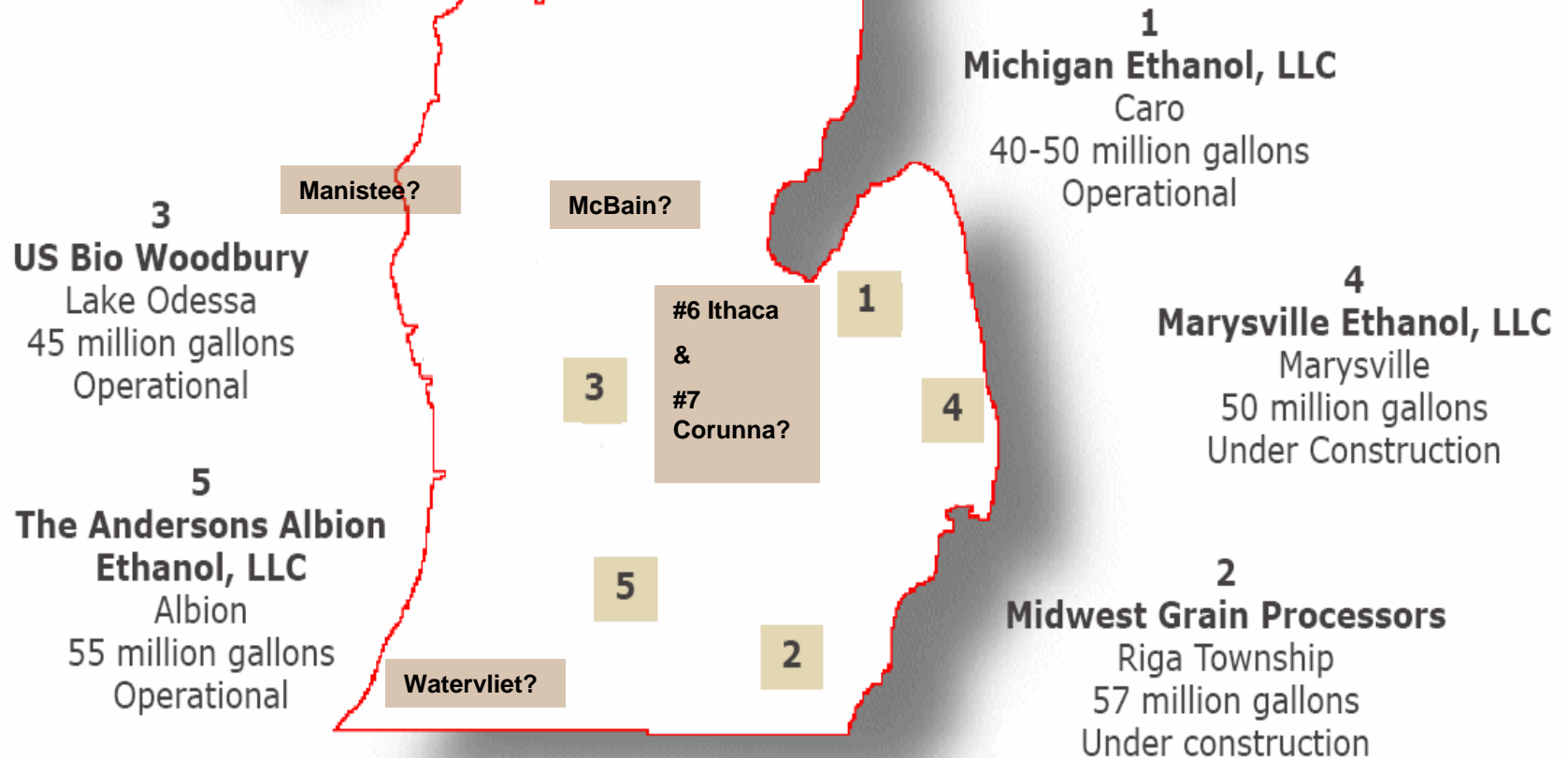
Feb. 12, 2007 update

Total operating plants:	113	Current	5,583.4
Under construction:	78		
Expansions:	<u>7</u>	Under Construction & Expansion	<u>6,243.5</u>
Total:	198	Total Capacity:	11,826.9

Michigan Ethanol Plant Information



Michigan Ethanol Plant Information

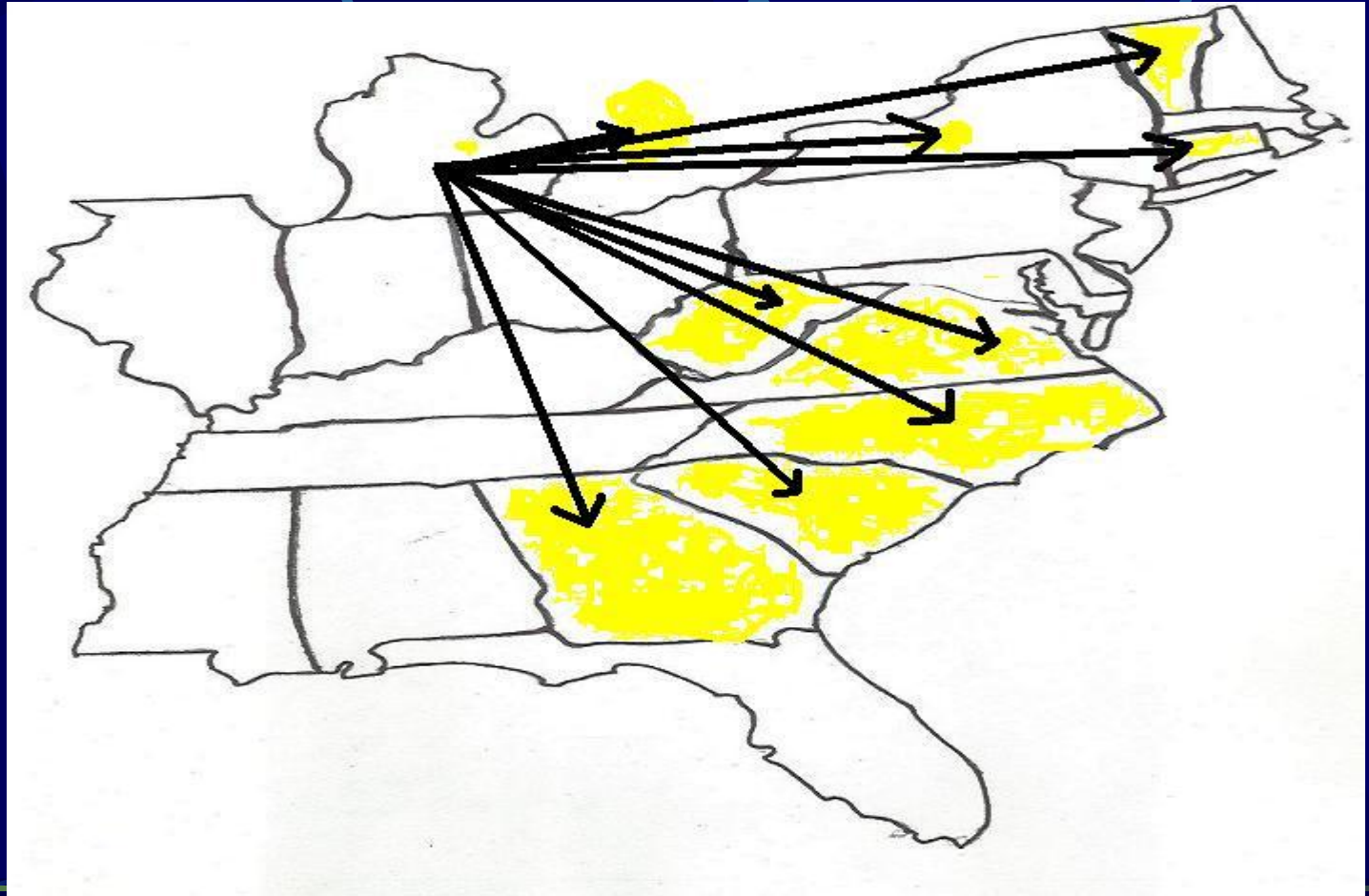


Ethanol Plants

Bu/Millions Running Sum

Caro	19.5	19.5	2006/07
Woodbury	19.5	39.0	
Albion	21.0	60.0	
Rega 06/07	12.0	72.0	6/7 months
Rega 07/08	21.0	81.0	2007/08
Maryville	21.0	102.0	
Ithaca	40.0	142.0	2008/??
Rega II ?	21.0	163.0	
Corona	40.0	203.0	
Watervliet	19.0	222.0	
McBain	19.0	241.0	
Manistee	19.0	260.0	
Alma	19.0	279.0	

Corn Flow Now



Historical Ethanol Gross Margins

Ethanol Gross Margins based on nearby futures prices

Center for Agricultural and Rural Development (CARD), <http://www.card.iastate.edu/>, Iowa State University, Ames, Iowa

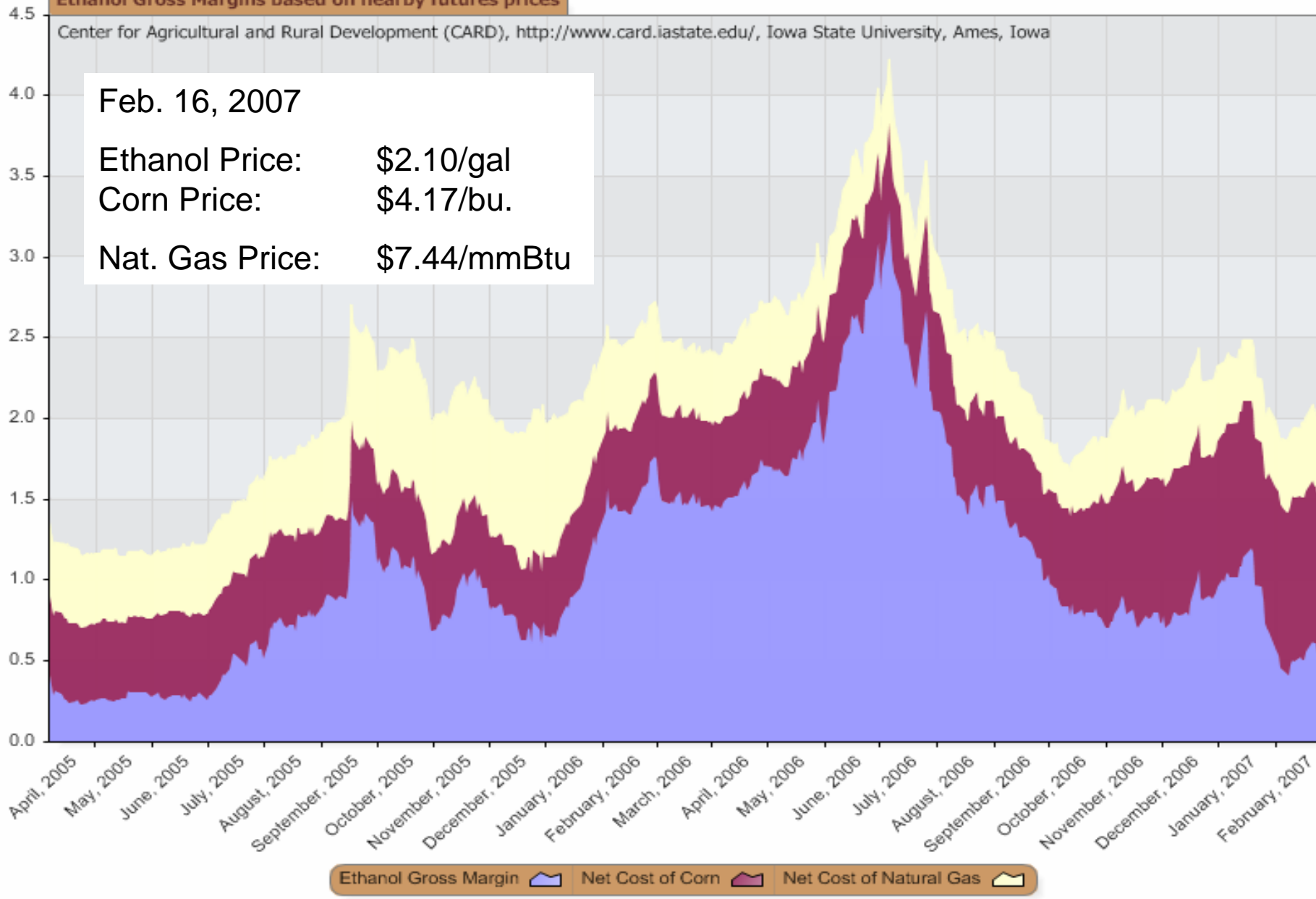
Feb. 16, 2007

Ethanol Price: \$2.10/gal

Corn Price: \$4.17/bu.

Nat. Gas Price: \$7.44/mmBtu

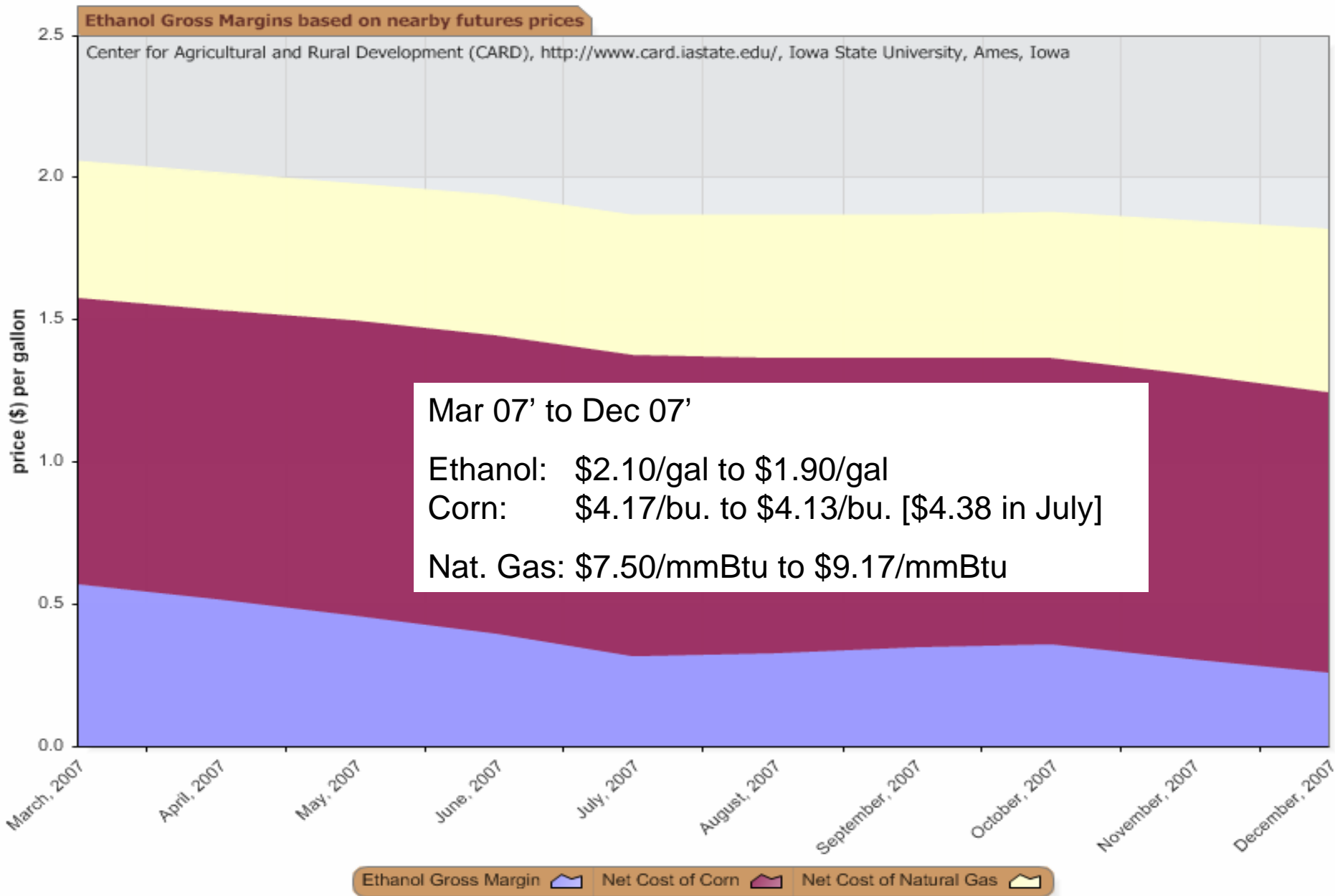
price (\$) per gallon



Ethanol Gross Margin Net Cost of Corn Net Cost of Natural Gas

Source: CARD: http://www.card.iastate.edu/research/bio/tools/hist_eth_gm.aspx
Assumes 1 corn bu. & 165,000 British thermal units of natural gas are required to create 2.7 gallons of ethanol and 17 DDGS lbs.

Projected 2007 Ethanol Gross Margins



Source: CARD: http://www.card.iastate.edu/research/bio/tools/proj_eth_gm.aspx

Assumes 1 corn bu. & 165,000 British thermal units of natural gas are required to create 2.7 gallons of ethanol and 17 DDGS lbs.

Nearby Ethanol Futures

AC H7 [10] - DENATURED FUEL ETHANOL LAST: 2.163 CHANGE: ▲ 0.055 HIGH: 2.163 LOW: 2.163 2/23/2007



CBOT *ADVANTAGE*

Monthly Corn Futures

Corn Monthly

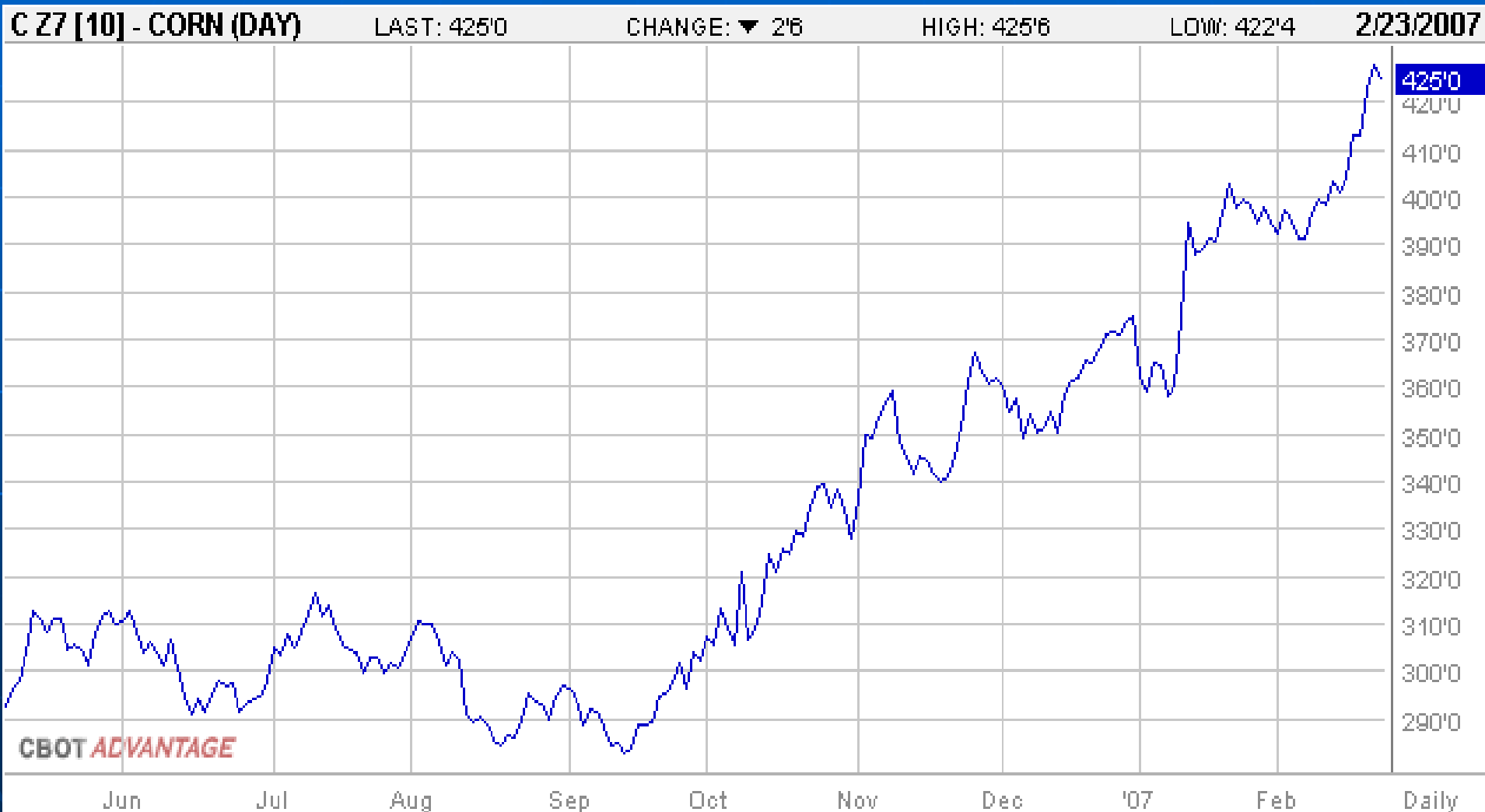
updated Jan 30



Corn Futures (as of 2/22/07)

Mar-07	4.34
May-07	4.47
Jul-07	4.57
Sep-07	4.40
Dec-07	4.27
Jul-08	4.37
Dec-08	3.98
Jul-09	4.03
Dec-09	3.84
Jul-10	3.88
Dec-10	3.72

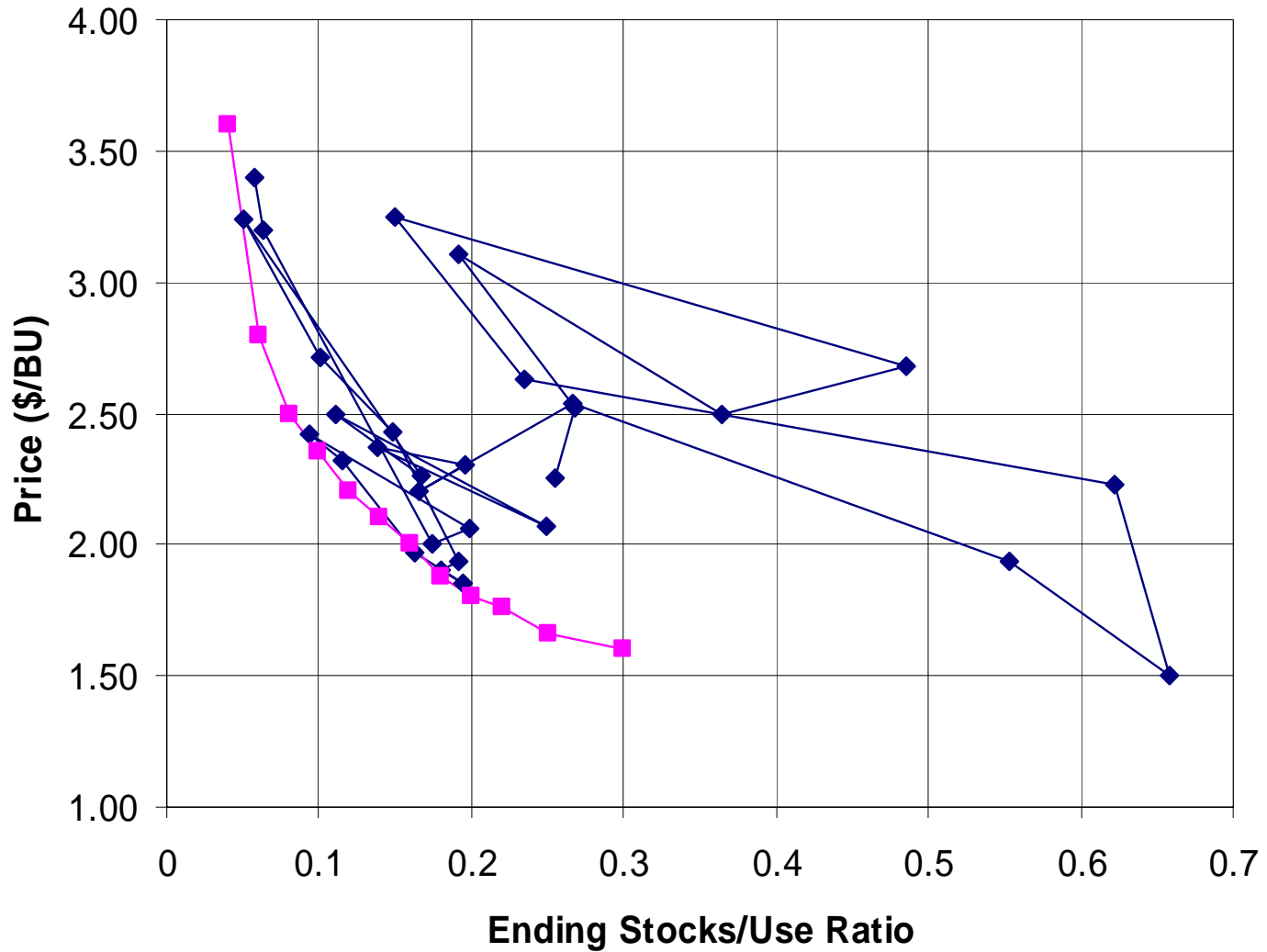
Dec 07 Corn Rally



Corn Futures Volatility

- CBOT Corn Volatility:
 - 2001-2005 average volatility
 - Ranged from 19.4% to 21.9%
 - 2006 average volatility of 28.8%
 - 7 of 12 months in 2006 were highest since 1980

U.S. Corn Price vs Ending Stocks/Use Ratio 1978 - 2007

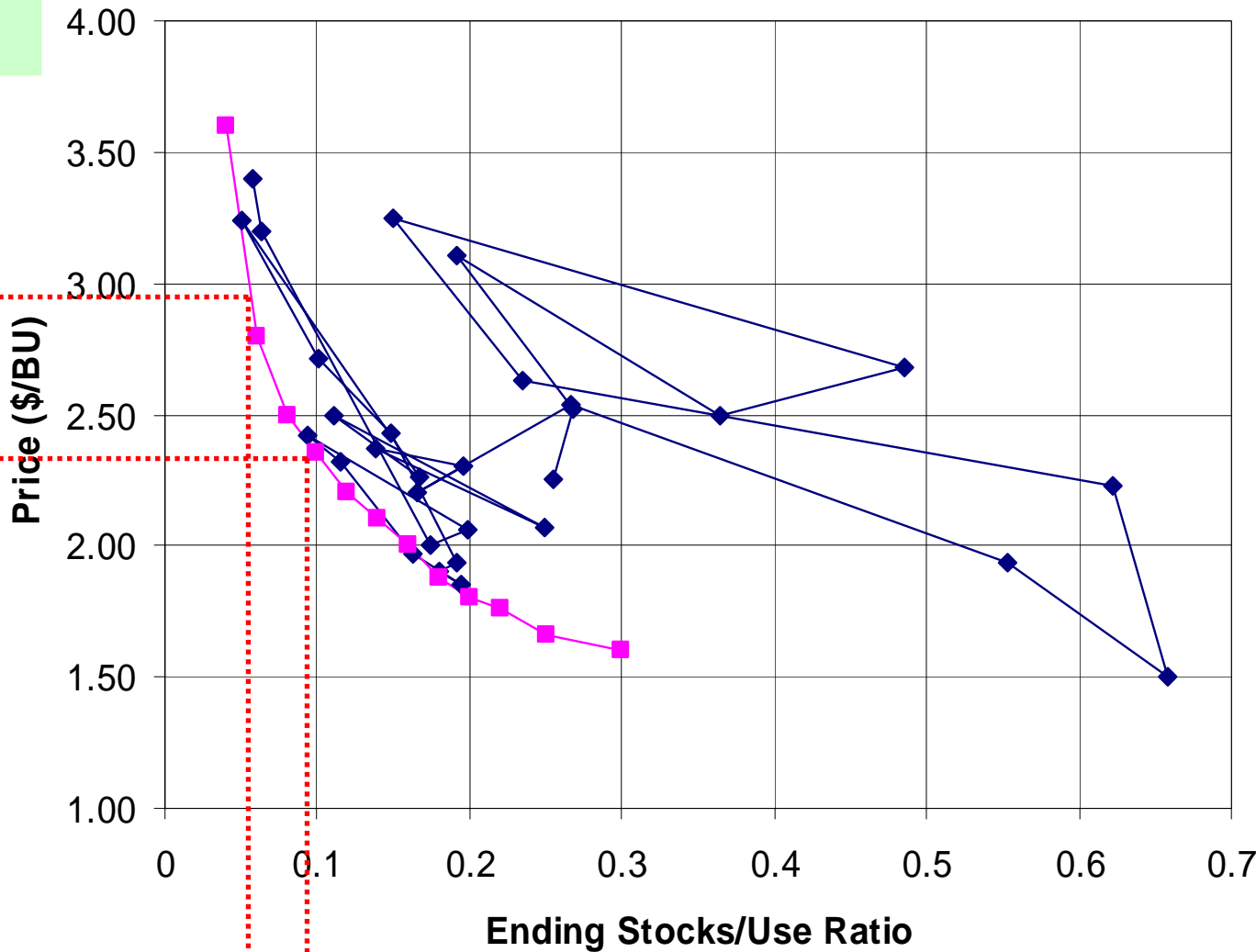


U.S. Corn Price vs Ending Stocks/Use Ratio 1978 - 2007

EndStocks/Use
.05 to .1 =
\$3 to \$2.30

Ratio: .05
Price: \$3

Ratio: .10
Price: \$2.30

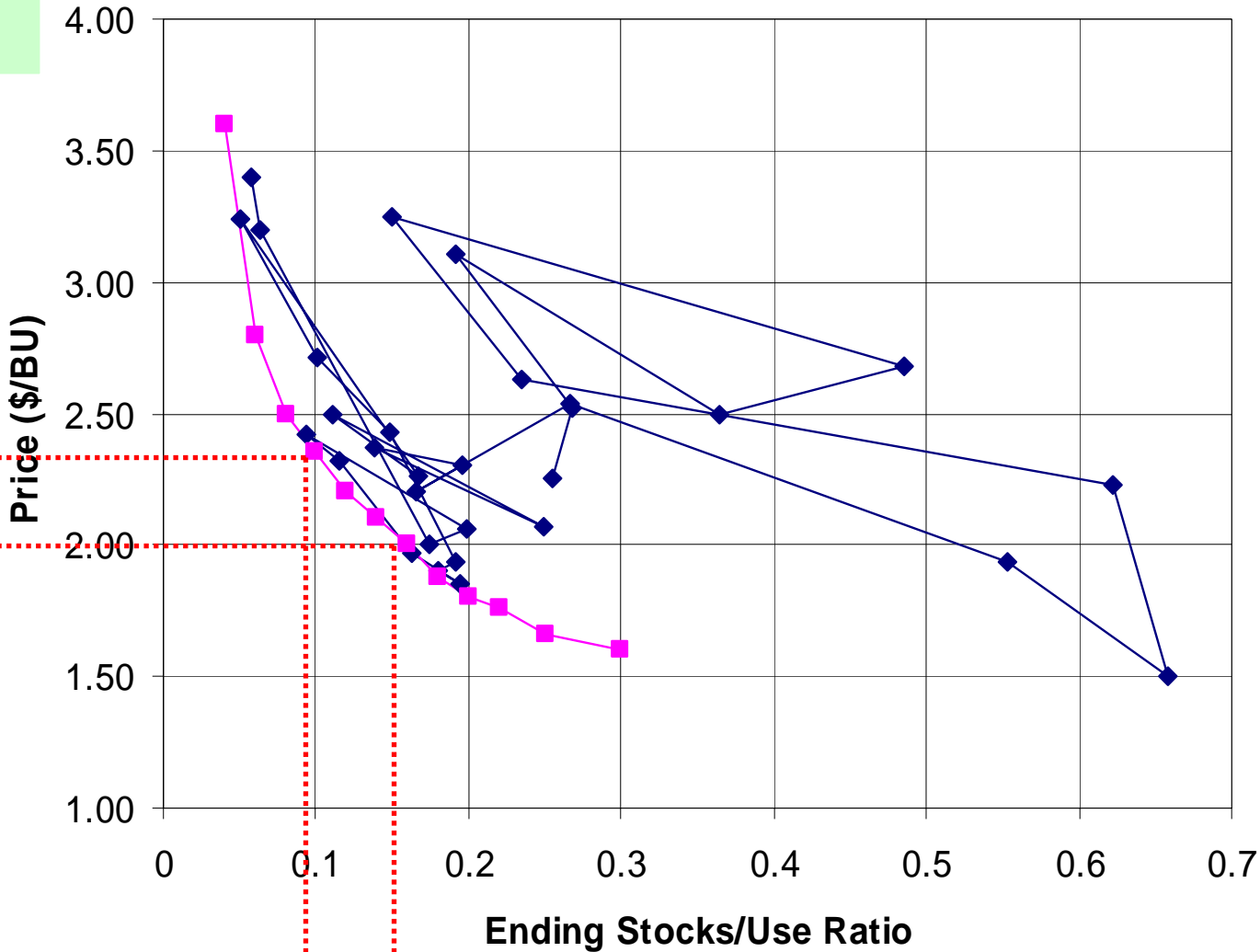


U.S. Corn Price vs Ending Stocks/Use Ratio 1978 - 2007

EndStocks/Use
.1 to .15 =
\$2.30 to \$2.00

Ratio: .10
Price: \$2.30

Ratio: .15
Price: \$2



Soybean Futures (as of 2/22/07)

Mar-07	7.83
May-07	8.00
Jul-07	8.15
Nov-07	8.37
Mar-08	8.44
Nov-08	8.21
Nov-09	7.70

Soybean Rally (Nov 07)

S X7 [10] - SOYBEANS (DAY)

LAST: 834'4

CHANGE: ▼ 3'2

HIGH: 838'4

LOW: 834'4

3/2/2007



CBOT ADVANTAGE

834'4
820'0
800'0
780'0
760'0
740'0
720'0
700'0
680'0
660'0
640'0
620'0
600'0

Oct Dec '06 Mar Apr Jun Jul Sep Oct Dec '07 Weekly

Soybean Meal Futures (as of 2/22/07)

Mar-07	231.4
Jul-07	243.0
Sep-07	246.5
Dec-07	250.4
Mar-08	251.0
Dec-08	243.0

SBM Rally (Dec 07)

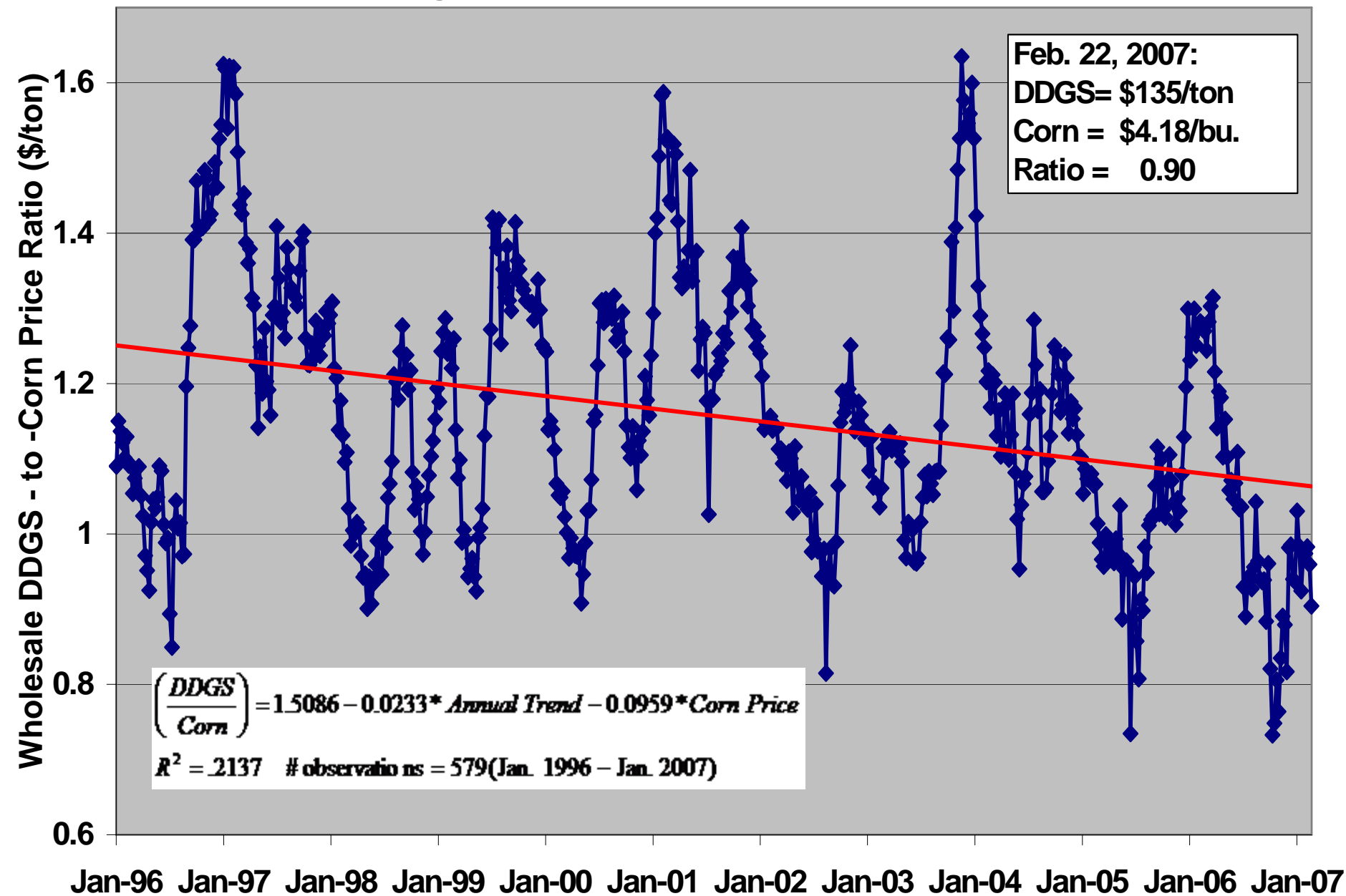
SM Z7 [10] - SOYBEAN MEAL (DAY) LAST: 237.2 CHANGE: ▼ 1.3 HIGH: 240.0 LOW: 236.8 2/14/2007



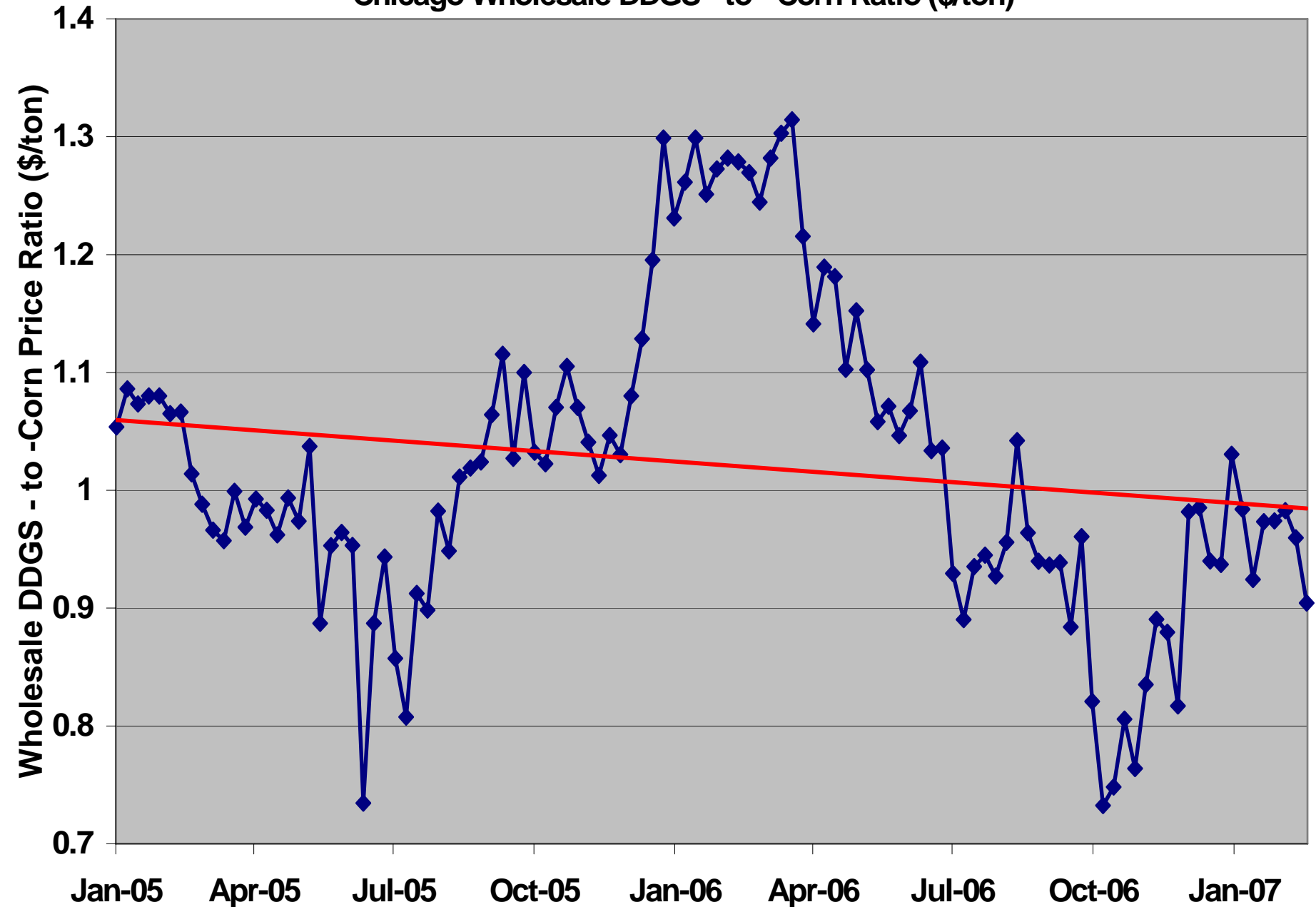
Distillers Grains w/ Solubles (DGS) Issues:

- Can by-products offset corn prices?
- What implications does DGS use have?
- As DGS market matures:
 - Which producers will have DGS access?
 - What type of purchasing arrangement?

Chicago Wholesale DDGS - to - Corn Ratio (\$/ton)

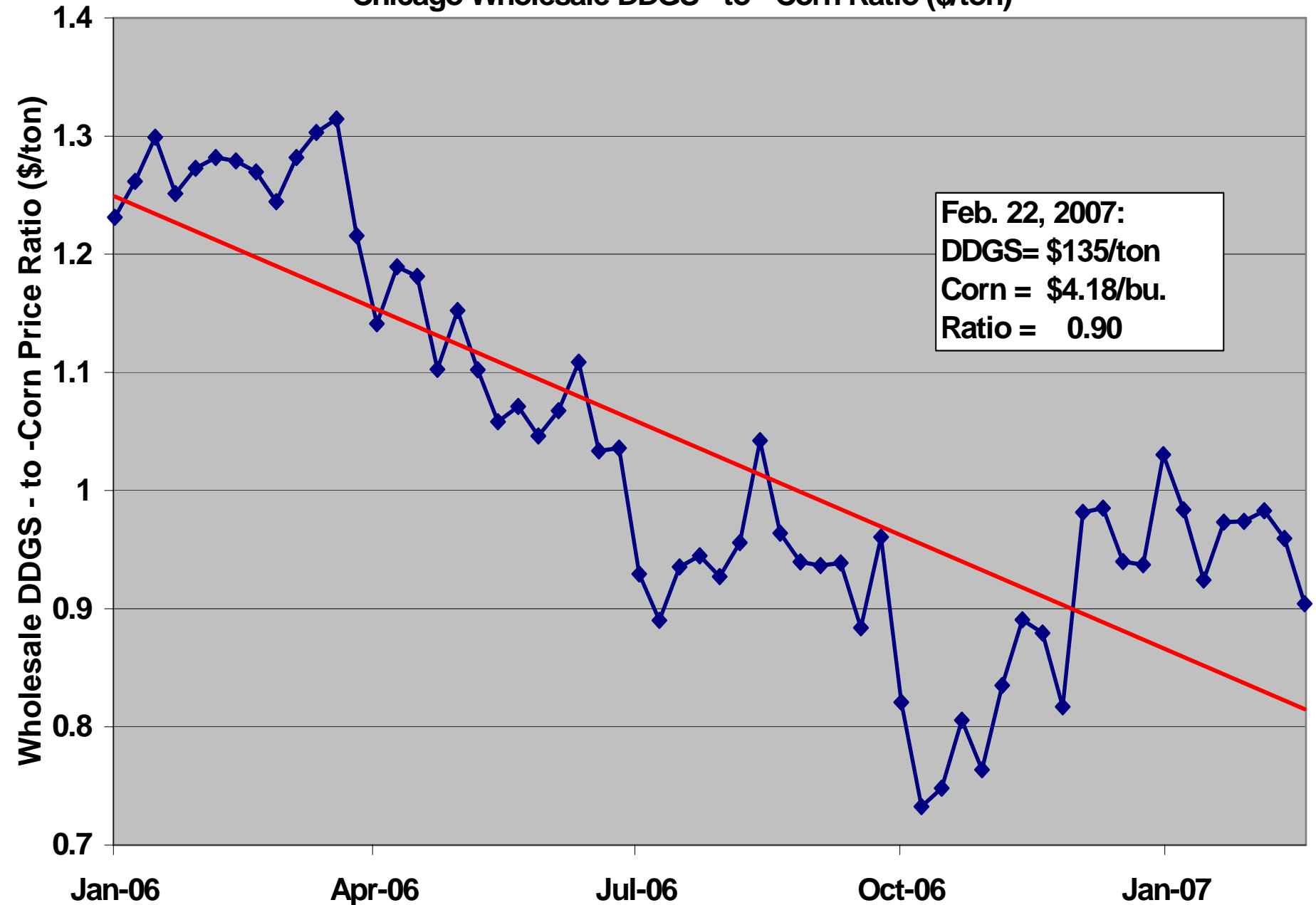


Chicago Wholesale DDGS - to - Corn Ratio (\$/ton)



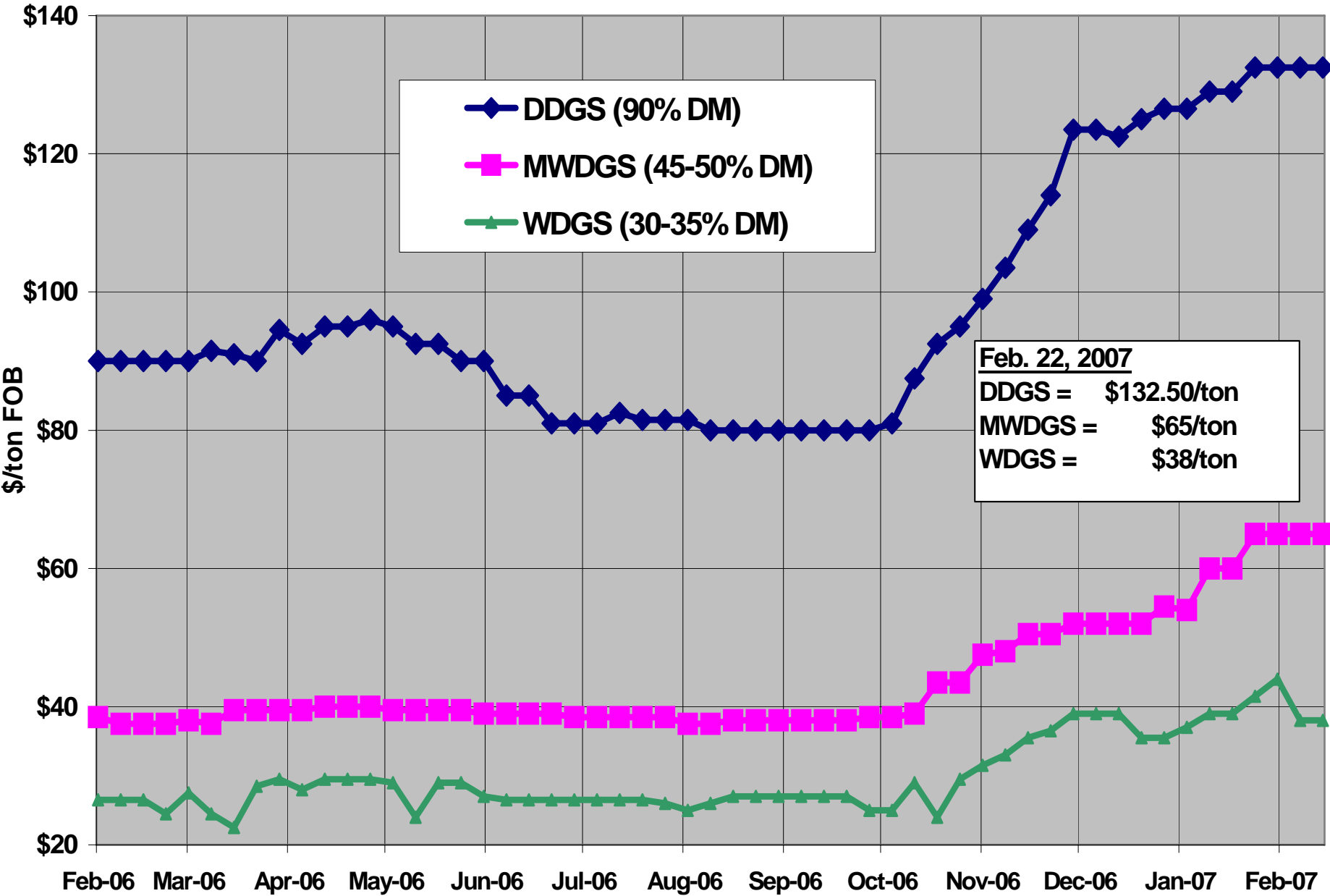
Source: LMIC (2.22.07)

Chicago Wholesale DDGS - to - Corn Ratio (\$/ton)



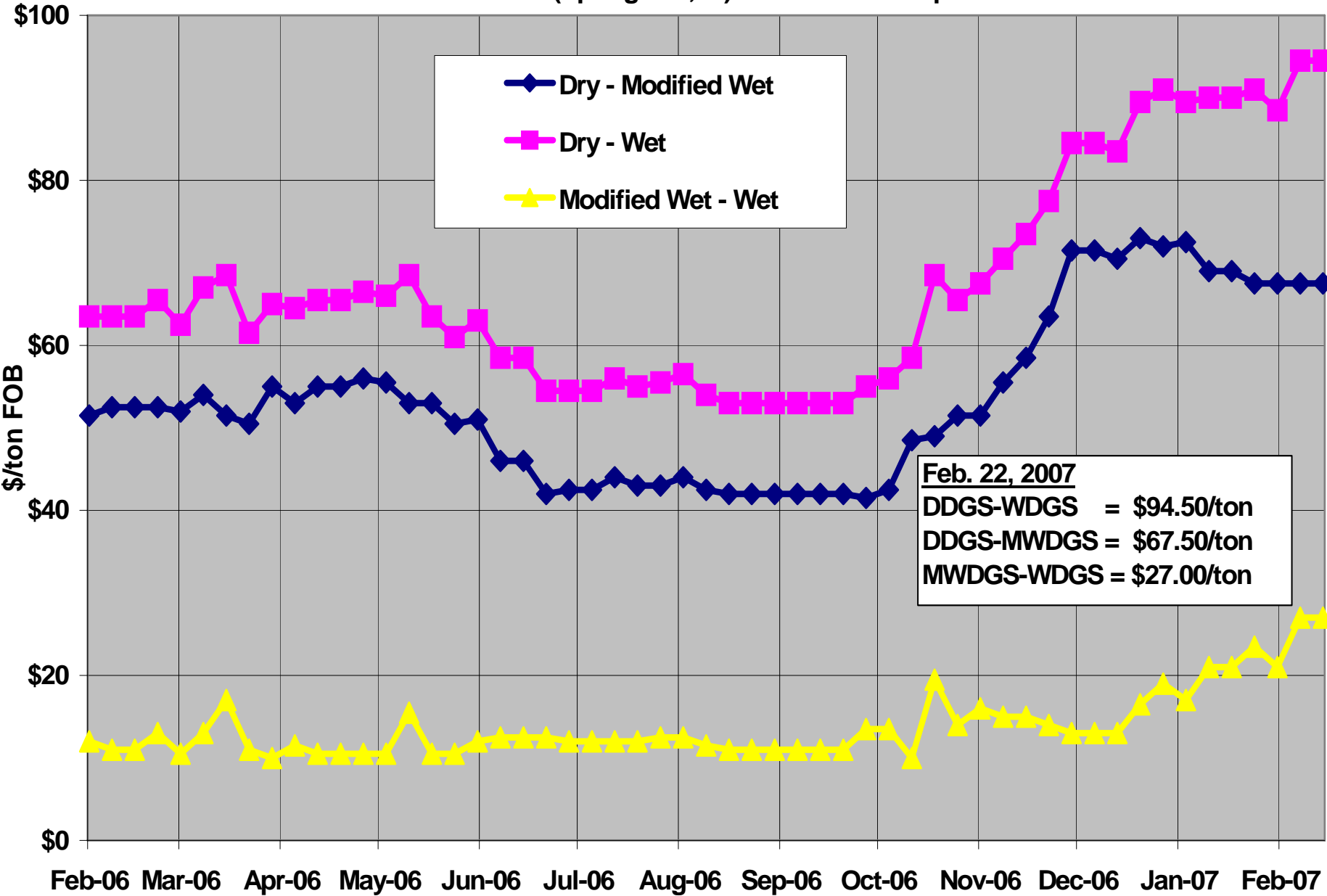
Feb. 22, 2007:
DDGS= \$135/ton
Corn = \$4.18/bu.
Ratio = 0.90

Eastern Cornbelt (Springfield, IL) Distillers Prices



Feb. 22, 2007
DDGS = \$132.50/ton
MWDGS = \$65/ton
WDGS = \$38/ton

Eastern Cornbelt (Springfield, IL) Distillers Price Spreads



Feb. 22, 2007
 DDGS-WDGS = \$94.50/ton
 DDGS-MWDGS = \$67.50/ton
 MWDGS-WDGS = \$27.00/ton

Increasing Risk Exposure

- DGS risk management?
 - Increases in importance with inclusion rates
 - Cross-hedging of price risk?

NASS/Nebraska Corn Board Co-Product Study

- 12 state survey of livestock producers (Jan/Feb)

- Identify:
 - Co-product use
 - Inclusion levels
 - Channel of purchase (plant, feed co., broker)
 - Available/desired services (nutrient profile,..)
 - Purchase type
 - Spot or contract (several lengths)
 - Reference point of price (corn, soybean meal, other?)

Past NASS DGS Survey

- 721 Iowa & Minnesota Producers & 25 Ethanol Plants
- Ethanol Plants (2004)
 - 30% had minimum order for DGS; avg. min = 9.8 tons
 - DGS sales agreements:

<u>Monthly</u>		<u>Quarterly</u>		<u>6-Month</u>		<u>Yearly</u>	
2002	2003	2002	2003	2002	2003	2002	2003
10%	15%	10%	13%	9%	12%	NA	20%

<u>Spot</u>		<u>Clock</u>		<u>No Contract</u>	
2002	2003	2002	2003	2002	2003
38%	18%	11%	10%	19%	13%

Past NASS DGS Survey: Ethanol Plants (2004)

Transportation of DDGS, 2003

	% Plants Using Transport Mode	% Product Hauled by Transport Mode	Average Miles Hauled	Average Transport Costs/Ton
Paid by Plant				
Rail	100	16	1,550	30
Truck	67	10	82	4
Paid by Buyer				
Rail	50	16	1,812	40
Truck	100	58	133	7

Transportation of WDGS, 2003

	% Plants Using Transport Mode	% Product Hauled by Transport Mode	Average Miles Hauled	Average Transport Costs/Ton
Paid by Plant				
Rail	0			
Truck	100	23	61	4
Paid by Buyer				
Rail	0			
Truck	100	77	60	4

Past NASS DGS Survey

- Livestock Producers (2003)
 - Cow/calf, dairy, cattle on feed, hogs, turkeys (721 total)

Operations Profile

	<u>All Operations</u>		<u>Feeding Distillers Grains</u>		<u>Not Feeding Distillers Grains</u>	
	Avg Peak Inventory (head)	Operations Feeding DGS (%)	Avg Peak Inventory (head)	Avg Years Feeding DGS	Avg Peak Inventory (head)	% Considered Feeding DGS
Cow/Calf	121	24	359	4	91	27
Dairy	202	56	214	7	183	51
Cattle on Feed	2,074	72	2,302	6	1,399	74
Hogs	15,373	22	16,523	2	14,994	37
Turkeys	124,301	8	180,000	---	118,534	22

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