

# Iowa State University Extension



**Dr. Robert Wisner, University Professor  
& Extension Economist**

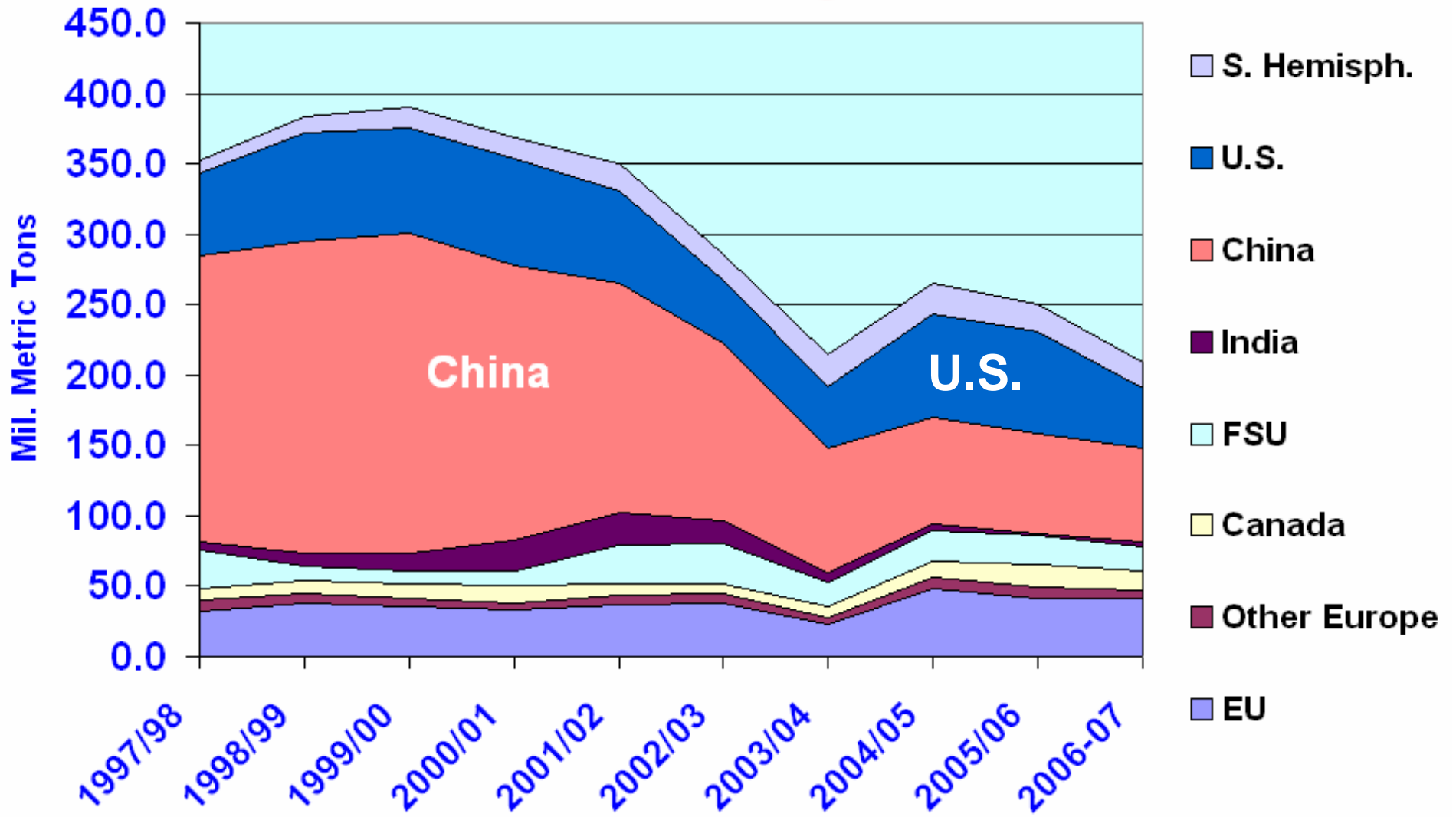
**Ethanol, Feed Grain Markets, & Longer Term  
Implications**

**11/09/06**

# The Corn Market Setting for 2006-07

- Second-highest U.S. yield/A. on record
- Corn crop a billion bushels below expected demand
- Corn processing for ethanol to be up 34% from 2005-06
- Plants under construction have 1.7 bil. Bu. capacity – all should be on line in 15-18 months
- Corn processing increases next 2 years likely 32-40 percent per year
- Iowa top ethanol producing state
- World grain stocks low

## Wheat & Coarse Grain Carryover Stocks in Selected Global Regions

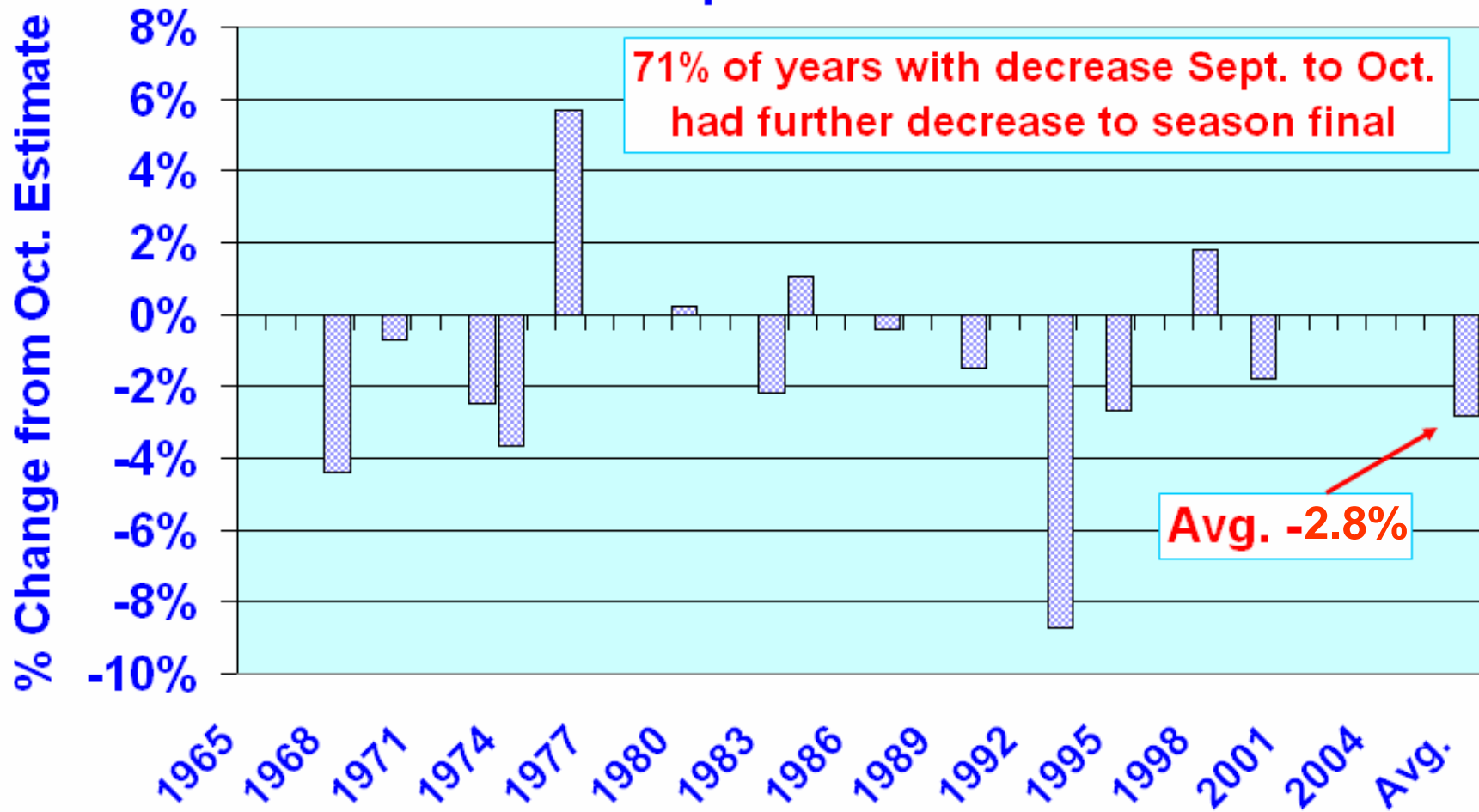


Sources: USDA FAS & WAOB

# Will the corn crop get smaller?

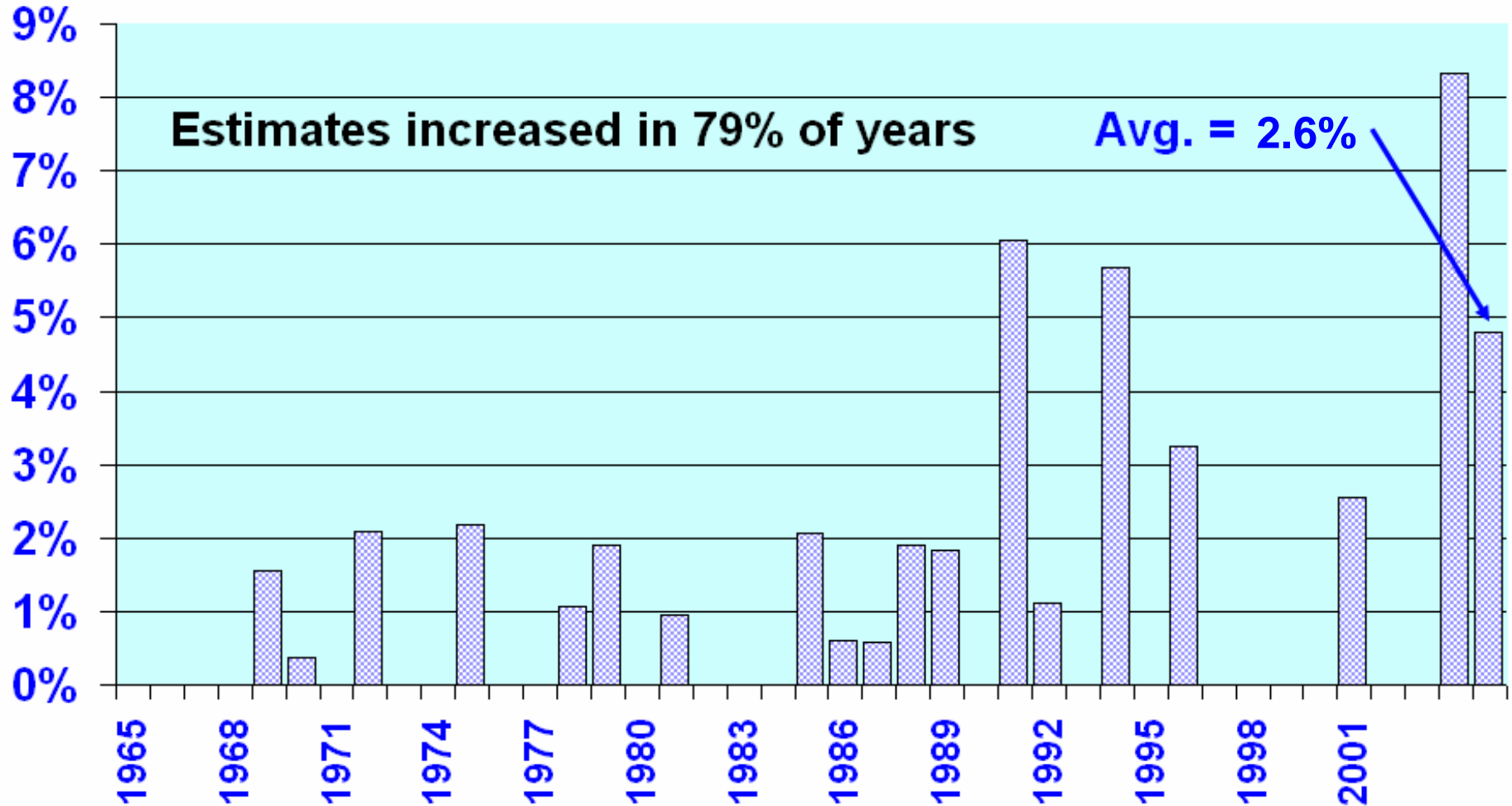
## Figure 1. Corn Yield Change from October to Season Final in Years When Estimate Decreased from September to October

Data are from  
USDA, NASS



# Will the bean crop get bigger?

**Figure 2. USDA Soybean Yield Change, October to Season Final, in Years with Increase from September to October**



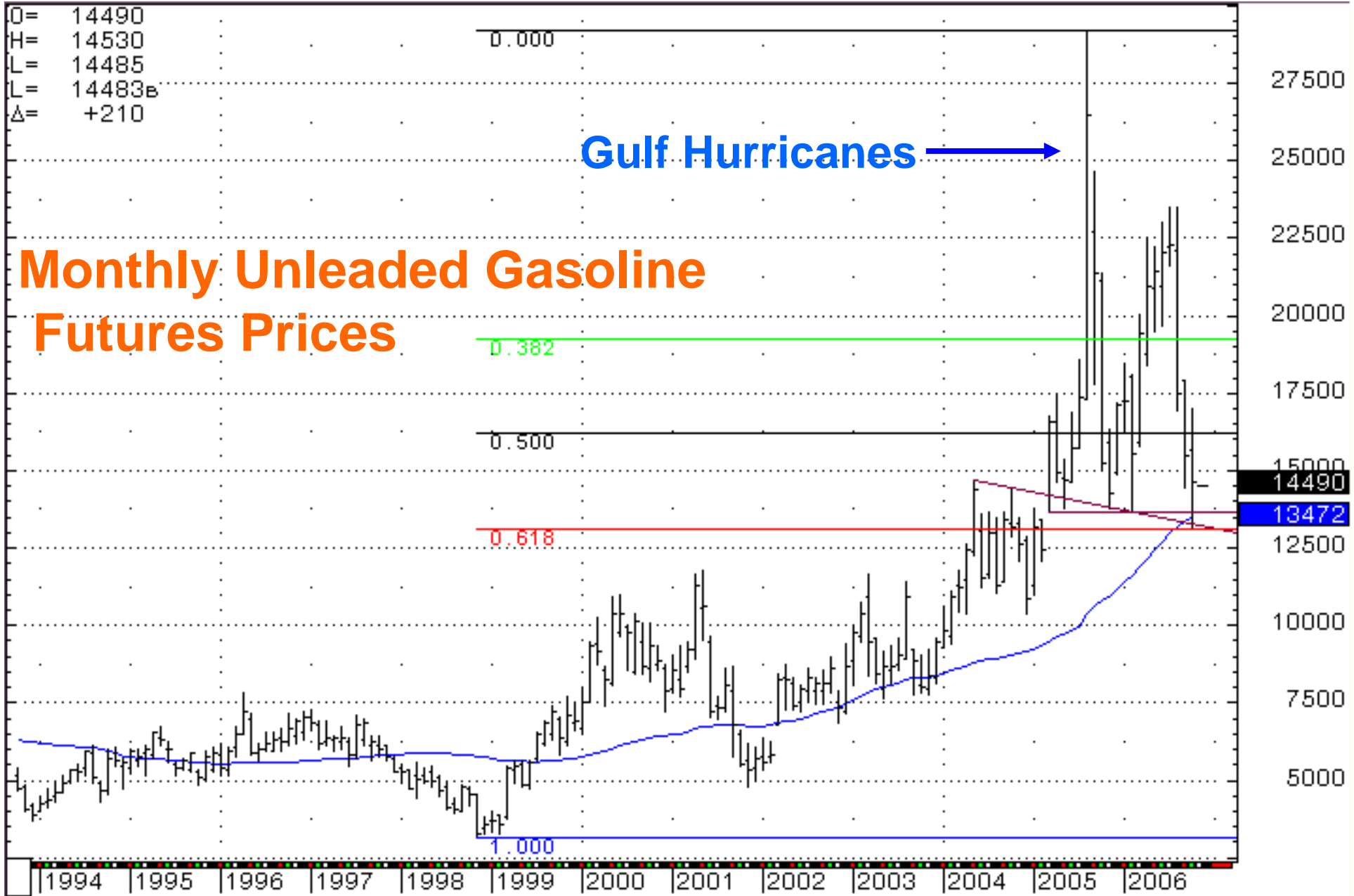
# Implications of Emerging Energy Market

- *A lot more corn acres will be needed*
- **Corn prices: increasingly volatile & weather-sensitive**
- **Basis opportunities will be greater**
- **More storage space needed**
- **Winter & spring 2006-07: look for periods of higher corn, SB prices, strong basis**
- **Cautions about selling 2008 and later crops**
- **Corn, biodiesel to pull bean prices up**
- **Options may be useful in managing risks**

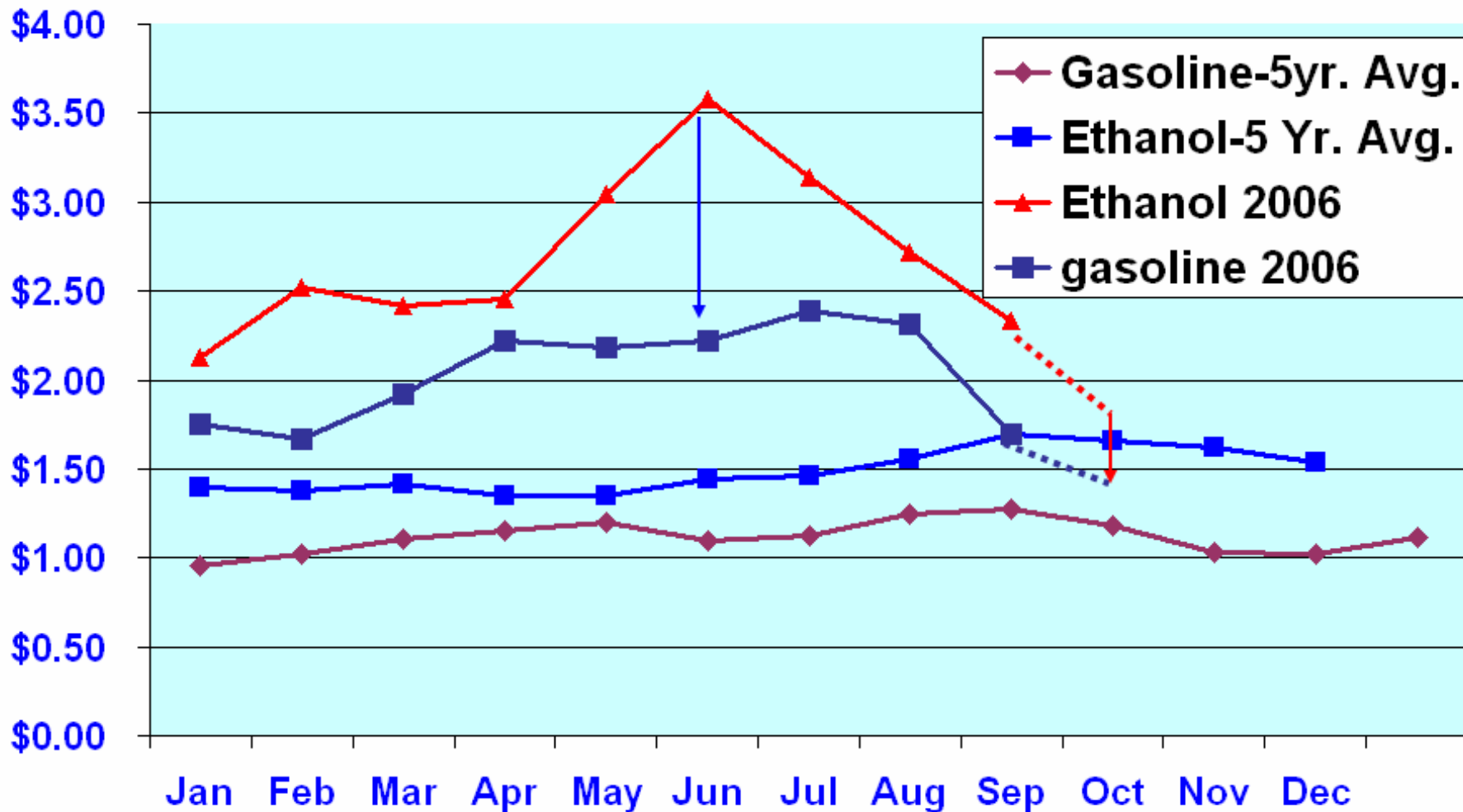
O= 14490  
H= 14530  
L= 14485  
L= 14483B  
Δ= +210

Gulf Hurricanes →

# Monthly Unleaded Gasoline Futures Prices



# Omaha Rack Ethanol & Gasoline Prices



## State Average Ethanol Rack Prices

Date: Friday,  
October 27, 2006

Late June \$3.89



Iowa: \$2.06

Illinois: 2.09

Kansas: 2.19

Michigan: 2.20

Minnesota: 2.03

Missouri: 2.17

North Dakota: 1.96

Nebraska: 2.13

South Dakota: 2.03

Wisconsin: 2.07

Source of Data

[www.axxispetro.com](http://www.axxispetro.com)

[www.ethanol.org](http://www.ethanol.org)

**AXIS**  
Petroleum



# Ethanol Economics

- Ethanol prod'n cost \$1.30/gal. (Minnesota- @\$2corn)
- Cost increases about \$0.36/gal. for each \$1 increase in corn
- 11/27/06 ethanol price: \$2.06/gal.
- Recent margin: \$0.40/gal. (incl.\$0.51)
- Drops to zero @ corn price of about **\$4.11 corn in IA (\$4.67 with USDA costs)**
- **\$0.10 increase in ethanol price raises break-even Corn price \$0.28/bu.**
- **\$1.00 rise in corn price increases cost/gal. \$0.36**
- Other variables: DDGS price, Natural Gas

# Iowa Corn Processing Plants

## Annual Capacity

<b>Operating Plants</b>	<b>970 mil. bu.</b>
<b>Expanding Plants</b>	<b>282</b>
<b>New, Under Construction</b>	<b>198</b>
<b>Planned</b>	<b>1,114</b>
<b>Potential total rated capacity</b>	<b>2,564 mil. bu.</b>

<b>Corn Processing Plants in and Near Iowa, 10/12/06</b>			
<b>Est. Mil. Bu. Processing Capacity</b>			
Cedar Rapids	203	<b>Planned or under construction</b>	
Clinton	180	ADM Expansion (cedar rapids & clinton)	190
W. Burlington	18	Akron - P	38
Muscatine	49	Albert City - C	42
Hanlontown	17	Ashton - E	20
Marcus	20	Atlantic - P	19
Lakota (current cap. 20 mil. Bu)	40	Belmond - P	38
Ashton	18	Blair, NE* - E	38
Hopkinton (Uses sugar & strach)	0	Blenco - P	38
Sioux Center	8	Boone - P	36
Coon Rapids	36	Buffalo - P	38
Blair, NE*	32	Burlington expansion E	36
Albert Lea, MN*	15	Charles City - C	57
Luvurne, MN*	8	Corning (may go to 38 mil. Bu.) - P	23
Keokuck	47	Council Bluffs - P	42
Eddyville	76	Creston - P	18
Iowa Falls	40	Des Moines P	38
Galva	10	Dexter - P	38
Steamboat Rock	8	Emmetsburg- E	18
Emmetsburg	19	Fairmont, MN (1/2 of 76 mil. Bu.)* C	38
Denison	19	Faribank - C	38
Ft. Dodge	42	Ft. Dodge new plant - P	110
Mason City	15	Goldfield - C	19
Jewell	24	Grinnell - P	38
Gowrie	22	Hartly - P	40
Nevada	19	Hinton - P	38
<b>Sub-total, operating</b>	<b>930</b>	Humboldt County - P	18
*Reflects estimated corn drawn from Iowa supplies. The amount is excluded from totals.		Marcus expansion - E	18
		Marshaltown - P	38
		Merrill - P	18
<b>P = Proposed, C = Under Construction, E= Expansion of existing plant</b>		New Hampton - P	18
		Quad Cities - Galva, IL 1/2 of 38- P	19
Arthur - P	36	Revived Blairstown - C	14
Butler County - P	36	Salix - P	19
Green County - P	70	Shenandoah - C	18
Marion co. - P	20	Spencer - P	38
Odebolt - P	45	Staceyville - P	38
Ottumwa - p	18	Superior - C	18
W. Des Moines - P	36	Tama - P	38
<b>Sub-total, planned</b>	<b>261</b>	Wesley - P	37
		Winnesheik county - P	38
		<b>Sub-total, planned</b>	<b>1,380</b>
<b>Grand total, processing, rated 2,571 Mil. Bu.</b>			

63 Planned + current in Iowa  
11 Just across the borders

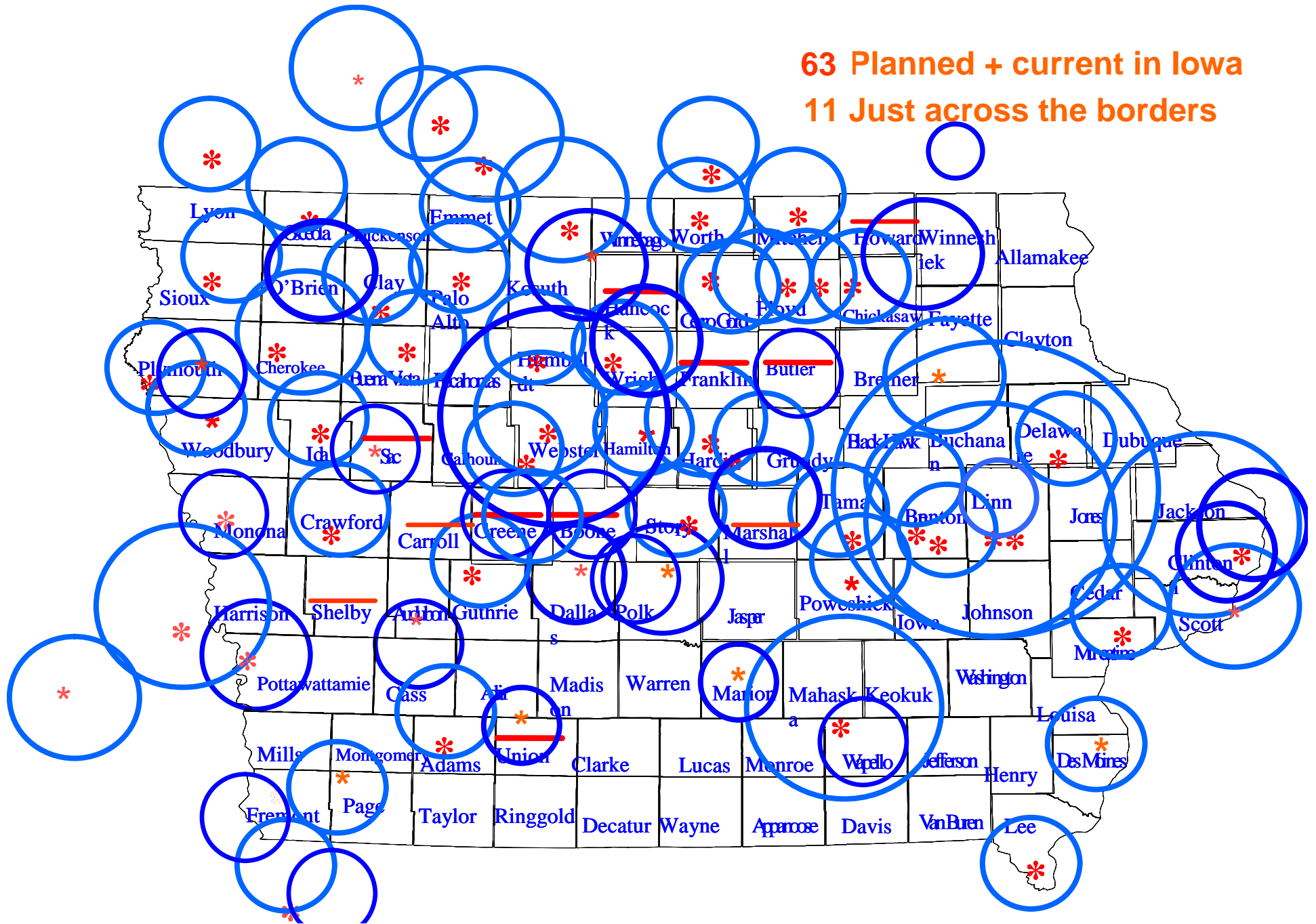


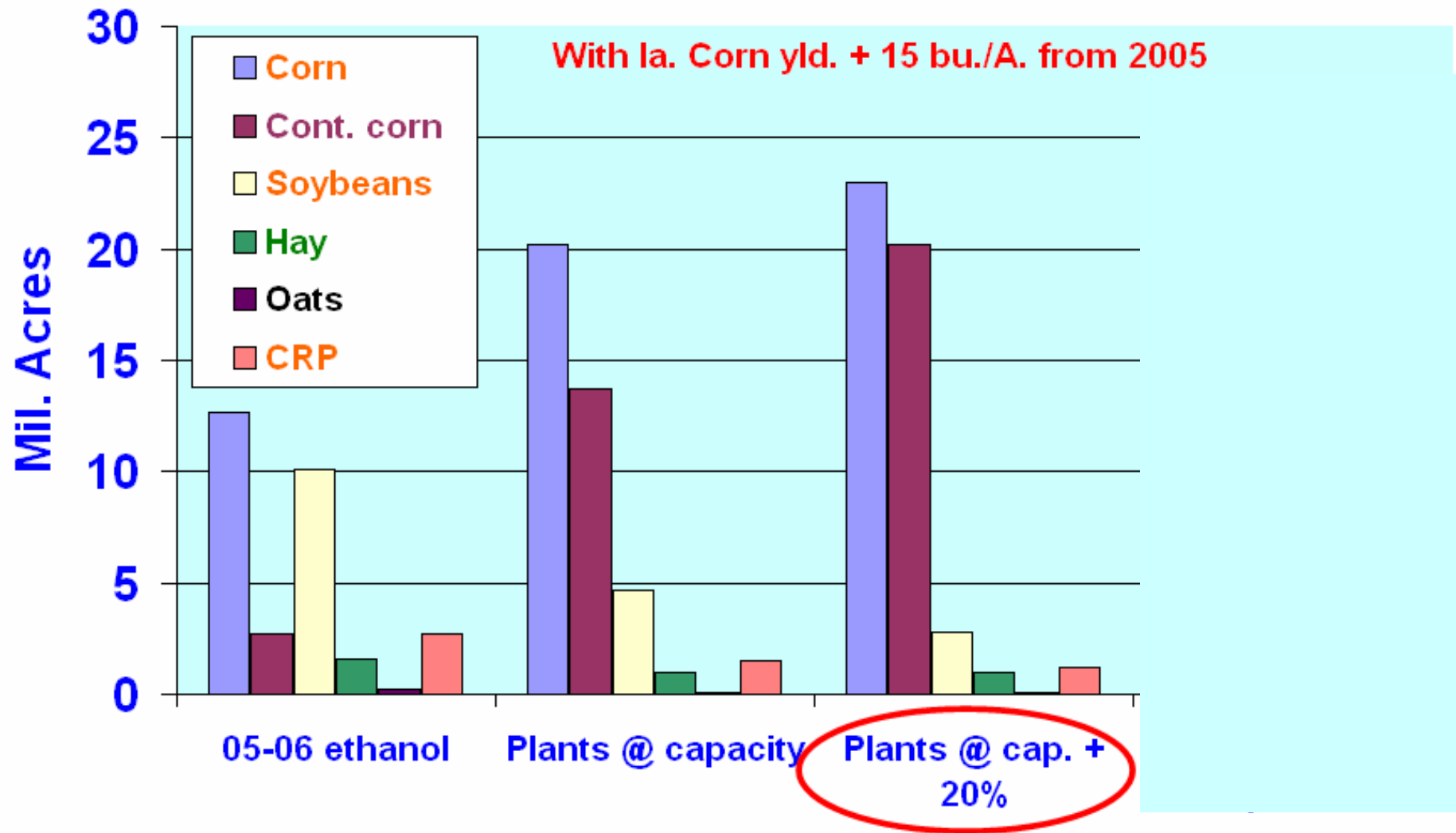
Figure 1. Iowa corn processing & ethanol plants, current & planned

## Iowa Corn Production, Use & Excess for Export out of State, Mil. Bu.

10/23/06	2005-06	Current &	Current &
	06/06 processing	Planned plants	Planned plants
	Capacity	@ rated capacity	@ 120% capacity
2005 corn crop	2,163	2,163	2,163
Less feed use	700	700	700
Less processing	930	2,571	3,085
Plus corn replaced by DGS	45	45	45
<b>Avail. For Export</b>	<b>578</b>	<b>-1,063</b>	<b>-1,577</b>
2006 Mil. Harv. Acres	<b>12.4</b>		
Yield, 2005, Bu./A.	<b>173</b>		
2005 Trend Yield, Bu/A.	<b>159</b>		
<b>2009 Trend Yld., Bu./A.</b>	<b>167</b>		
Yield needed to maintain exports (@ '05 A.)		<b>306.8</b>	<b>348.2</b>
Acresage needed @ 2005 yield		<b>22.0</b>	<b>25.0</b>
Acresage needed @ 2009 trend yield		22.8	25.9
Acresage needed @ 2005 yield+15 bu./A.		<b>20.2</b>	<b>23.0</b>

10/25/06

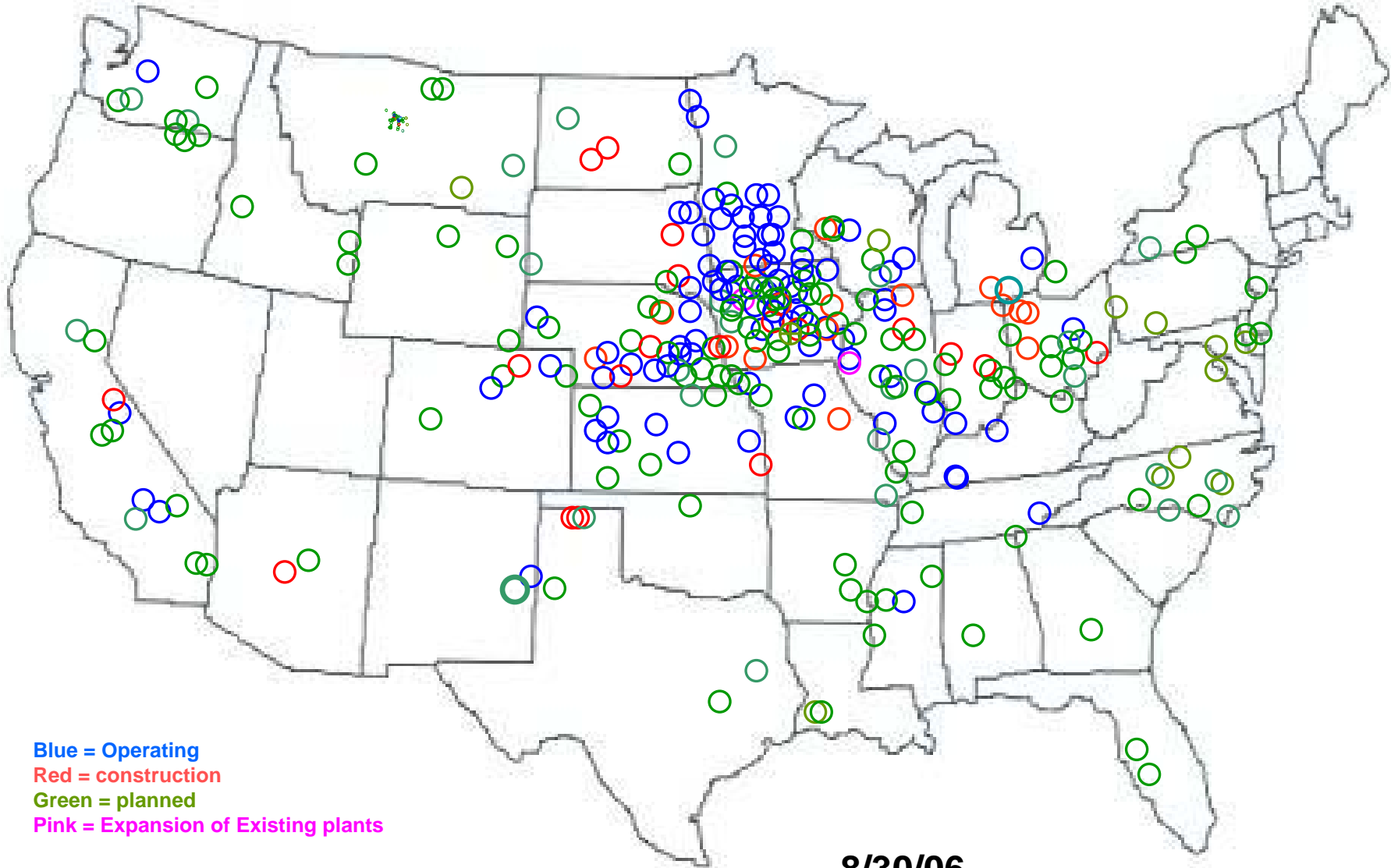
# Iowa Current & Potential 2012 Crop Acreages



# Transportation Implications-- IA

- **About 25% of volume of corn lost during processing**
- **Corn shipments to ethanol plants mostly by truck**
- **IA corn export volume may decline slightly**
- **IA Soybean exports likely down sharply, possibly to near zero or may have in-shipments**
- **IA SBM exports likely to increase slightly**
- **IA DDGS exports: about 14.8 mil. tons to move out of state @ current feeding recommendations**
- **IA ethanol volume: about 5.5 bil. gallons or 20.6 mil. tons – mostly exported by rail (2,100 trains/yr.)**

**Figure 2. Existing & Planned U.S. Corn Processing Plants**



8/30/06

## Construction of 3.34 Billion Gallons of New Capacity Part I

### Begun in Last 12 Months\*\*

Month	Plant Name	Location	Type	Contractor/ Processor	Capacity (Mil. Gal.)
5-Sep	Iroquois Bio-Energy	Rensselaer, IN	New Plant	Fagen	40
	Front Range Energy	Windsor, CO	New Plant	ICM	40
	Heartland Grain	Huron, SD	Expansion	ICM	18
	Prairie Horizon	Phillipsburg, KS	New Plant	ICM	40
	US. BioEnergy	Lake Odessa, MI	New Plant	Fagen	45
	The Andersons	Albion, MI	New Plant	ICM	55
5-Oct	Prairie Ethanol	Loomis, SD	New Plant	Broin	60
5-Nov	Heron Lake BioEn.	Heron Lake, MN	New Plant	Fagen	50
	Central Indiana Etoh	Marion, IN	New Plant	Fagen	40
	Siouxland Ethanol	Jackson, NE	New Plant	Fagen	50
	Missouri Ethanol	Ladonna, MO	New Plant	Broin	45
	Redfield Ethanol	Redfield, SD	New Plant	Fagen/ICM	50
5-Dec	Advanced Bioenergy	Fairmont, NE	New Plant	Fagen	100
	Green Plains	Shenandoah, IA	New Plant	Fagen	50
	Val-E Ethanol	Ord, NE.	New Plant	Fagen	45
6-Jan	ASAllinances Biofuels	Linden, IN	New Plant	Fagen/ICM/ Cargill	100
	ASAllinances Biofuels	Albion, NE	New Plant	Fagen/ICM/ Cargill	100
	Pinal Energy	Maricopa, AZ	New Plant	TIC/Delta-T	55
	VeraSun	Charles City, IA	New Plant	Fagen/ICM	110
	The Andersons	Clymers, IN	New Plant	Lurgi	110
6-Feb	Siouxland Energy	Sioux Center, IA	Expansion		10
6-Mar	Blue Flint Ethanol	Underwood, SD	New Plant	Fagen/ICM	50
	Pinnacle Ethanol	Corning, IA	New Plant	Broin	60
6-Apr	Abengoa	Ravenna, NE	New Plant	FRU-CON/Vogelbusch	88
	United Ethanol	Milton, WI	New Plant	Agri-Industries/Delta-T	60
	Conestoga Energy Partners	Garden City, KS	New Plant	ICM	55
6-May	Platte Valley Fuel Ethanol, LI	Central City, NE	Expansion	Fagen/ICM	40
	ASAlliances	Bloomington, OH	New Plant	Fagen	100
	Subtotal				<b>1,666</b>

## Construction of 3.34 Billion Gallons of New Capacity Part II

### Begun in Last 12 Months\*\*

Plant Name & Location	Type	Contractor/ Processor	Capacity (Mil. Gal.)
Mid-America Agri-Products LLC Madrid, NE	New Plant	TIC/Delta-T	44
Golden Grain Mason City, IA	Expansion	Fagen	70
Coshocton LLC Coshocton, OH	New Plant	TIC/Delta-T/Ibberson	60
Marysville Hydrocarbons Marysville, MI	New Plant	Fagen	50
Yuma Ethanol LLC Yuma, CO	New Plant	ICM	50
White Energy Ltd Hereford, TX	New Plant	Fagen/ICM	100
Cascade Grain Products LLC Clatskine, OR	New Plant	TIC/Delta-T/J H Kelly	100
Central Illinois Energy LLC Canton, IL	New Plant	Lurgi	37
Pacific Ethanol LLC Boardman, OR	New Plant		35
Absolute Energy St. Ansgar, IA	New Plant	Fagen/ICM	100
Conestoga Energy Partners Liberal, KS	New Plant	ICM	110
Advance Bioenergy, LLC Fairmont, NE	New Plant	Fagen/ICM	100
E Energy (Adams, NE) Adams, NE	New Plant	Fagen/ICM	50
Elkhorn Valley Ethanol, LLC Norfolk, NE	New Plant	Fagen/ICM	40
Goodland Energy Center Goodland, KS	New Plant		20
Green Plains Renewable Energy, Inc. Superior, IA	New Plant	Agra Industries/Delta-T	50
Holt County Ethanol Inc. ,ONEill, NE	New Plant	CJ Schneider/Vogelbusch	100
Illinois River Energy, LLC,Rochelle, IL	New Plant	Fagen/ICM	50
LifeLine Foods LLC ,St. Joseph, MO	New Plant	ICM	40
Mid-America Agri-Products LLC ,Cambridge, NE	New Plant	TIC/Delta-T	44
NEDAK,Atkinson, NE	New Plant	GEMMA/Delta-T	40
Northeast Biofuels, LLC (NEB) ,Volney, NY	New Plant	Lurgi PSI	100
Pro-Corn LLC ,Preston, MN	Expansion	Broin	18
US BioEnergy Corp. (C-Corp),Hankinson, ND	New Plant	Fagen/ICM	100
Western New York Energy ,Shelby, NY	New Plant	Fagen/ICM	50
Wildcat Bio-Energy, LLC,Pratt, KS	New Plant	Lurgi PSI	55
Wyoming Ethanol LLC ,Torrington, WY	Expansion	Delta-T	10
Yuma Ethanol LLC,Yuma, CO	New Plant	ICM	50
		<b>Sub-total</b>	<b>1,673</b>
<b>GRAND TOTAL</b>	<b>3,339</b>	<b>Corn Equivalent</b>	<b>1205</b>

Mil. Bu

9/09/06

\*\*There is a substantial difference in RFA and other industry estimates.

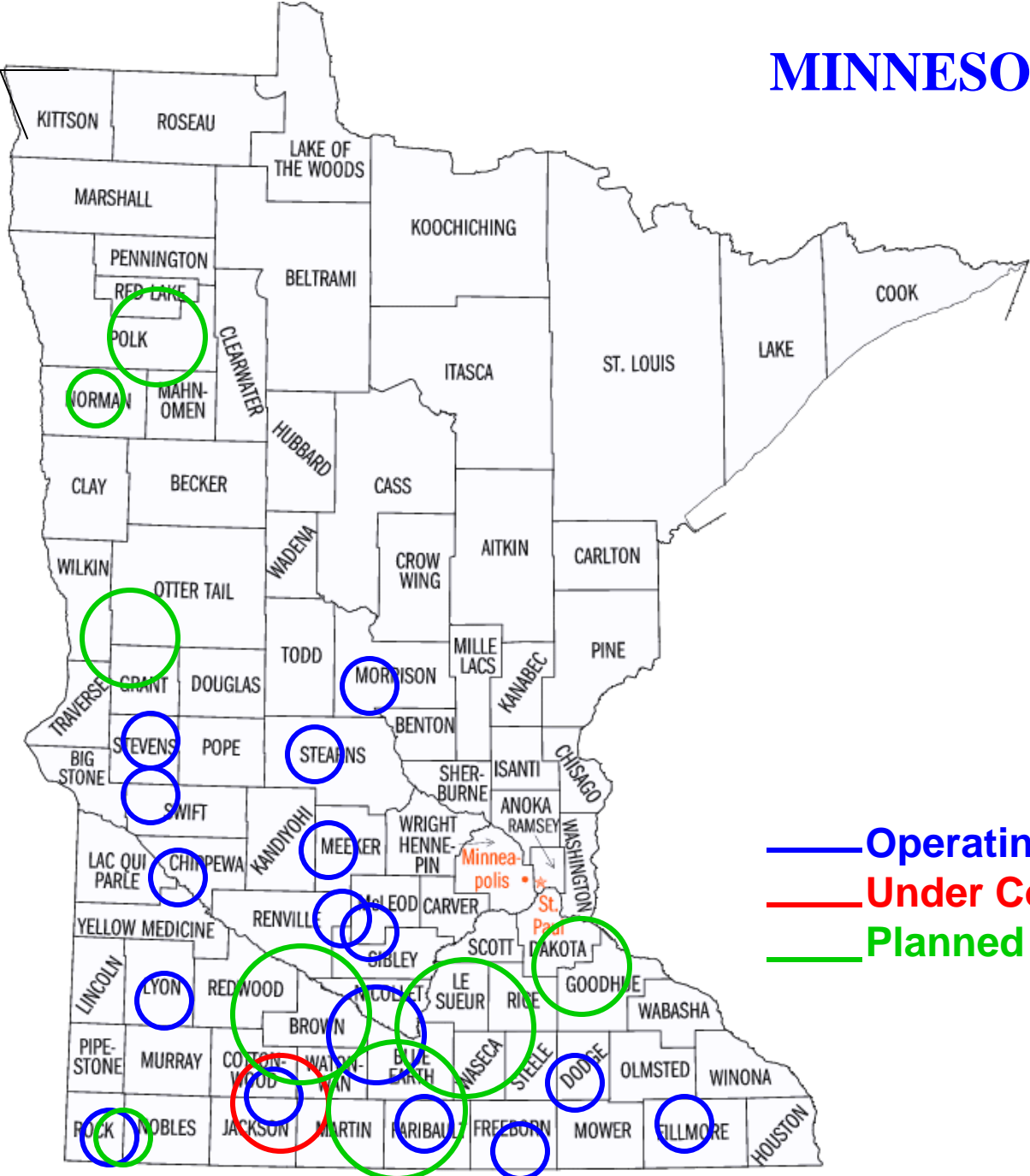
Sources: RFA, Grainnet.com, news reports, and industry contacts

**10/26/06 = 1.75 bil. bu.**

# Corn Acres Needed, 2007

- **Production deficit: 2006 = 1,000 mil. Bu.**
  - **New ethanol demand (50% of current construction): 675-800 mil. Bu.**
  - **Total short-fall: 1,675 to 1,800 mil. Bu.**
  - **Potential carryover decrease, '07-08: 200**
- 
- **Needed extra acres: 6.5-7.5 Mil. A. @ 160 Bu./A. on all acres (+9% to +11%)**
  - **Still Leaves Very Tight Supply**

# MINNESOTA

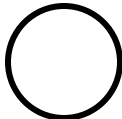


## Plant Capacity

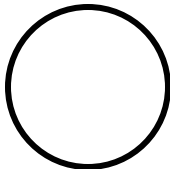
0 – 49 Mmgy



50 – 99 Mmgy

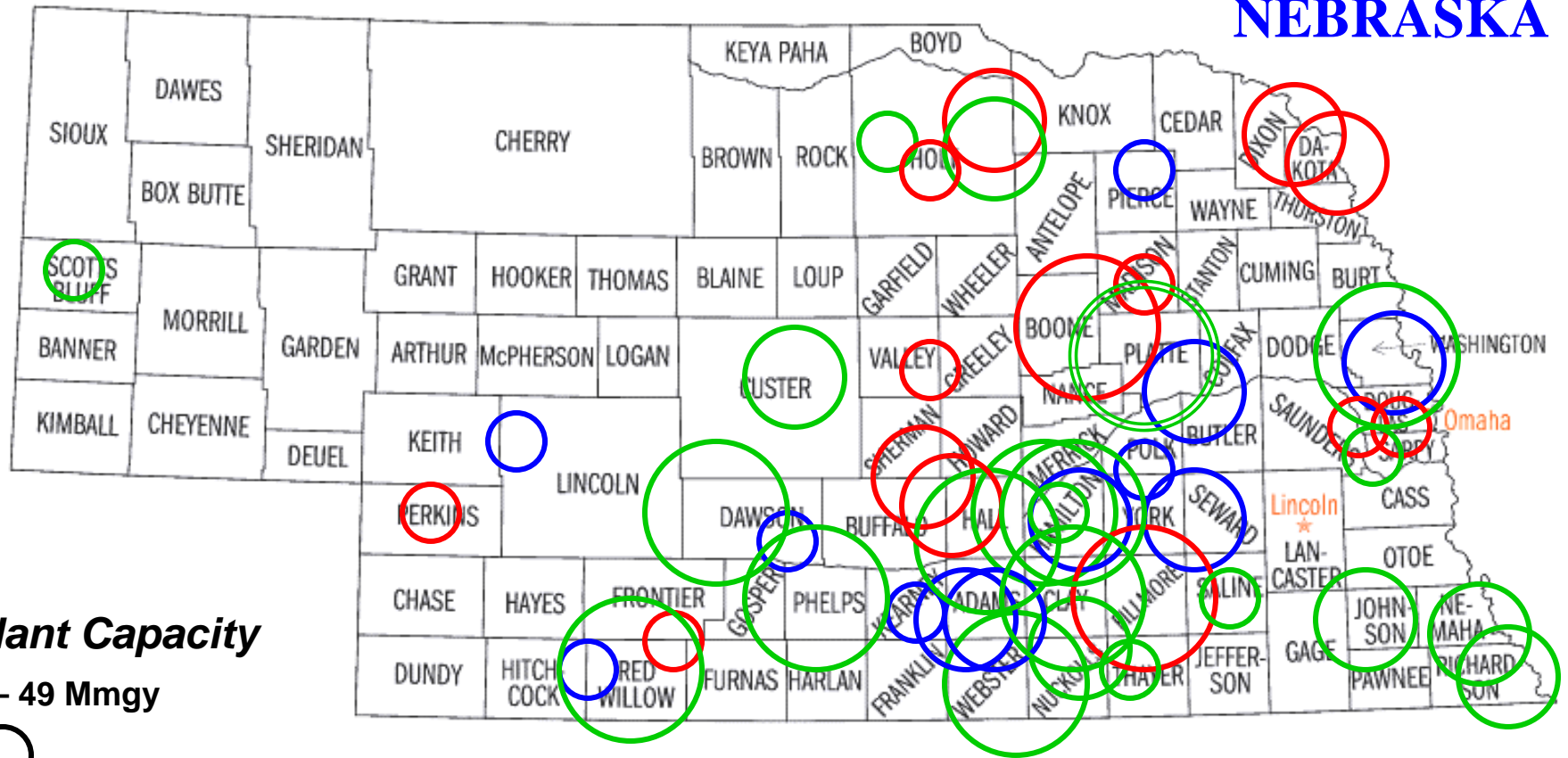


100 – 150 Mmgy



- Operating
- Under Construction
- Planned

# NEBRASKA

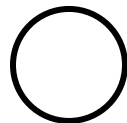


## Plant Capacity

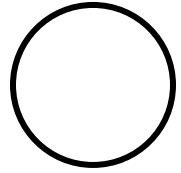
0 – 49 Mmgy



50 – 99 Mmgy



100 – 150 Mmgy



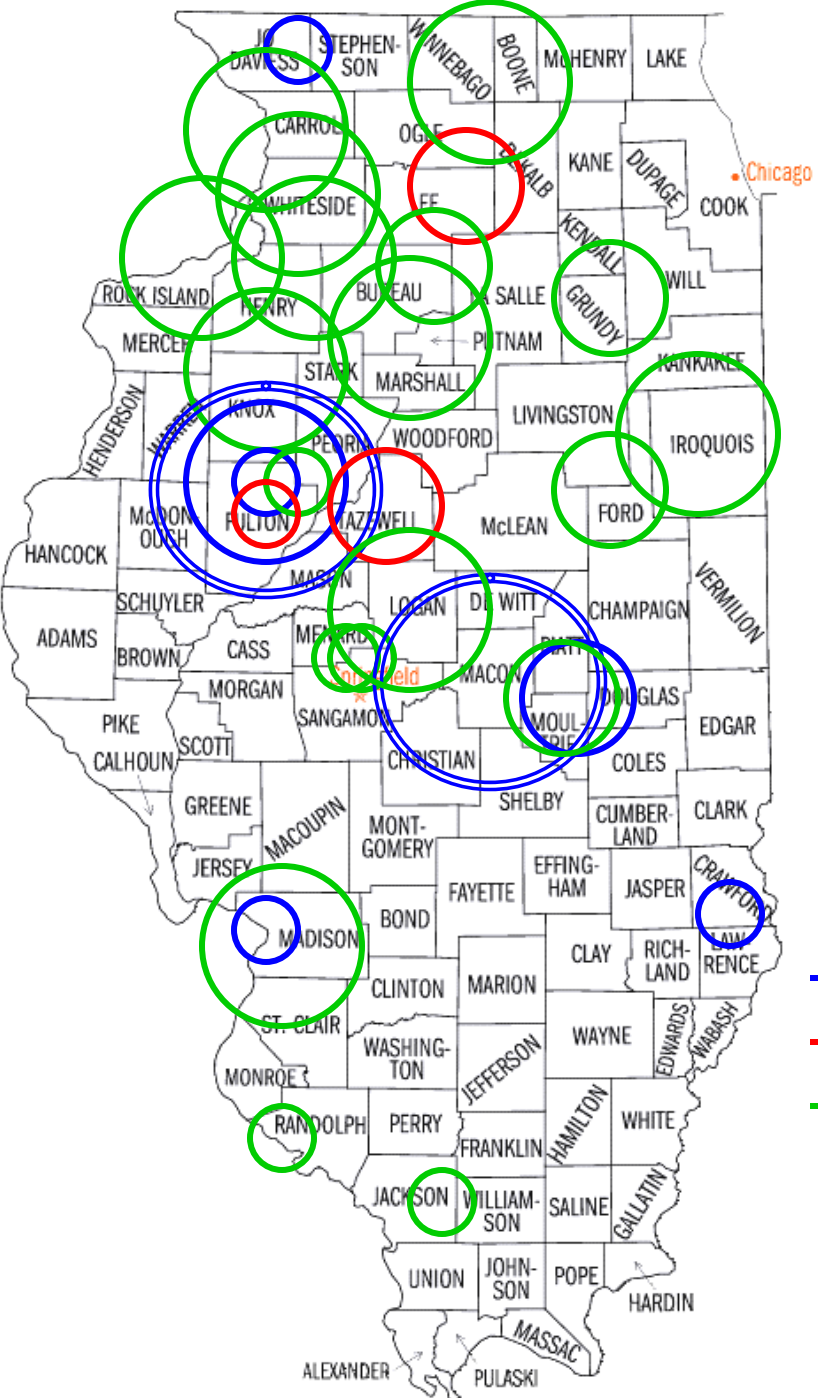
— Operating

— Under Construction

— Planned

**News article, 10/22/06 shows 12 operating plants, 10 plants under construction, and 30 being planned in Nebraska**

# ILLINOIS



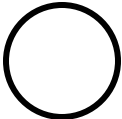
Over 30 planned  
Plants reported by  
Other sources

### Plant Capacity

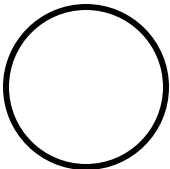
0 – 49 Mmgy



50 – 99 Mmgy



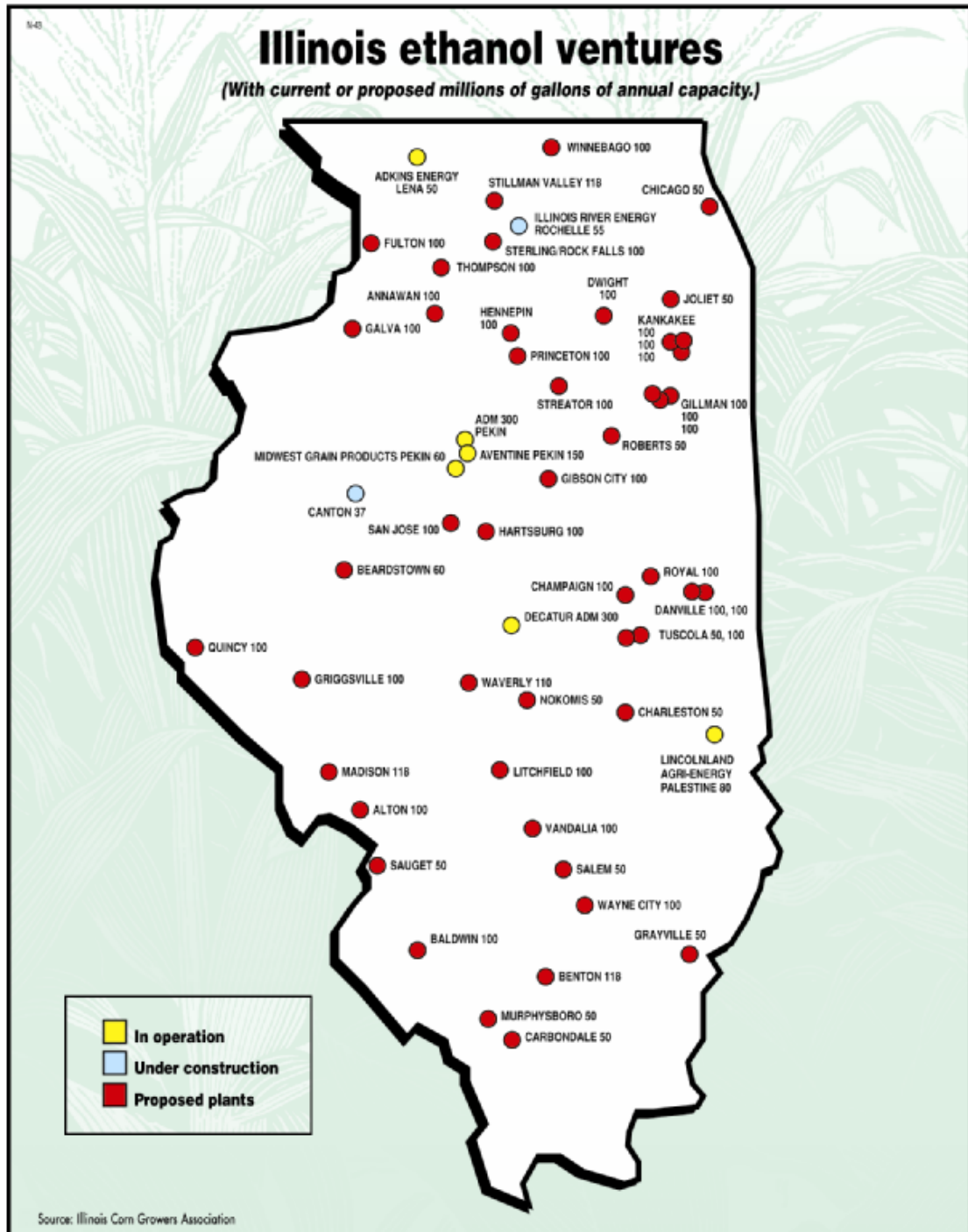
100 – 150 Mmgy



— Operating  
— Under Construction  
— Planned

47 proposed  
2 under constr.

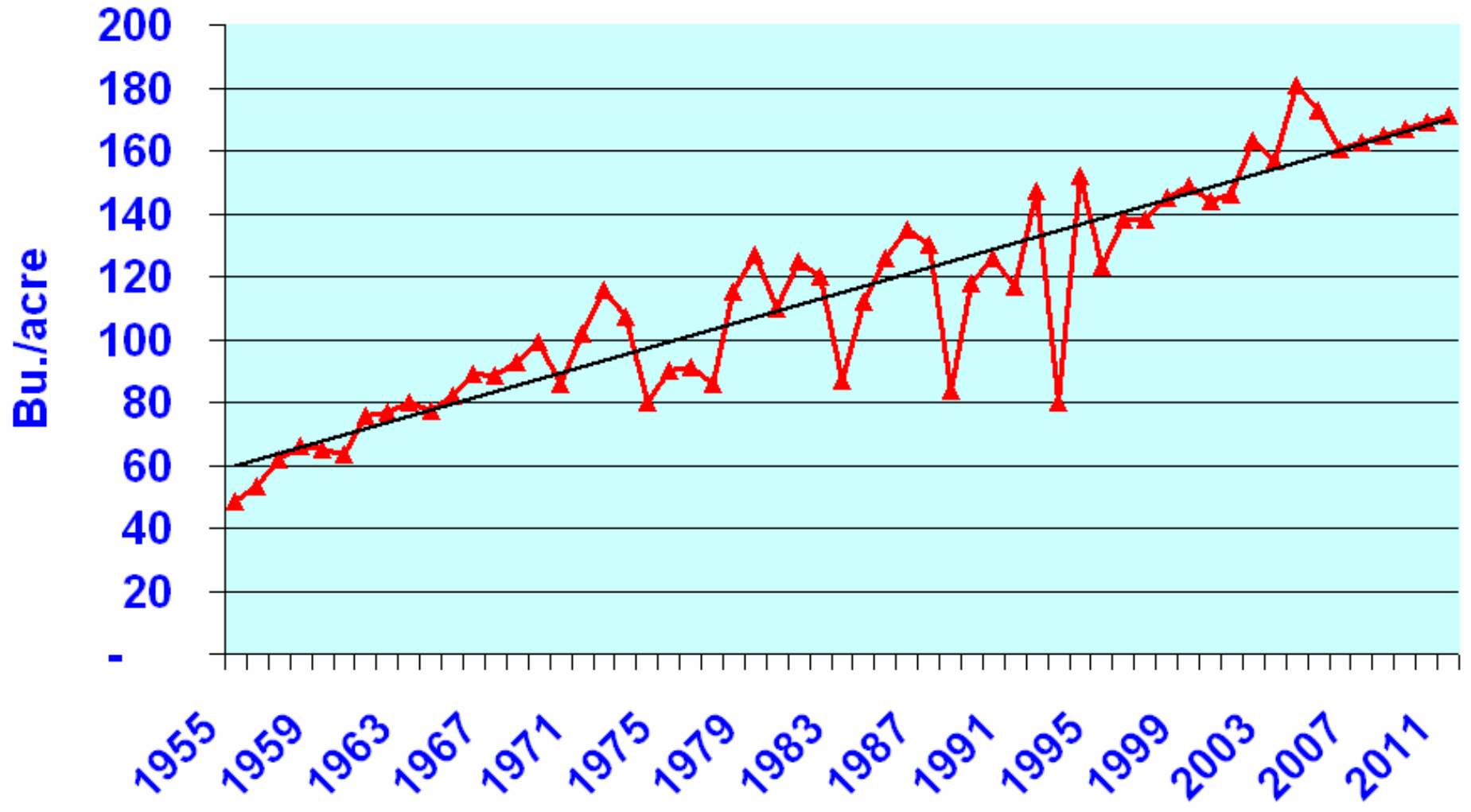
Source: Illinois  
Corn Growers  
Assoc.



Needed Yld. @ current Acres



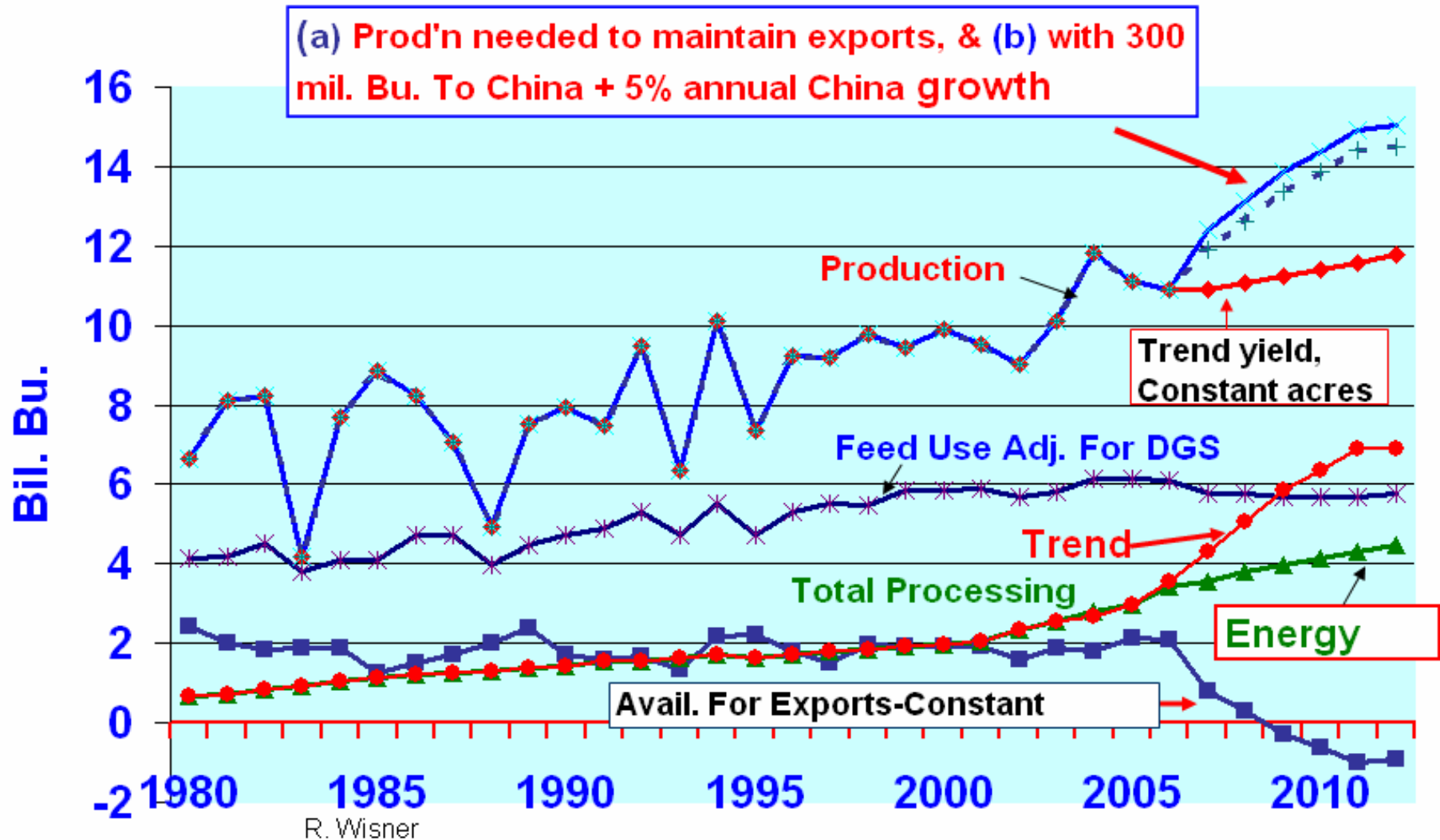
# Iowa Corn Yield Per Acre



# 5.5 Bil. Bu for ethanol

## Figure 3. U.S. Corn Production, Domestic Use, & Availability for Exports--Proj. to 2012

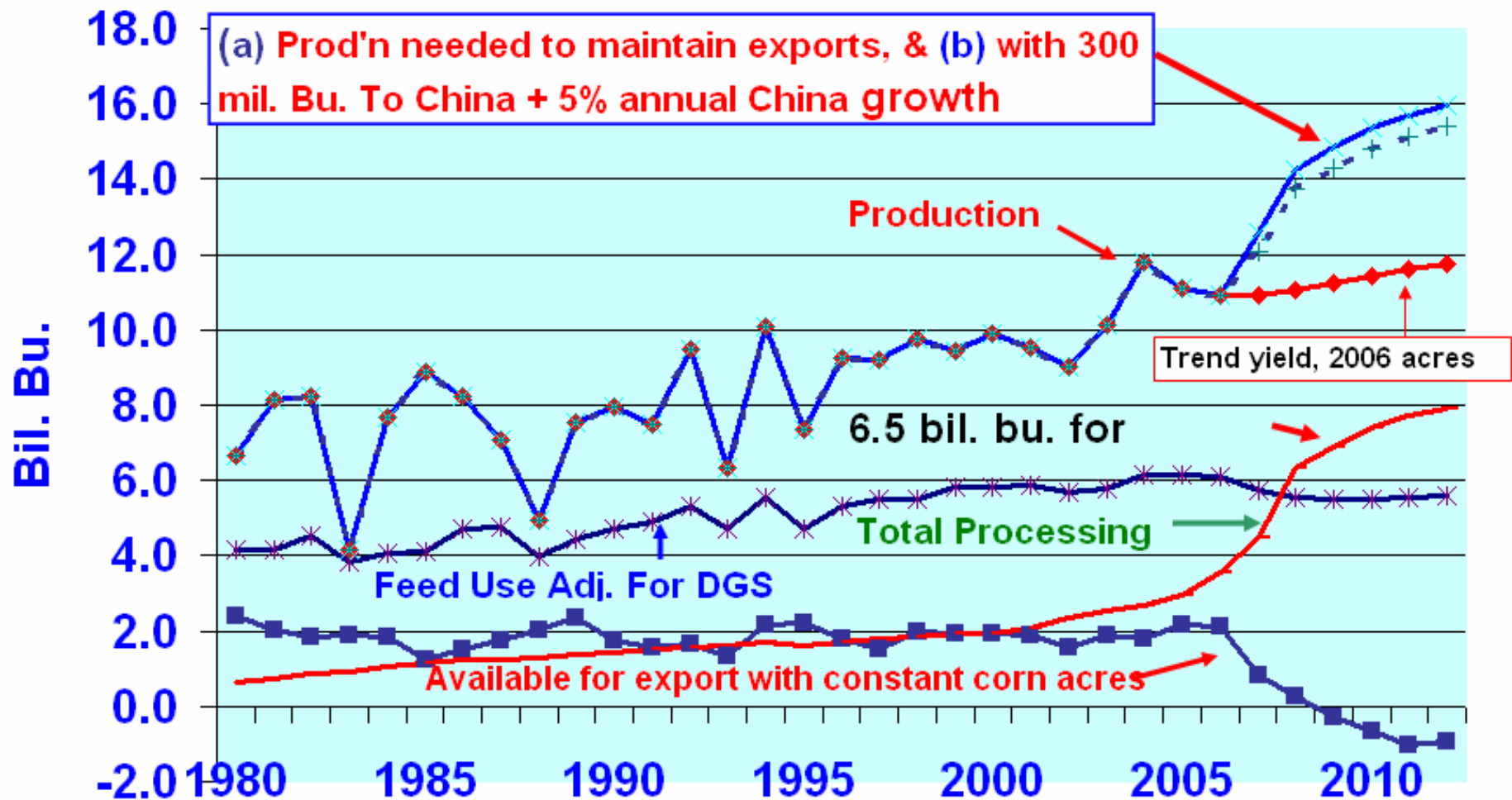
10-16-06



6.5 bil. Bu corn for ethanol

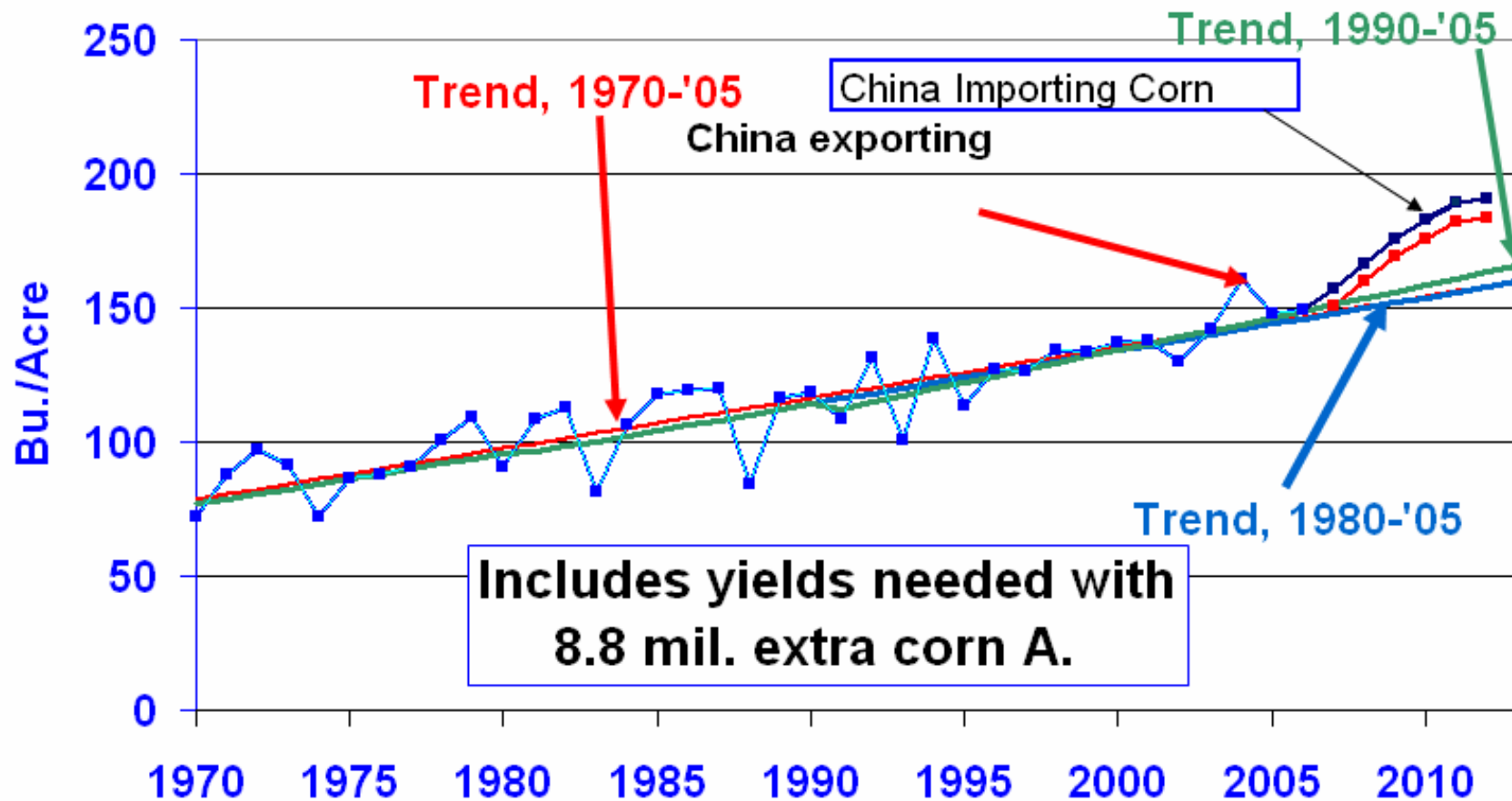
**Figure 1. U.S. Corn Production, Domestic Use, & Availability for Exports--Proj. to 2012**

10-12-06



# 5.5 Bil. bu. Corn for ethanol

## Figure 2. US CORN YIELD 1970-2005 & Projected to 2012



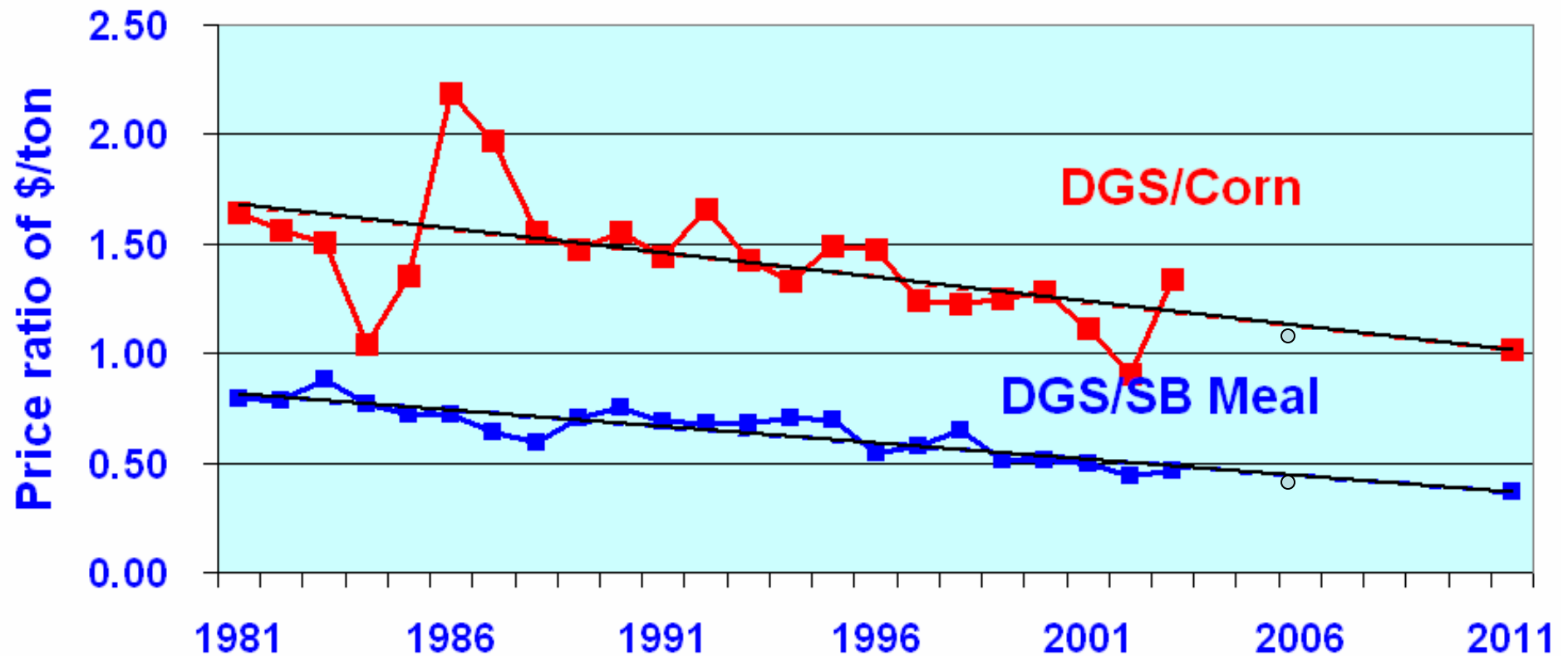
**5.5 Bil. Bu for ethanol**

## **Potential U.S. DGS demand by 2012**

<b>COF @ 20% of ration</b>	<b>7.1 mil. T.</b>
<b>Dairy @ 20% of ration</b>	<b>6.13 mil. T.</b>
<b>Hogs @15% of ration</b>	<b>6.72 mil. T.</b>
<b>Total</b>	<b>19.95 mil.T.</b>
<b>Potential production</b>	<b>46.8 Mil. T.</b>

**With 6.5 bil. Bu.: 51.8 Mil. T**

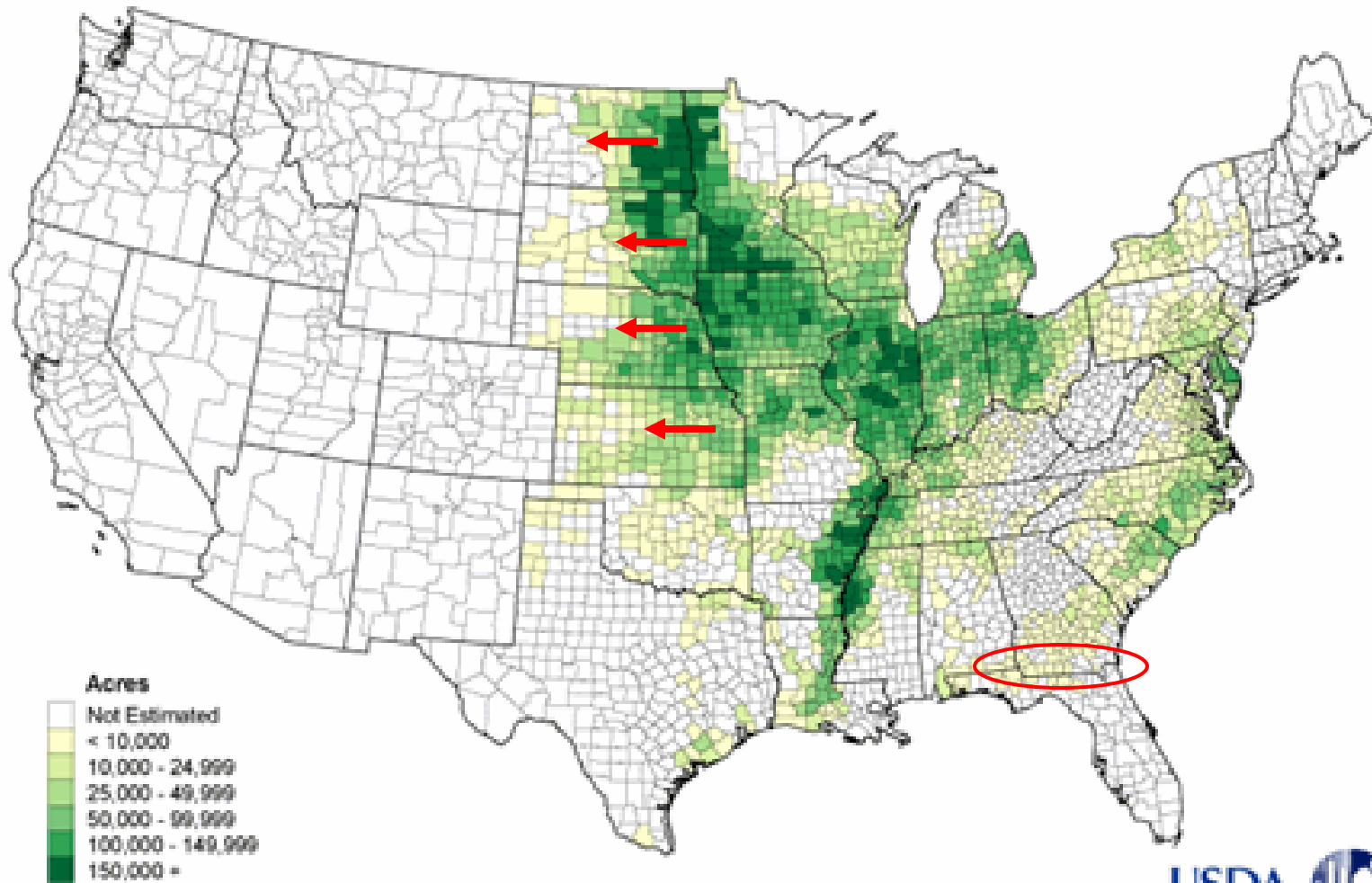
Marketing Year Avg. Price Ratio of Distillers  
Grain & Solubles vs. U.S. Avg. corn & 44%  
soybean meal Decatur prices, 1981-82 to 2002.  
03 & Projected to 2011-02



## Potential CRP Acres for Corn?

	Mil. Acres
ILLINOIS	1.03
INDIANA	0.29
IOWA	1.92
MICHIGAN	0.26
MINNESOTA	1.76
MISSOURI	1.55
OHIO	0.29
Total	7.10
Includes wetlands, buffer strips, etc.	

### Soybeans 2004 Planted Acres by County



Corn Balance Sheet (Mil. Bu.)		R. Wisner, ISU Econ.								Projected 2006-07			
11/09/06		1995-96	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	A	B	C
Harv.A.(mil)		65.0	72.7	70.5	72.4	68.8	69.3	71.1	73.6	75.1	71.0	71.0	71.0
Bu./A.		113.5	134.4	133.8	136.9	138.2	129.4	142.2	160.4	147.9	149.9	151.2	152.3
Production		7,374	9,759	9,431	9,915	9,507	8,968	10,089	11,807	11,112	10,643	10,745	10,813
Carryover		1,558	1,308	1,787	1,718	1,899	1,596	1,087	958	2,014	1,871	1,871	1,871
<b>Total Supply</b>		8,948	11,086	11,232	11,639	11,416	10,578	11,190	12,776	13,135	12,526	12,625	12,696
Feed & resid.		4,711	5,496	5,664	5,842	5,861	5,564	5,795	6,158	6,136	6,075	6,125	6,150
Food, ind. & seed		1,583	1,822	1,913	1,957	2,054	2,340	2,537	2,686	2,981	3,540	3,540	3,545
Corn for fuel ethanol		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1,163	1,323	1,603	2,150	2,150	2,155
Exports		2,228	1,981	1,937	1,941	1,905	1,588	1,897	1,918	2,147	2,250	2,275	2,280
<b>Total Utilization</b>		8,522	9,299	9,515	9,740	9,820	9,491	10,232	10,762	11,264	11,865	11,940	11,975
Carryover		426	1,787	1,718	1,899	1,596	1,087	958	2,014	1,871	661	685	721
U.S. FARM PRICE		\$3.25	\$1.94	\$1.82	\$1.85	\$1.97	\$2.32	\$2.42	\$2.06	\$2.00	\$3.25	\$3.10	\$2.90
IOWA AVE. PRICE, \$/Bu.		3.15	1.86	1.72	1.75	1.87	2.22	2.37	1.96	1.93	3.20	3.05	2.85
Counter-Cyclical Pmt.							0.00	0.00	0.30	0.35	0.00	0.00	0.00
HARV. PRICE, C.IA		2.90	1.75	\$1.40	\$1.60	1.65	2.20	1.92	1.60	1.40	2.80	2.80	2.80
DEC. FUT. @ HARV.		\$3.35	\$2.10	\$1.95	\$2.05	\$2.05	\$2.52	\$2.25	1.98	2.00	3.15	3.15	3.15
HISTORICAL PROBABILITY*									0.00	0.00	78%	18%	4%
Weeks carryover supply		2.6	10.0	9.4	10.1	8.5	6.0	4.9	9.7	8.6	2.9	3.0	3.1

11/09/06

## Corn Balance Sheet (Mil. Bu.)

	2004-05	2005-06	Sept. '06 for.	Projected 2007-08			Projected 2008-09		
Supplies:			2006-07	A	B	C	A	B	C
Plant. A(mil.)	80.9	81.8	78.6	84.5	84.5	84.5	86.5	86.5	86.5
Harv.A.(mil)	73.6	75.1	71.0	77.0	77.1	77.3	79.0	79.2	79.4
Bu./A.	160.4	147.9	151.2	146.0	156.5	161	146.0	158	163
Production	11,807	11,112	10,745	11,235	12,064	12,444	11,534	12,514	12,946
Carryover	958	2,114	1,871	685	685	685	623	623	623
<b>Total Supply</b>	12,776	13,236	12,625	11,932	12,763	13,143	12,169	13,151	13,584
<b>Feed &amp; resid.</b>	6,162	6,080	6,125	5,400	5,950	6,000	4,850	5,775	5,900
Food, ind. & seed	2,686	2,985	3,540	4,165	4,190	4,265	4,850	4,875	4,900
Corn for fuel ethanol	1,323	1,600	2,150	2,775	2,800	2,875	3,450	3,475	3,500
Exports	1,814	2,125	2,275	1,800	2,000	2,025	1,750	1,875	1,950
<b>Total Utilization</b>	10,662	11,190	11,940	11,365	12,140	12,290	11,450	12,525	12,750
<b>Carryover</b>	2,114	2,046	685	567	623	853	719	626	834
<b>U.S. FARM PRICE</b>	\$2.06	\$2.00	\$3.10	\$3.50	3.15	2.85	\$4.10	3.25	2.90
<b>IOWA AVE. PRICE, \$/Bu.</b>	1.96	1.95	\$3.05	3.45	3.10	2.80	4.05	3.20	2.85
<b>Counter-Cyclical Pmt.</b>	0.30	0.35	\$0.00	0	0	0	0	0	0
<b>HARV. PRICE, C.IA</b>	1.60	1.40	\$2.80	3.40	2.90	2.60	3.80	2.90	2.75
<b>DEC. FUT. @ HARV.</b>	\$1.98	\$2.00	\$3.15	\$3.80	\$3.30	\$3.00	\$4.20	\$3.30	\$3.20
<b>Historical Probability</b>				18%	65%	17%	18%	65%	17%
<b>Weeks carryover supply</b>	10.3	9.5	3.0	2.6	2.7	3.6	3.3	2.6	3.4
<b>Feed use % chg. Drought years vs. current</b>				-11.8%			-20.8%		
<b>Corn replaced by increased DDGS</b>			97		115			119	
<b>Decline in corn feeding vs. prev. year</b>			45		-175			-175	
<b>Percent Decline in corn feeding vs. prev. year:</b>				-11.2%			-18.5%		

11/09/06	Soybean Balance Sheet (Mil. Bu.)					R. Wisner, ISU Econ.			2004-05	2005-06	Projected 2006-07		
	1995-6	1998-9	1999-00	2000-01	2001-02	2002-03	2003-04			A	B	C	
HARV. A.,MIL.	61.6	70.4	72.4	72.4	73.0	72.5	72.5	74.0	71.3	74.5	74.5	74.5	
BU./A.	35.3	38.9	36.6	38.1	39.6	38.0	33.9	42.2	43.0	42.4	43.0	43.7	
PRODUCTION	2,174	2,741	2,654	2,758	2,891	2,756	2,453	3,124	3,063	3,159	3,204	3,252	
CARRYOVER	335	200	348	290	248	208	178	112	256	449	449	449	
<b>TOTAL SUPPLY</b>	<b>2,514</b>	<b>2,945</b>	<b>3,006</b>	<b>3,052</b>	<b>3,141</b>	<b>2,969</b>	<b>2,637</b>	<b>3,242</b>	<b>3,322</b>	<b>3,612</b>	<b>3,657</b>	<b>3,715</b>	
UTILIZATION:													
CRUSH	1,370	1590	1,579	1,640	1700	1615	1530	1,696	1,739	1,775	1,780	1,785	
EXPORTS	851	801	973	996	1064	1044	885	1,095	947	1,150	1,155	1,160	
OTHER DOMESTIC	109	205	164	169	169	132	111	195	188	170	170	170	
TOTAL	2,330	2,596	2,716	2,804	2,933	2,791	2,526	2,986	2,873	3,095	3,105	3,115	
<b>CARRYOVER</b>	<b>183</b>	<b>348</b>	<b>290</b>	<b>248</b>	<b>208</b>	<b>178</b>	<b>112</b>	<b>256</b>	449	517	552	594	
U.S.wtd. AVG. PRICE, \$/B	\$6.72	\$4.93	\$4.63	\$4.54	\$4.38	\$5.53	7.34	5.74	5.66	6.20	6.00	5.80	
Counter-Cyclical Pmt.						0.00	0.00	0.00	0.00	0.00	0.00	0.00	
IA. AVG. PRICE, \$/Bu.	6.67	4.83	4.53	4.44	4.34	5.53	7.24	5.64	5.56	6.10	5.90	5.70	
N.C.IA.HARV.PRICE	6.75	4.80	4.35	4.35	4.10	5.20	7.25	4.70	5.15	5.45	5.45	5.45	
MEAL DECATUR, \$/T 48¢	\$236	\$139	\$147	\$174	\$169	182.00	256	\$183	\$174	\$198	\$192	\$185	
SOY OIL, DECATUR	24.7	19.9	15.6	14.2	16.5	22.0	30.0	23.0	23.4	27.5	27.0	26.5	
NOV. FUT. AT HRV., \$/E	7.15	5.30	4.95	4.95	4.35	5.65	7.70	5.15	5.70	6.05	6.05	6.05	
Historical Probability										10%	20%	70%	
Weeks carryover supply	4.1	7.0	5.6	4.6	3.7	3.3	2.3	4.5	8.1	8.7	9.2	9.9	

11/09/06

## Soybean Balance Sheet (Mil. Bu.)

	2004-05	2005-06	Sept. forecast	Projected 2007-08			Projected 2008-09		
Supplies:			2006-07	A	B	C	A	B	C
Plant. A(mil.)	75.2	72.0	75.6	70.5	70.5	70.5	69.0	69	69
Harv.A.(mil)	74.0	71.3	74.5	69.6	69.8	69.9	68.1	68.3	68.4
Bu./A.	42.2	43.0	43.0	39.0	43.4	43.8	39.0	43.6	44.2
Production	3,124	3,063	3,204	2,714	3,029	3,062	2,656	2,978	3,023
Carryover	112	256.0	449	552	552	552	442	442	442
<b>Total Supply</b>	3,242	3,322	3657	3,278	3,587	3,616	3,103	3,425	3,470
Crush for oil	1,696	1,739	1,780	1,820	1,830	1,835	1,850	1,870	1,875
Crush for meal	1,696	1,739	1780	1745	1780	1785	1740	1755	1760
Seed & Residual	192	188	170	180	175	175	180	175	175
Exports	1,097	947	1155	1,090	1,140	1,135	880	1,120	1,125
<b>Total Utilization- for oil</b>	2,986	2,873	3105	3,090	3,145	3,145	2,910	3,165	3,175
Carryover - crushing for oil	256	449	552	188	442	471	193	260	295
Carryover - crushing for meal	256	449	552	263	492	521	303	375	410
<b>U.S. FARM PRICE</b>	\$5.74	\$5.66	\$6.00	\$7.80	6.10	6.10	\$7.55	6.30	5.90
IOWA AVE. PRICE, \$/Bu.	5.64	5.60	\$5.45	7.75	6.05	6.05	7.50	6.25	5.90
Counter-Cyclical Pmt.	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HARV. PRICE, C.IA	4.70	5.15	\$5.45	7.45	5.70	5.60	8.40	5.80	5.60
NOV. FUT. @ HARV.	\$5.15	\$5.70	\$6.05	\$7.85	\$6.20	\$6.10	\$8.80	\$6.25	\$6.10
Historical Probability				18%	65%	17%	18%	65%	17%
<b>Weeks carryover supply -- Oil crsh.</b>	4.5	8.1	9.2	3.2	7.3	7.8	3.4	4.3	4.8
MEAL DECATUR, \$/T 48%	\$184	\$175	192	\$198	\$169	\$171	\$174	\$173	\$162
SOY OIL, DECATUR, cts./Lb.	23.0	23.8	27.0	38.0	28.5	28.0	40.5	29.5	28.0
<b>Soybean/Corn Price ratio</b>	2.79	2.83	1.94	2.23	1.94	2.14	1.84	1.94	2.03
<b>U.S. Avg. corn price</b>	\$2.06	\$2.00	\$3.10	3.50	3.15	2.85	4.10	3.25	2.90
<b>Corn/Soybean Yld. Ratio</b>	3.80	3.44	3.52	3.74	3.61	3.68	3.74	3.62	3.69
<b>U.S. Avg. corn Yield</b>	160.4	147.9	151.2	146.0	156.5	161.0	146.0	158.0	163.0

## How Weather Resistant is Today's Corn?

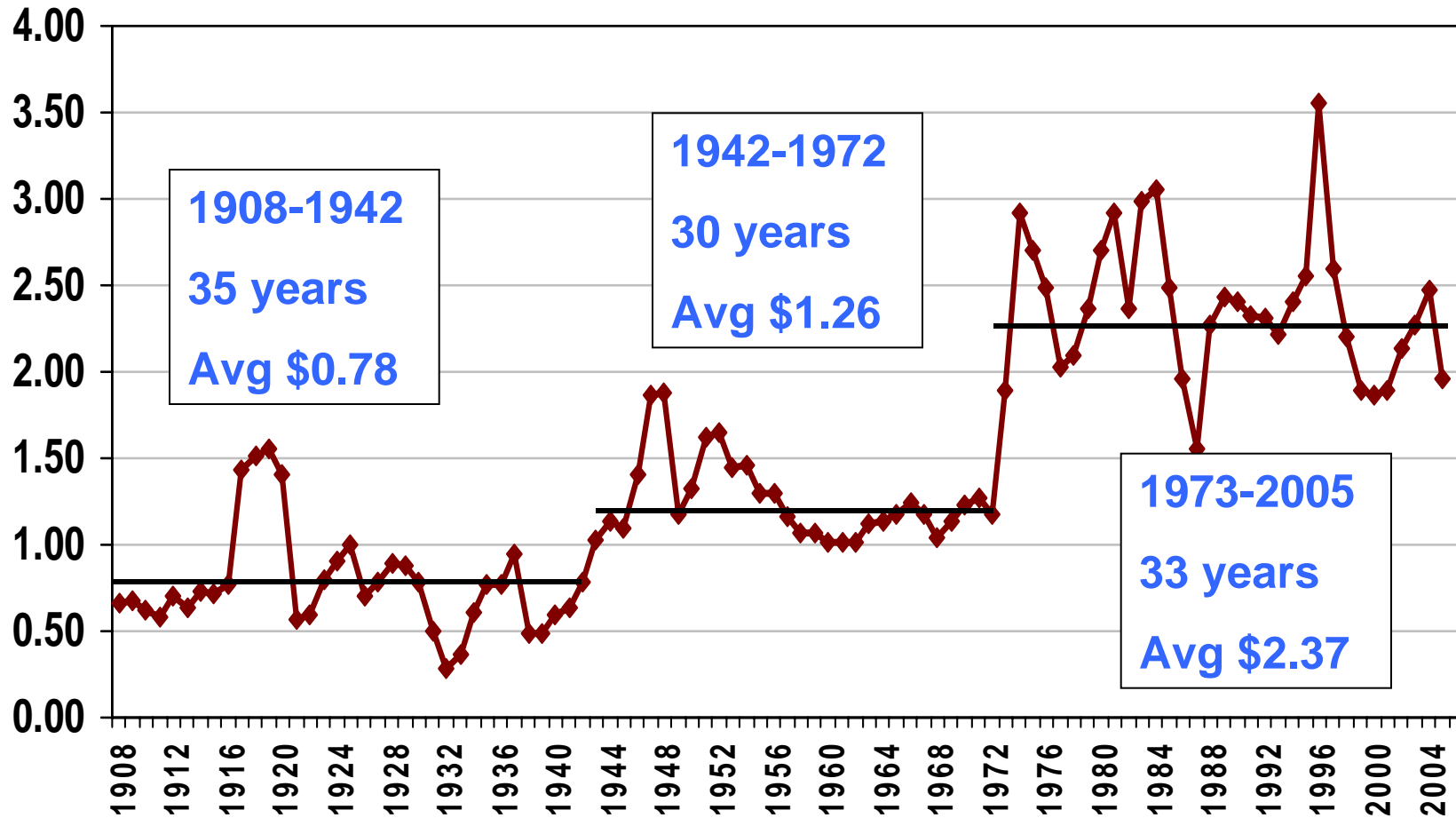
	Avg. Corn Yield/Bu.		% chg. Vs.
	2001	2002	2001
IL	152	136	-10.5%
IN	156	121	-22.4%
KS	127	116	-8.7%
KY	142	102	-28.2%
MO	133	105	-21.1%
NE	147	128	-12.9%
NC	125	83	-33.6%
OH	138	88	-36.2%
PA	98	68	-30.6%
SD	109	95	-12.8%
TN	132	107	-18.9%
TX	118	113	-4.2%
<b>US</b>	<b>138.2</b>	<b>130</b>	<b>-5.9%</b>
Trend Yld. 25 yr.	<b>138</b>	<b>140</b>	
Trnd. 1970-05	137.3	139.2	

# Illinois Corn Yields Drought Tolerant?

	<u>2004</u>	<u>2005</u>	% chg.
• NW	184	140	-24
• NE	174	129	-26
• WEST	192	141	-27
• E.SE.	175	139	-21
• SW	158	133	-16
• SE	158	130	-18

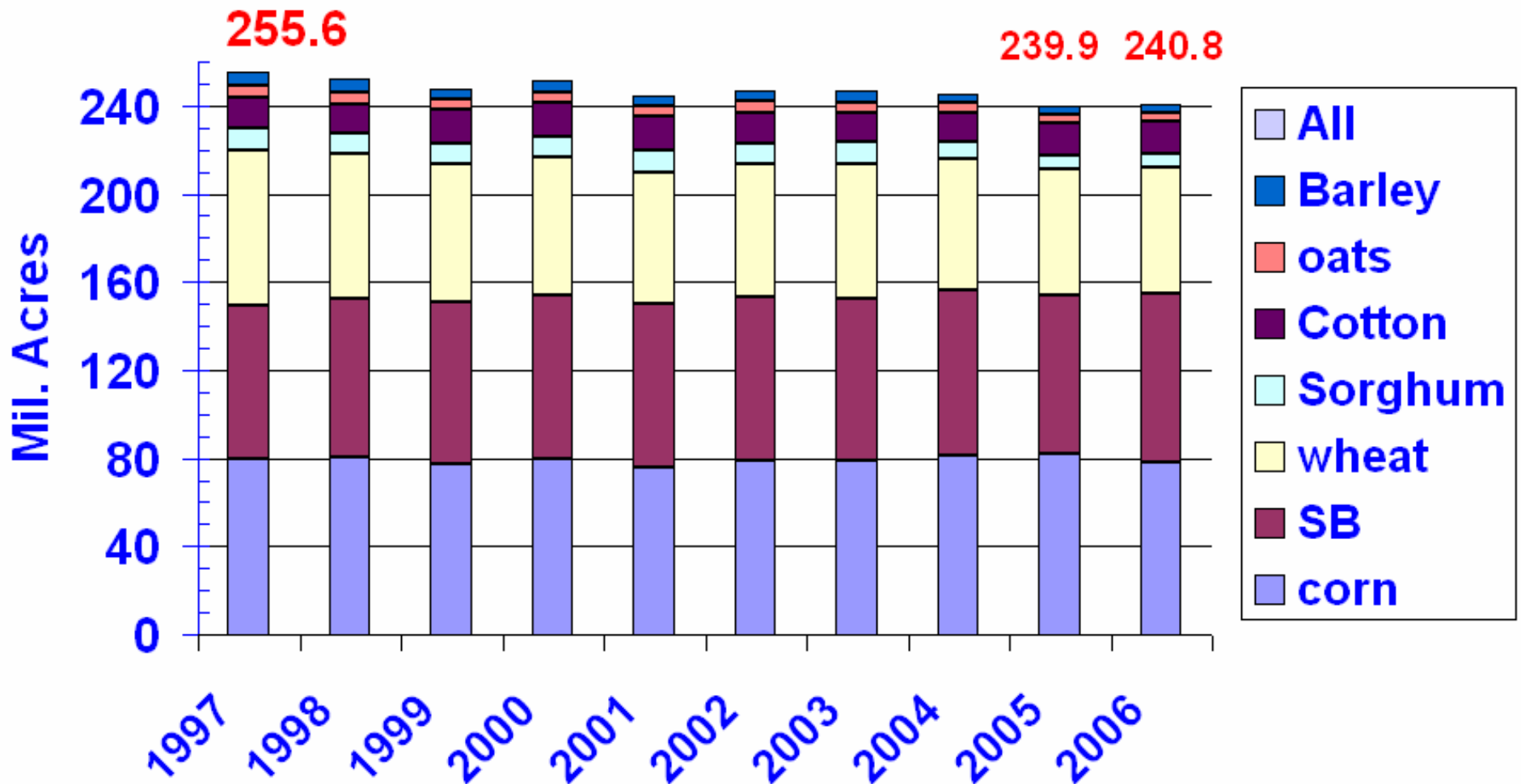
# U.S. Annual Average Corn Price, 1908-2005

\$ Per Bushel



Source: USDA/NASS

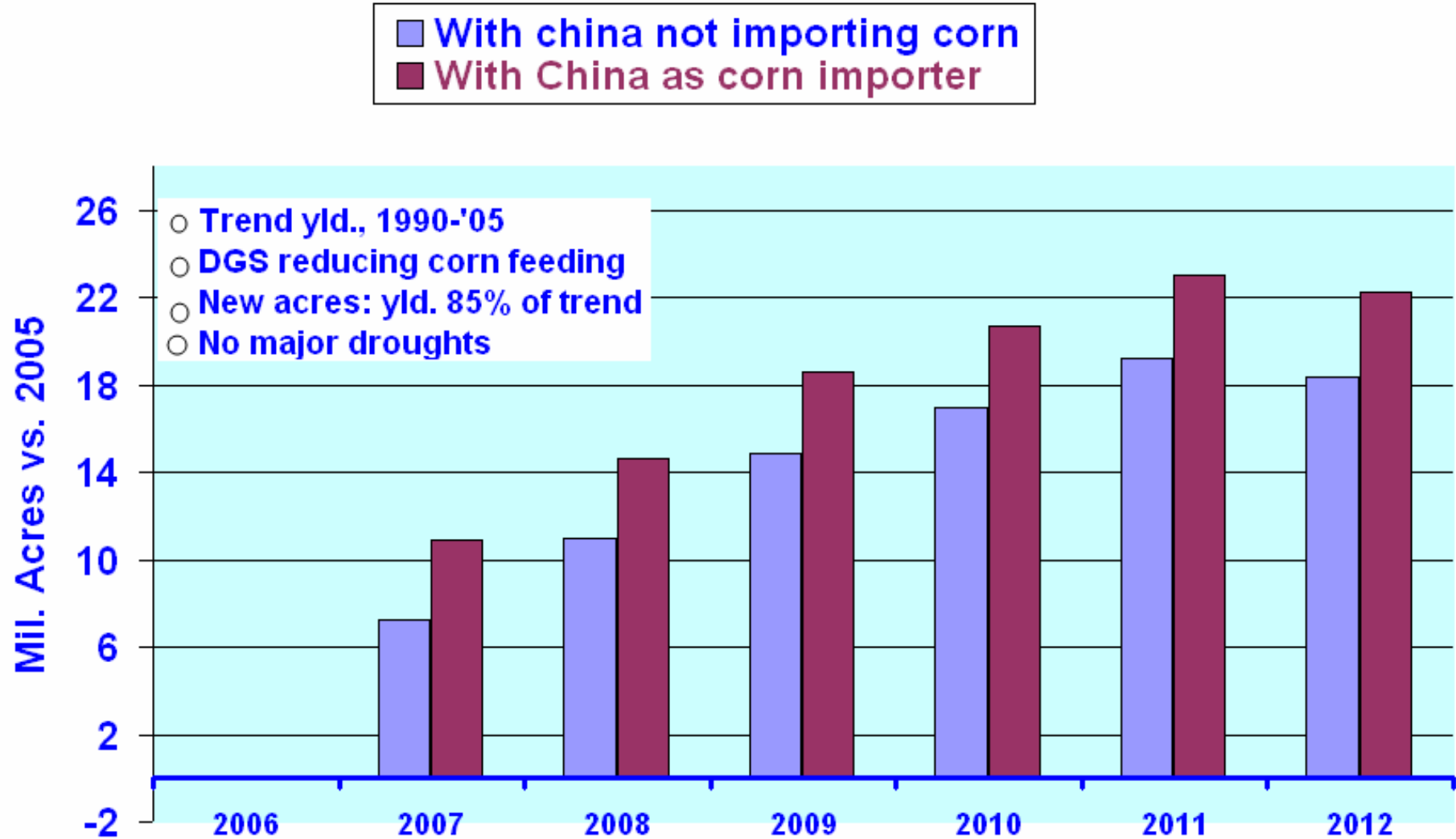
### Figure 3. U.S. Planted Acreage of Major Grains, Oilseeds, and Cotton



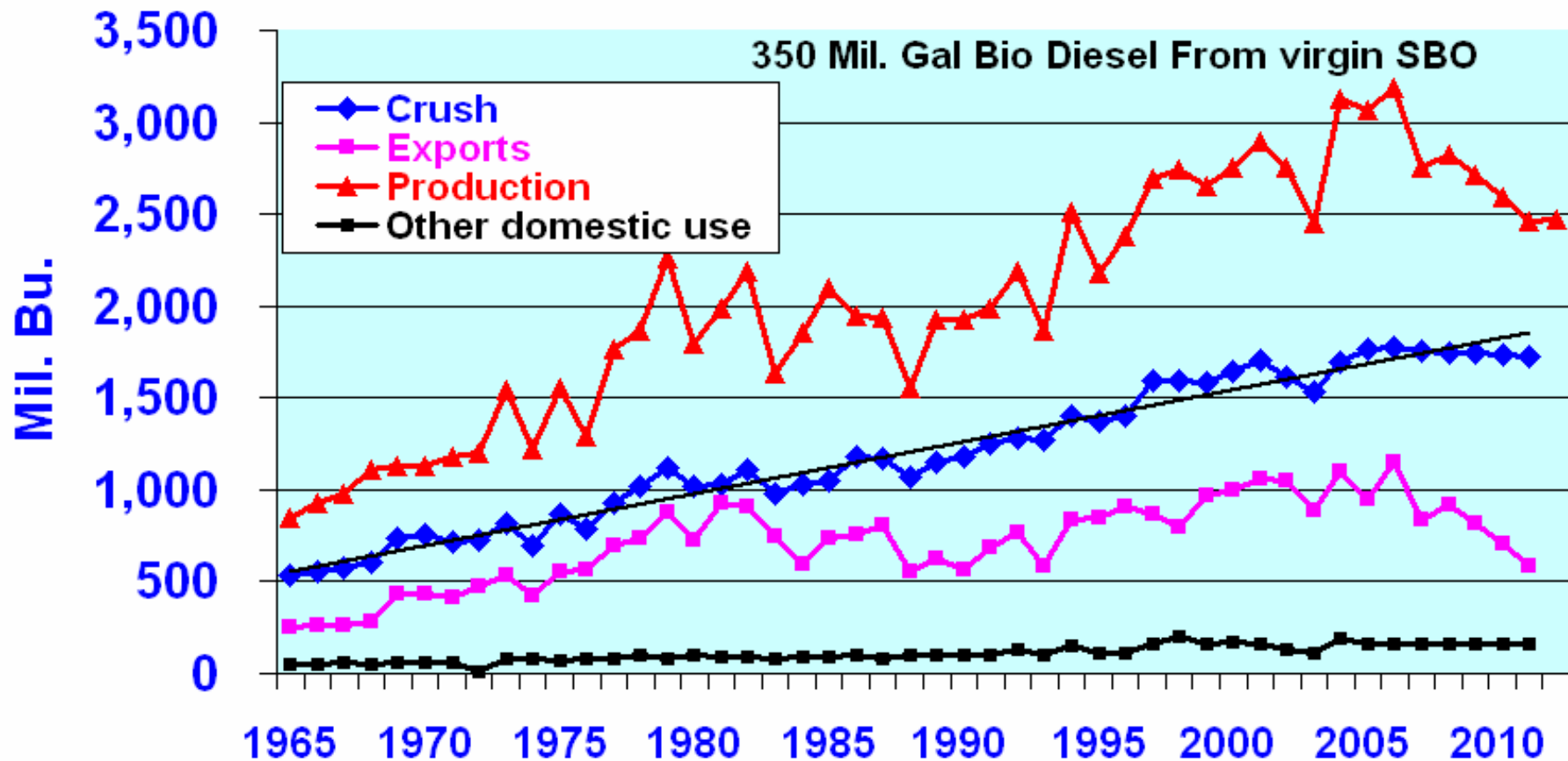
Source of data: USDA, NASS

## 5.5 Bil. Bu. For Ethanol

### Figure 4. Extra U.S. Corn Acres Needed to Maintain Exports & Projected Ethanol



**Figure 6. U.S. Soy Production, Use, & Exports to 2012  
With 5.5 bil. Bu. Corn for ethanol**



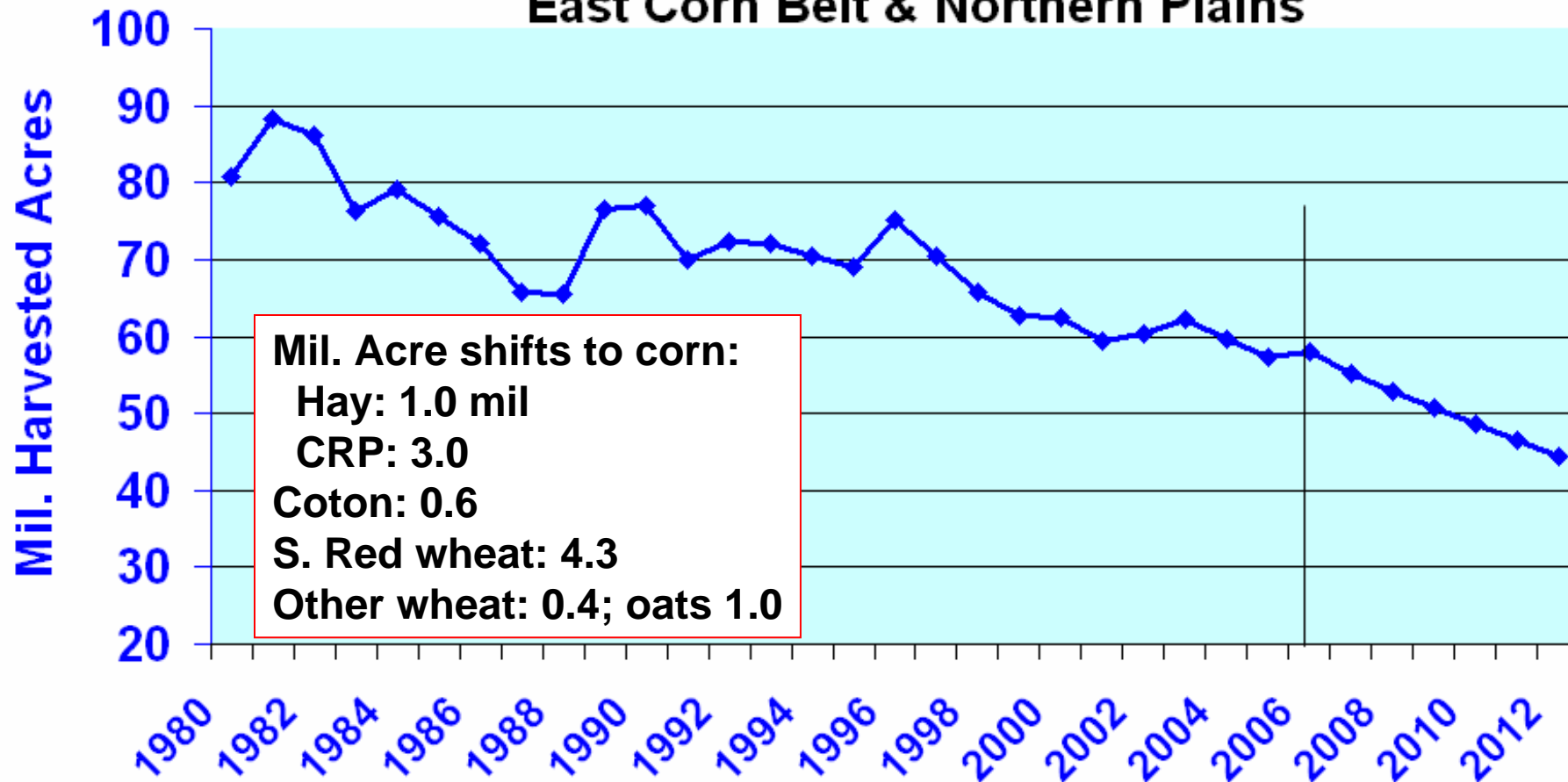
**Assumes trend yields. Increased DGS Prod'n in 2012-13 replaces soybean meal from about 440 mil. bu. of soybeans**

**5.5 bil. Gallons of Ethanol**

9/06/06

## U.S. Wheat Acres & Projections to 2012 With Expanding Corn Ethanol

Wheat acres shift to soybeans, & to corn in  
East Corn Belt & Northern Plains



# De-Trended Domestic Soy Oil Consumption & Price (Implications for Bio-diesel?)



# MINIMUM SOYOIL PRICE FOR BIODIESEL BREAKEVEN at GIVEN WORLD CRUDE OIL PRICE

PRX\_C\_US\_BA, GTB-06-03, Mar-14-06

		Crude Oil Price, \$/bbl								
		\$30.00	\$35.00	\$40.00	\$45.00	\$50.00	\$55.00	\$60.00	\$65.00	\$70.00
		Profitability of Biodiesel at given crude oil and soyoil prices, %\$/lb								
Soybean	\$0.19	(\$0.10)	\$0.02	\$0.14	\$0.25	\$0.37	\$0.49	\$0.61	\$0.73	\$0.85
Oil Price	\$0.20	(\$0.18)	(\$0.06)	\$0.06	\$0.18	\$0.30	\$0.42	\$0.54	\$0.66	\$0.78
\$/lb	\$0.21	(\$0.25)	(\$0.13)	(\$0.01)	\$0.11	\$0.23	\$0.35	\$0.47	\$0.58	\$0.70
	\$0.22	(\$0.32)	(\$0.20)	(\$0.08)	\$0.04	\$0.15	\$0.27	\$0.39	\$0.51	\$0.63
	\$0.23	(\$0.39)	(\$0.28)	(\$0.16)	(\$0.04)	\$0.08	\$0.20	\$0.32	\$0.44	\$0.56
	\$0.24	(\$0.47)	(\$0.35)	(\$0.23)	(\$0.11)	\$0.01	\$0.13	\$0.25	\$0.37	\$0.48
	\$0.25	(\$0.54)	(\$0.42)	(\$0.30)	(\$0.18)	(\$0.06)	\$0.05	\$0.17	\$0.29	\$0.41
	\$0.26	(\$0.61)	(\$0.49)	(\$0.38)	(\$0.26)	(\$0.14)	(\$0.02)	\$0.10	\$0.22	\$0.34
	\$0.27	(\$0.69)	(\$0.57)	(\$0.45)	(\$0.33)	(\$0.21)	(\$0.09)	\$0.03	\$0.15	\$0.27
	\$0.28	(\$0.76)	(\$0.64)	(\$0.52)	(\$0.40)	(\$0.28)	(\$0.16)	(\$0.05)	\$0.07	\$0.19
	\$0.29	(\$0.83)	(\$0.71)	(\$0.59)	(\$0.48)	(\$0.36)	(\$0.24)	(\$0.12)	\$0.00	\$0.12
	\$0.30	(\$0.91)	(\$0.79)	(\$0.67)	(\$0.55)	(\$0.43)	(\$0.31)	(\$0.19)	(\$0.07)	\$0.05
	\$0.31	(\$0.98)	(\$0.86)	(\$0.74)	(\$0.62)	(\$0.50)	(\$0.38)	(\$0.26)	(\$0.15)	(\$0.03)

For Blue Sky Scenario, PRX adopts a crude oil price of \$50/bbl and thus a minimum 24 cent/lb soyoil price, to evaluate impact of subsidized biodiesel market

Source: Dr. Terry Francel, American Farm Bureau Federation



# Key Issues for Agriculture

- **Alternative feedstocks: which ones, how soon?** Biomass, sweet sorghum, sugar beets, high-oil crops, cane sugar, others
- **Differential impacts on livestock & poultry species**
- **Environmental: continuous corn, off-take of biomass, erosion-prone land**
- **Efficient use of distillers grain, including new uses**
- **Risk Management: livestock, crops, ethanol**

# Key Issues for Agriculture, II

- **Future transition of corn-ethanol plants to other feedstocks**
- **Policy issues: import tax, blending credit, LDPs, CCPs, E-85 vs. E-10, pipeline possibilities, vehicle redesigning, Hydrogen sources**
- **Global developments: EC biodiesel, Brazil export potential, Asia, S. Africa bioenergy & global grain supply, demand & prices**
- **Infrastructure needs: grain handling & storage, transportation, ethanol & ddgs transport**
- **High Prices encourage oil exploration & conservation**

# What Could Change These Prospects?

- Accelerated corn yield increases
- Slowdown in ethanol expansion -- oil price collapse
- Break-through in economical biomass conversion
- Ethanol import tax removed – longer term impacts
- Declining livestock feeding

<http://www.econ.iastate.edu/faculty/wisner/>

**...and justice for all**

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