Ethanol & The Corn & Feed Grain Market Outlook for 2007-09

7/27/07

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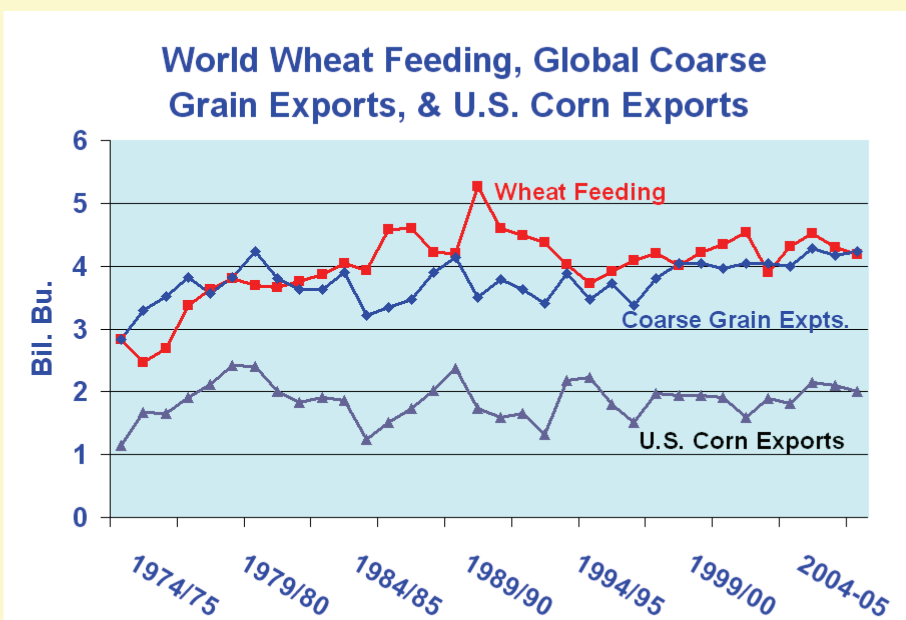
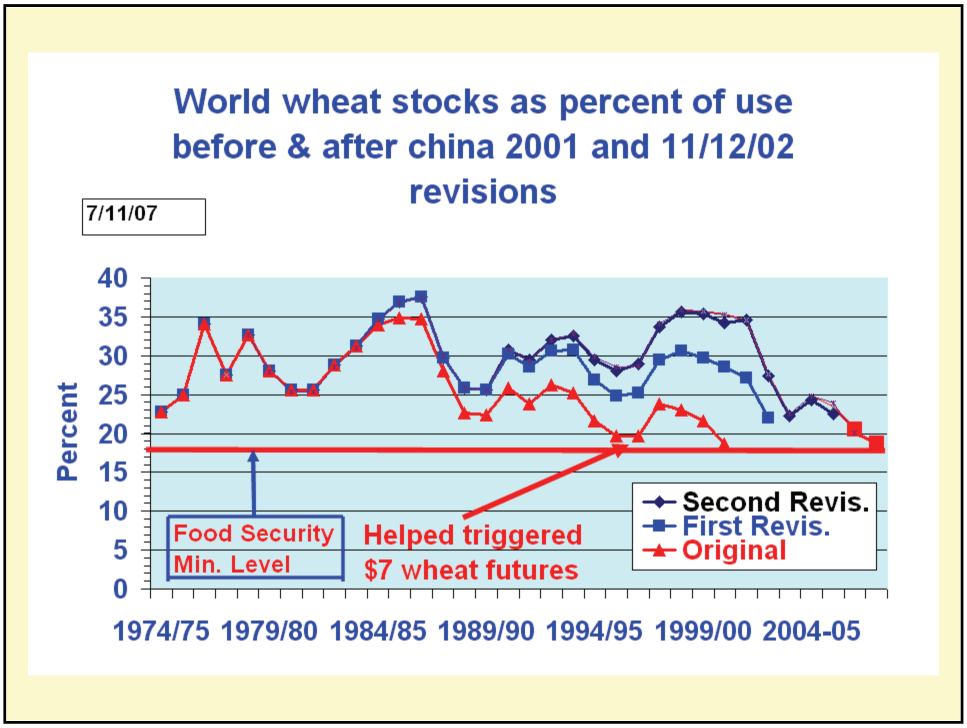
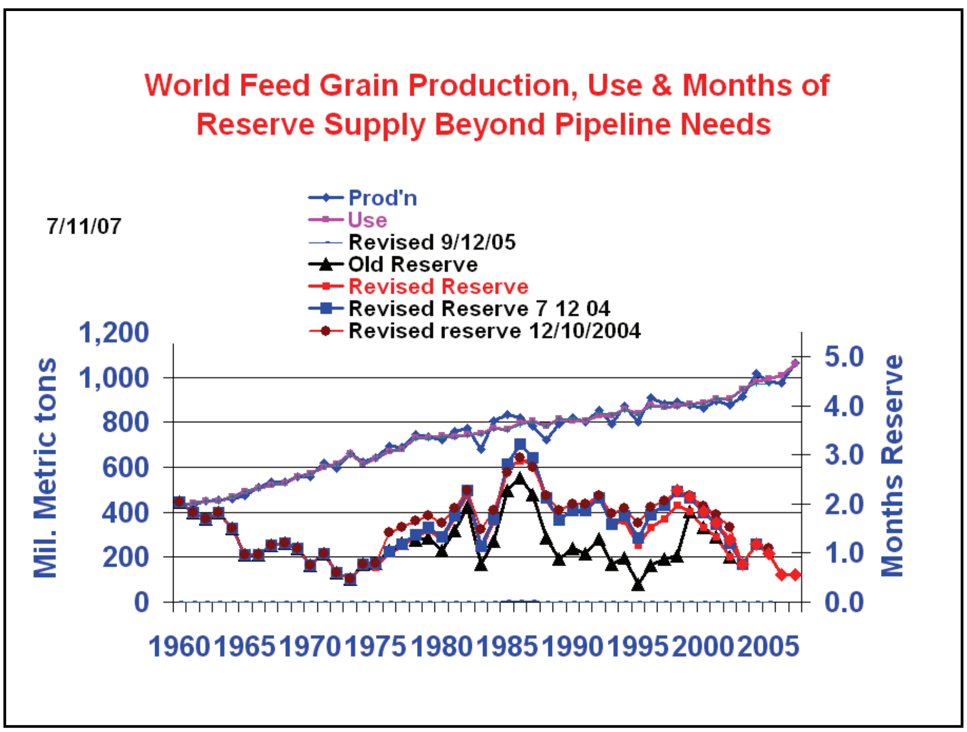
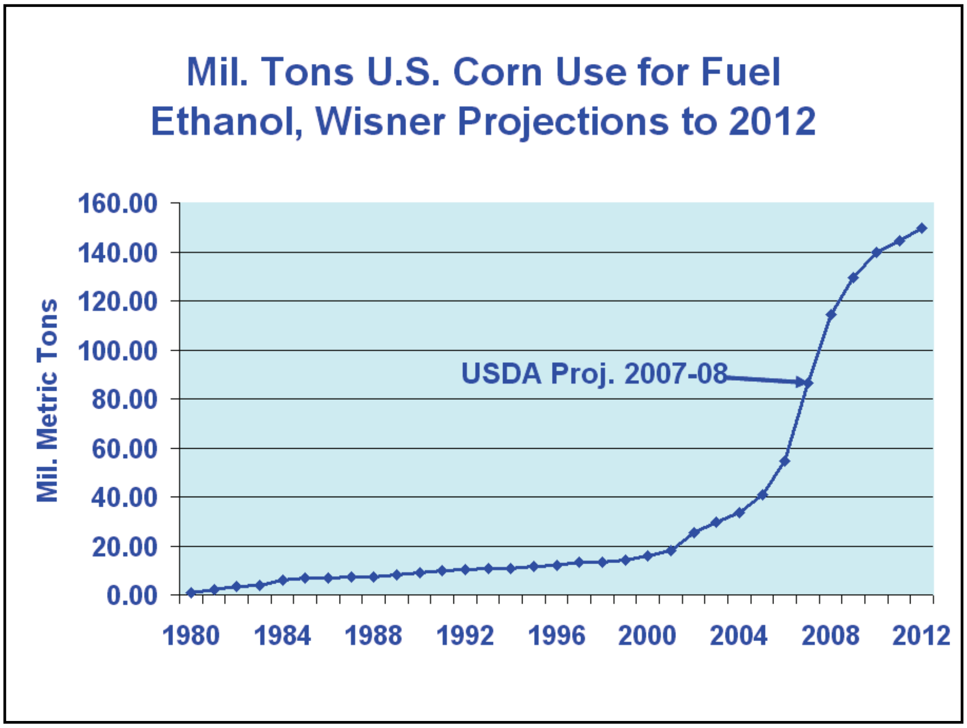
Ames, Iowa, U.S.A.

For presentation at the AAEA Annual Meeting, Portland, Oregon 7/31/07




World wheat stocks as percent of use before & after china 2001 and 11/12/02 revisions
7/11/07
Percent
40
35
30
25
20
15
10
5
0
Food Security Min. Level
Helped triggered $7 wheat futures
Second Revis.
First Revis.
Original
1974/75 1979/80 1984/85 1989/90 1994/95 1999/00 2004-05


World Feed Grain Production, Use & Months of Reserve Supply Beyond Pipeline Needs
7/11/07
Prod'n
Use
Revised 9/12/05
Old Reserve
Revised Reserve
Revised Reserve 7 12 04
Revised reserve 12/10/2004
Mil. Metric tons
1,200
1,000
800
600
400
200
0
Months Reserve
5.0
4.0
3.0
2.0
1.0
0.0
1960 1965 1970 1975 1980 1985 1990 1995 2000 2005



41 countries encourage biofuels

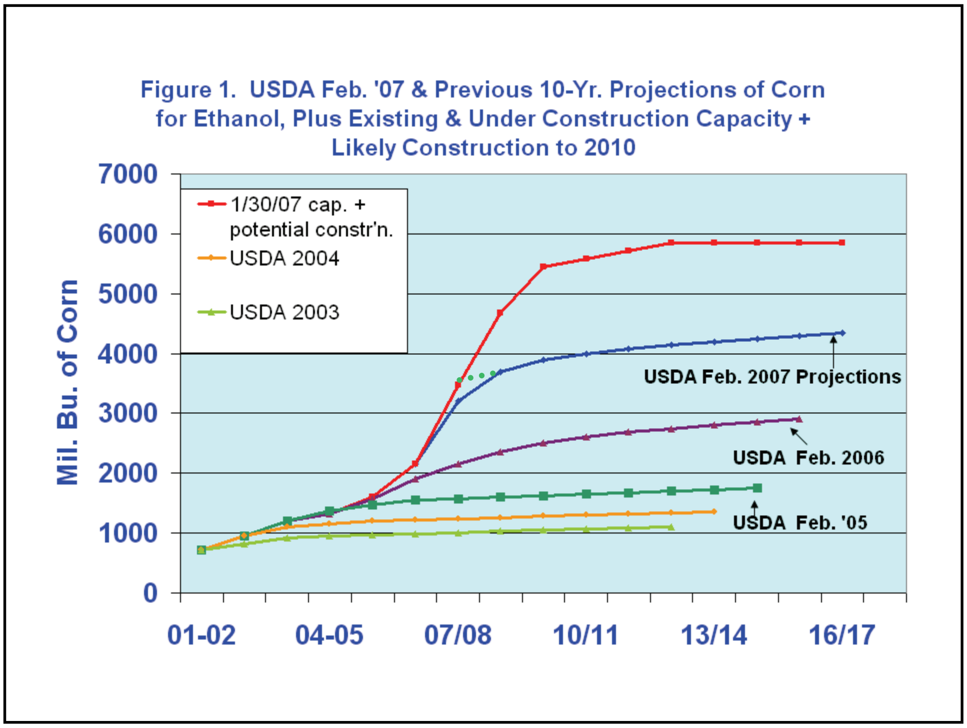
Major Countries with Ethanol Fuels

- U.S., Canada
- China, Brazil
- EU-27
- Thailand

Countries considering ethanol fuels

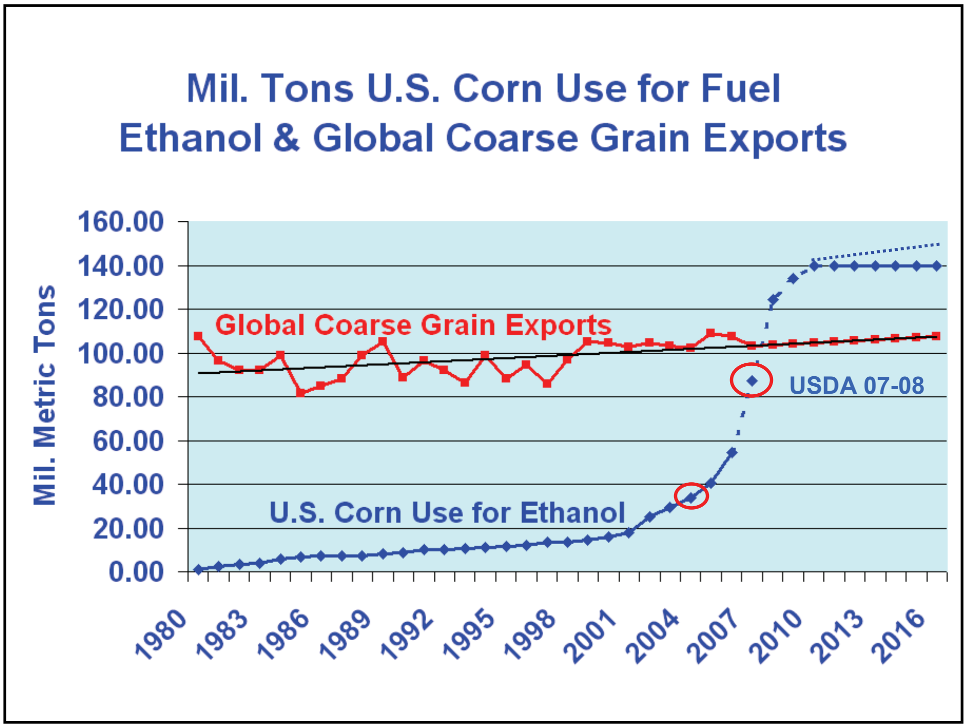
- South Africa
- Ukraine
- Japan

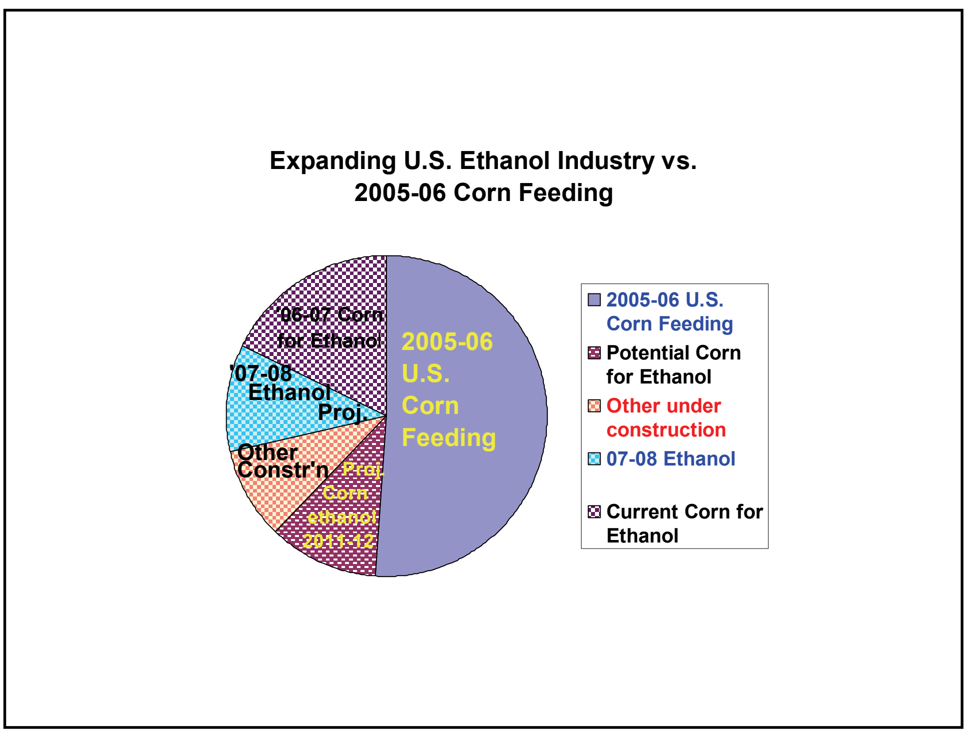
Biodiesel– Competition for crop land



International Impacts

- U.S. ethanol plants under construction to use 58 mil. tons of corn (doubling use)
  - 3.5 times the volume of Japan imports of U.S. corn
  - 130% of 2006 EU corn crop
  - 70% of global corn exports
- Other countries are expanding ethanol & biodiesel
- Strong negative impacts on animal ag.
- Higher food costs ahead
- Major risk-management challenges in Ag. & bioenergy


Mil. Tons U.S. Corn Use for Fuel
Ethanol & Global Coarse Grain Exports
Mil. Metric Tons
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Global Coarse Grain Exports
USDA 07-08
U.S. Corn Use for Ethanol
1980
1983
1986
1989
1992
1995
1998
2001
2004
2007
2010
2013
2016


Expanding U.S. Ethanol Industry vs.
2005-06 Corn Feeding
2005-06
U.S.
Corn
Feeding
'06-07 Corn
for Ethanol
'07-08
Ethanol
Proj.
Other
Constr'n
Proj
Corn
ethanol
2011-12
2005-06 U.S. Corn Feeding
Potential Corn for Ethanol
Other under construction
07-08 Ethanol
Current Corn for Ethanol

Corn Processing Plants in and Near Iowa, 7/25/07, Est. Mil. Bu.
Processing Capacity, Ethanol & Other Processing Excl. Feed

Operating Plants

Albert Lea, MN*	16.4
Albert City	36
Ashton	36
Blair, NE*	32
Blairstown	3
Cedar Rapids	389
Charles City	40
Clinton	180
Coon Rapids	18
Corning (may go to 38 mil. Bu.)	23
Denison	20
Eddyville	76
Emmetsburg	19
Faribank	38
Ft. Dodge	40
Galva	10
Goldfield	19
Gowrie	22
Hanlontown	20
Hopkinton (Uses sugar & strach)	0.7
Iowa Falls	40
Jewell	24
Keokuck	47
Lakota	36
Luvurne, MN*	8
Marcus	18
Mason City	36.4
Muscatine	49
Nevada	19
Sioux Center	9
Steamboat Rock	7
W. Burlington	19
Sub-total, operating	**1,294**

*Total excludes out-of-state Proccessing

P = Proposed, C = Under Construction,

E= Expansion of existing plant

Planned, Part I

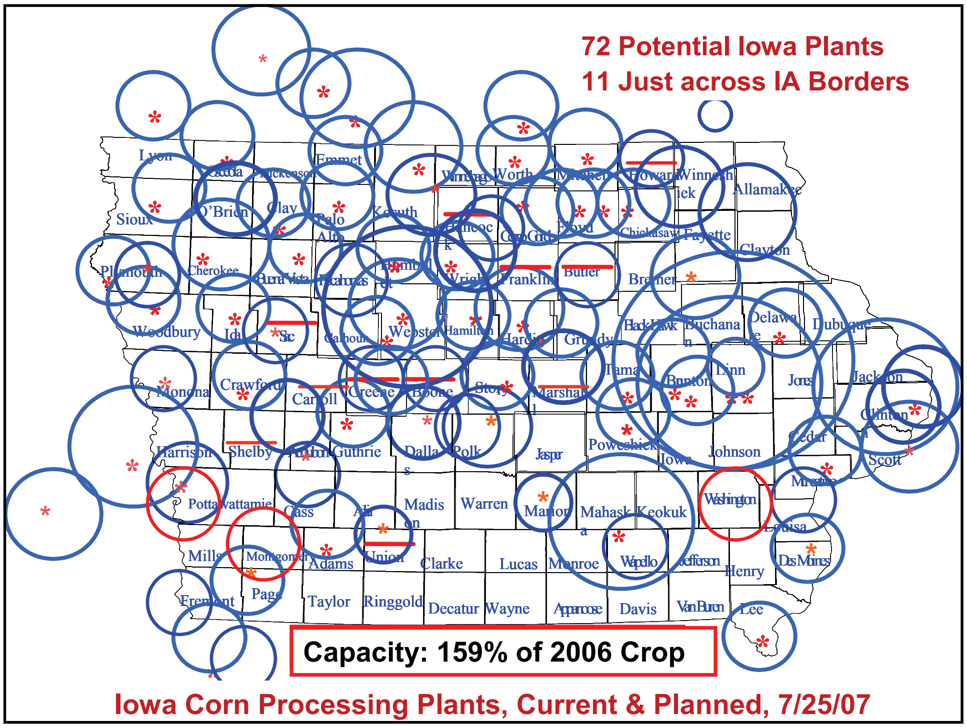
ADM Expansion (cedar rapids & clinton)	190
Akron - P	38
Arthur - P	36
Ashton - E	20
Atlantic - P	19
Belmond - P	38
Blair, NE* - E	38
Blairstown-- P-E	13
Partial Sub-total, planned	**354**

Planned or under construction, II

Belmond - P	38
Blair, NE* - E	38
Blenco - P	38
Buffalo - P	38
Butler County - P	36
Burlington expansion E	36
Cedar Rapids -Penford - C	15
Columbus Junction- P	27
Coon Rapids - E- P	20
Council Bluffs - C	42
Creston - P	18
Des Moines P	38
Dexter - C	38
Dyersville- C	37
Eddyville	40
Emmetsburg- E	18
Fairmont, MN -- C	41.2
Ft. Dodge new plant - P	73
Ft. Dodge Expansion - C	38
Garner-P	38
Green County - P	70
Grinnell - C	38
Hancock co.-P	38
Hartly - C	40
Hinton - P	38
Manchester- P	38
Marcus expansion - E	18
Marion co. - P	20
Marshaltown - P	38
Menlo - C	38
Merrill - C	18
New Hampton - P	18
Odebolt - P	45
Ogden - P	36
Ottumwa - P	18
Pleasantville- P	38
Pocohontos Co. - P	38
Postville - P	42
Quad Cities - Galva, IL 38- P	38
Red Oak - p	18
Salix - P	19
Shenandoah - C	18
Sioux Center - E	13
Spencer - P	38
Staceyville - P	38
St. Ansgar - C	38
Superior - C	18
Tama - C	38
Wesley - P	37
W. Des Moines - P	36
Winnesheik county - P	38
Total, planned	**1,960**

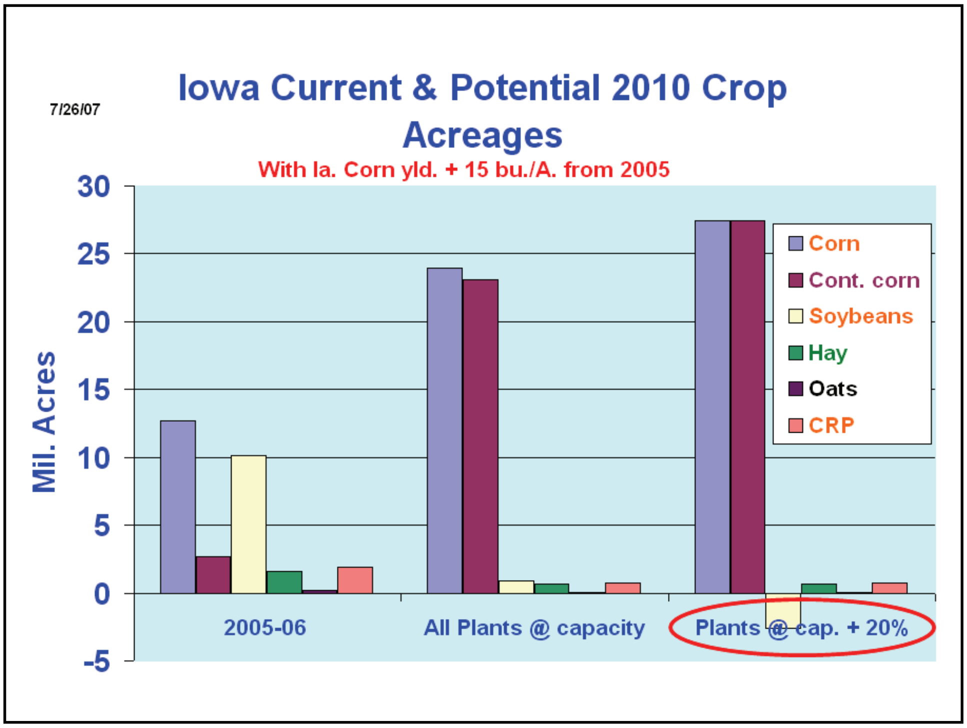
Grand total processing, all, rated capacity 3,254 Mil. Bu.

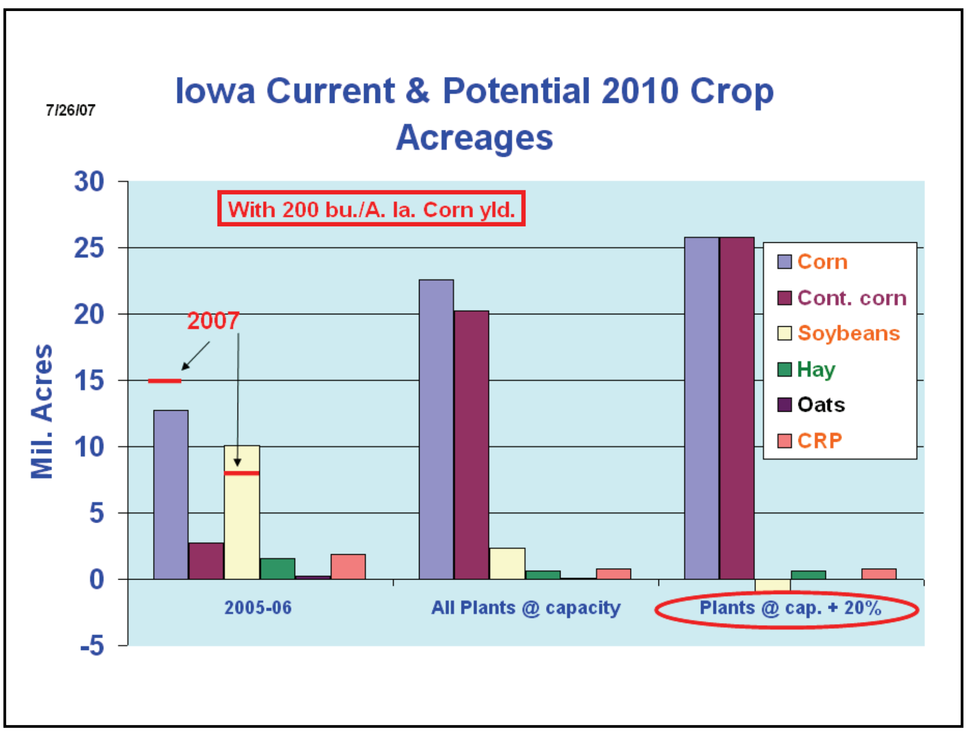
Iowa Corn Processing, 7/23/07	No. plants	Mil. Bu.	of '06 Crop
Total operating	30	1,294	63%
Total Under Construction or expansion	10	447	22%
Total Planned, not yet under construction	34	1,513	74%
Grand Total (adjusting for plant expansions)	71	3,254	159%



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

7/26/07	2005-06 05/06 processing Capacity	Current & Planned plants @ rated capacity	Current & Planned plants @ 120% capacity
2005 corn crop	2,163	2,163	2,163
Less feed use	700	700	700
Less processing	908	3,254	3,905
Plus corn replaced by DGS	45	45	45
Avail. For Export	600	-1,746	-2,397
7/26/07 process. Cap.	1,294		
Est.2007 Mil. Harv. Acres	13.5		
Yield, 2005, Bu./A.	173		
2005 Trend Yield, Bu/A.	159		
2009 Trend Yld., Bu./A.	167		
Yield needed to maintain exports (@ '07 A.)		334.0	382.2
Acreage needed @ 2005 yield		26.1	29.8
Acreage needed @ 2009 trend yield		27.0	30.9
Acreage needed @ 2005 yield+15 bu./A.		24.0	27.4


7/26/07
Iowa Current & Potential 2010 Crop Acreages
With Ia. Corn yld. + 15 bu./A. from 2005
Mil. Acres
30
25
20
15
10
5
0
-5
Corn
Cont. corn
Soybeans
Hay
Oats
CRP
2005-06
All Plants @ capacity
Plants @ cap. + 20%

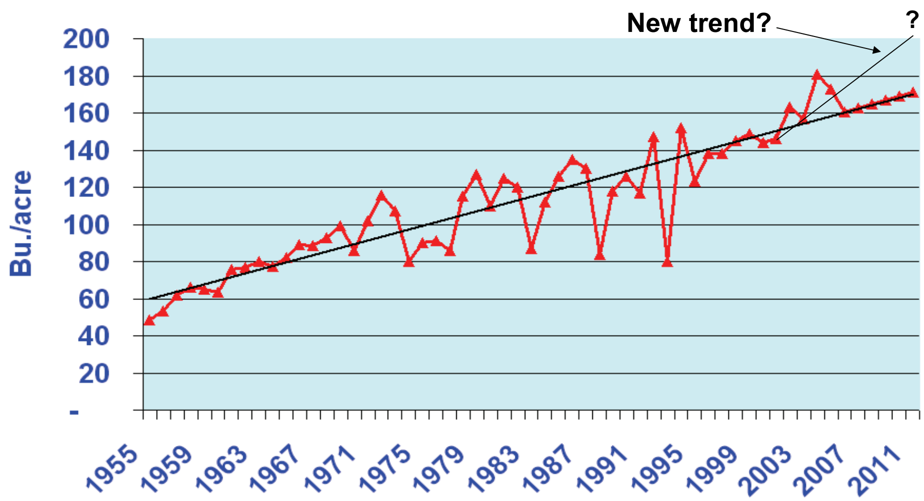

7/26/07
Iowa Current & Potential 2010 Crop Acreages
With 200 bu./A. Ia. Corn yld.
2007
Mil. Acres
30
25
20
15
10
5
0
-5
Corn
Cont. corn
Soybeans
Hay
Oats
CRP
2005-06
All Plants @ capacity
Plants @ cap. + 20%

June 2007

Needed Yld. @ 2007 Acres

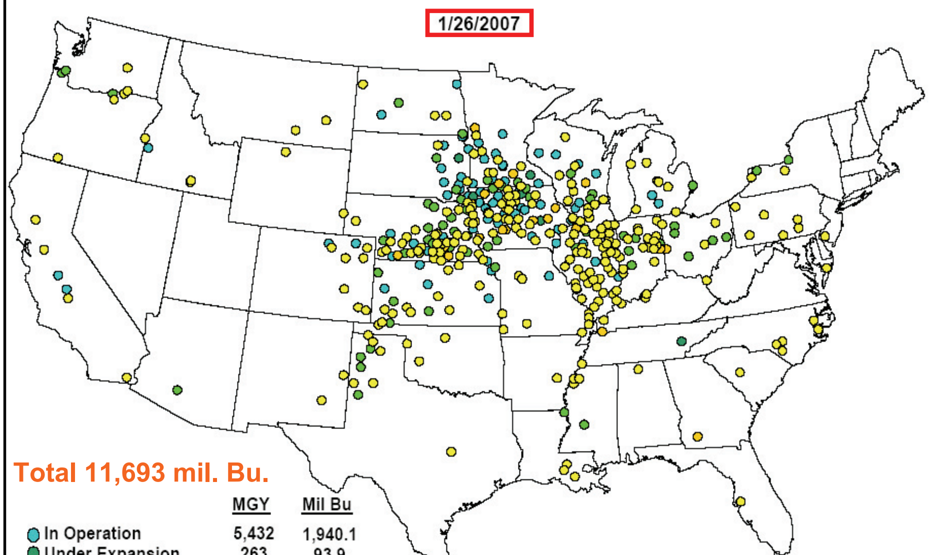
334 bu./A. @ ethanol plant rated cap.

Iowa Corn Yield Per Acre



US Ethanol Plants

1/26/2007



Total 11,693 mil. Bu.

	MGY	Mil Bu
In Operation	5,432	1,940.1
Under Expansion	263	93.9
Under Construction	4,872	1,740.0
Ground Broken	2,463	879.6
Planned	19,710	7,039.3

Plants "Under Construction" have broken ground and have poured concrete. Plants that have "broken ground" have begun site work but no actual construction. Plants that are "planned" have been talked about or announced in the news.

How Much More U.S. Construction to Reach 5.5 Bil. Bu. Corn for Ethanol?

- Operating plants:
  -- 2.15 Bil. Bu.
- Plants under construction:
  -- 2.0 Bil. Bu.
- Plants soon to build:
  -- 0.2 Bil. Bu.

Total: 4.35 Bil. Bu.

Capacity needed:

1.15 Bil. Bu.

(About 32 plants @ 100 mil. gal./yr.)

Prospective Number of future Ethaonl Plants, 7/25/07 (Excludes Current Plants)

	Under Constr'n	Planned Plants	Total to build
Iowa	13	27	40
Indiana	7	30	37
Illinois	4	56	60
Kansas	6	10	16
Michigan	3	5	8
Minnesota	6	7	13
Missouri	1	9	10
Nebraska	14	36	50
Ohio	12	7	19
S. Dakota	4	4	8
Wisconsin	4	10	14
Corn Belt Total	74	201	275
Non-Corn Belt			
California	3	14	17
Colorado	1	14	15
Idaho	2	1	3
New York	3	6	9
N. Carolina	1	6	7
Penn.	1	7	8
Texas	5	11	16
Other non-Corn Belt	11	83	94
Total non-Corn Belt	27	128	155
U.S. Total	101	329	430

Plant Numbers Sources: Renewable Fuels Association http://www.ethanol.org/index.php?id=37&parentid=8#USEthanolFacilities & DTN Ethanol Web Site, http://www.dtnethanolcenter.com/index.cfm?show=47&mid=48

Prospective Number of future Ethaonl Plants, 7/25/07 (Excludes Current Plants)

	M. Bu. Current Plnt. Cap.	Mil. Bu. Constr'n	No. Planned Plants	2006 Mil. Bu. Corn Prod'n	Corn needed @ avg. 70 mil. Gal./planned plant
Iowa	931	447	27	2,050	2,891
IA. Non-eth. Plants	363				
Iowa total	1,294		1,513 mil. Bu.	2,050	3,254
Indiana	114	212	30	845	1,091
Illinois	136	106	56	1,818	1,670
Kansas	77	127	10	345	459
Michigan	77	25	5	288	230
Minnesota	191	157	7	1,103	526
Missouri	56	15	9	363	301
Nebraska	228	391	36	1,178	1,537
Ohio	--	164	7	471	343
S. Dakota	228	4	4	312	334
Wisconsin	102	4	10	400	361
Corn Belt Total	3,796	1,652	201	9,173	10,573
Non-Corn Belt					
California	23	45	14	18	425
Colorado	31	18	14	134	406
Idaho	--	26	1	11	52
New York	--	55	6	62	208
N. Carolina	--	26	6	98	179
Penn.	--	73	7	117	252
Texas	--	98	11	175	379
Other non-Corn Belt	144	177	69	221	2,081
Total non-Corn Belt	198	518	128	836	3,980
U.S. Total	3,994	2,170	329	10,535	14,554

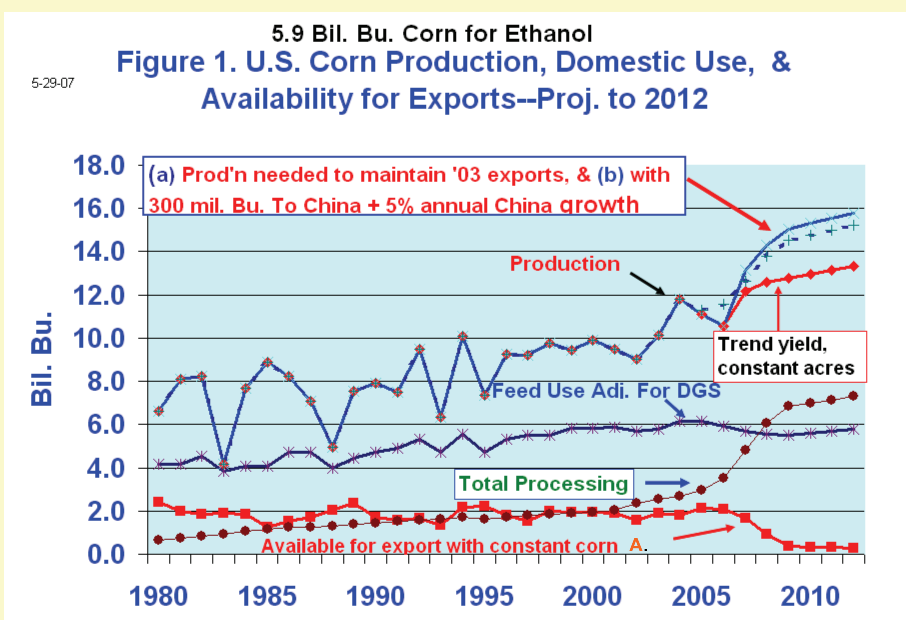
Note: Non-IA states exclude other corn processing (Total of 1,200 mil. Bu.

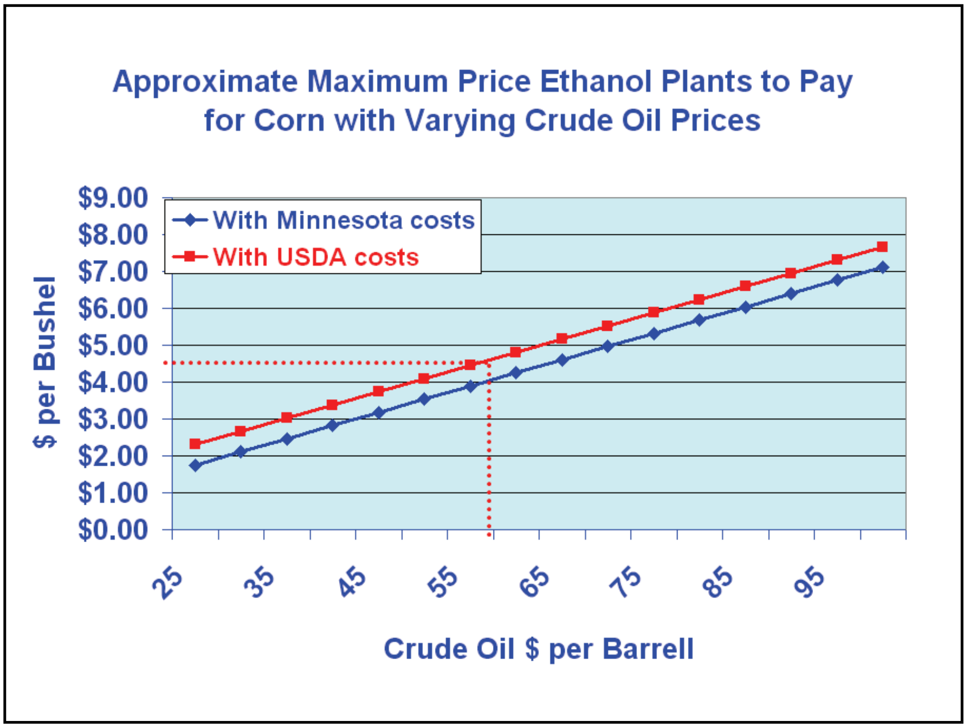
(Potential about 40 bil. Gal. of ethanol if all are built)

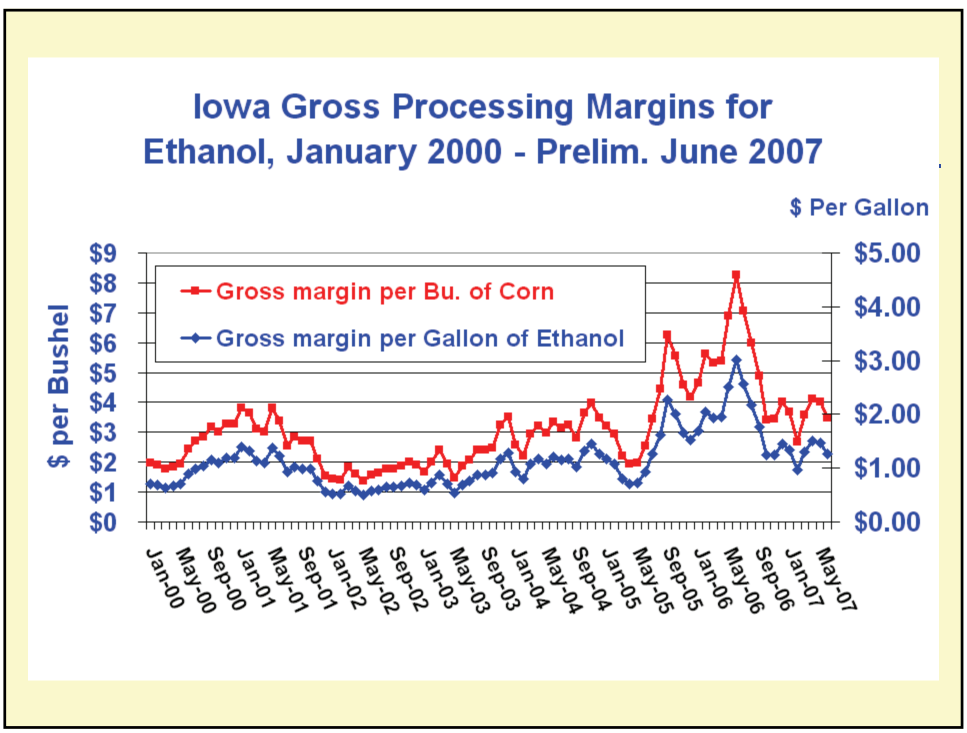
Plant Numbers & Capacity Sources: Renewable Fuels Association & DTN Ethanol Web Site.

http://www.ethanol.org/index.php?id=37&parentid=8#USEthanolFacilities

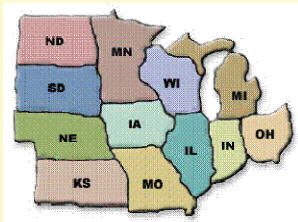
http://www.dtnethanolcenter.com/index.cfm?show=47&mid=48




Approximate Maximum Price Ethanol Plants to Pay for Corn with Varying Crude Oil Prices
$9.00
$8.00
$7.00
$6.00
$5.00
$4.00
$3.00
$2.00
$1.00
$0.00
$ per Bushel
With Minnesota costs
With USDA costs
25
35
45
55
65
75
85
95
Crude Oil $ per Barrell


Iowa Gross Processing Margins for Ethanol, January 2000 - Prelim. June 2007
$ Per Gallon
$9
$8
$7
$6
$5
$4
$3
$2
$1
$0
$ per Bushel
$5.00
$4.00
$3.00
$2.00
$1.00
$0.00
Gross margin per Bu. of Corn
Gross margin per Gallon of Ethanol
Jan-00
May-00
Sep-00
Jan-01
May-01
Sep-01
Jan-02
May-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
May-06
Sep-06
Jan-07
May-07

State Avg. Ethanol Rack Prices



Date: Wed., May 30, 2007

Iowa: 2.393

Illinois: 2.398

Kansas: 2.602

Michigan: 2.610

Minnesota: 2.387

Missouri: 2.412

North Dakota: 2.454

Nebraska: 2.479

South Dakota: 2.463

Wisconsin: 2.564

Averages provided by:

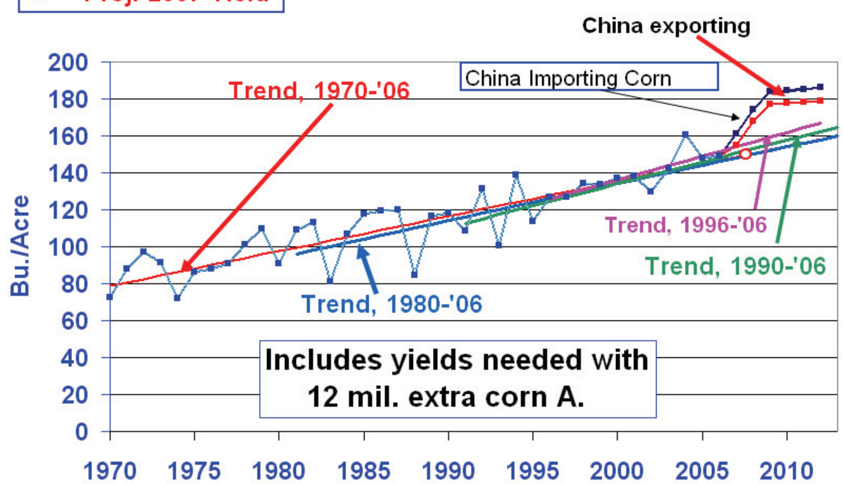
AXXIS SOFTWARE ispetro.com

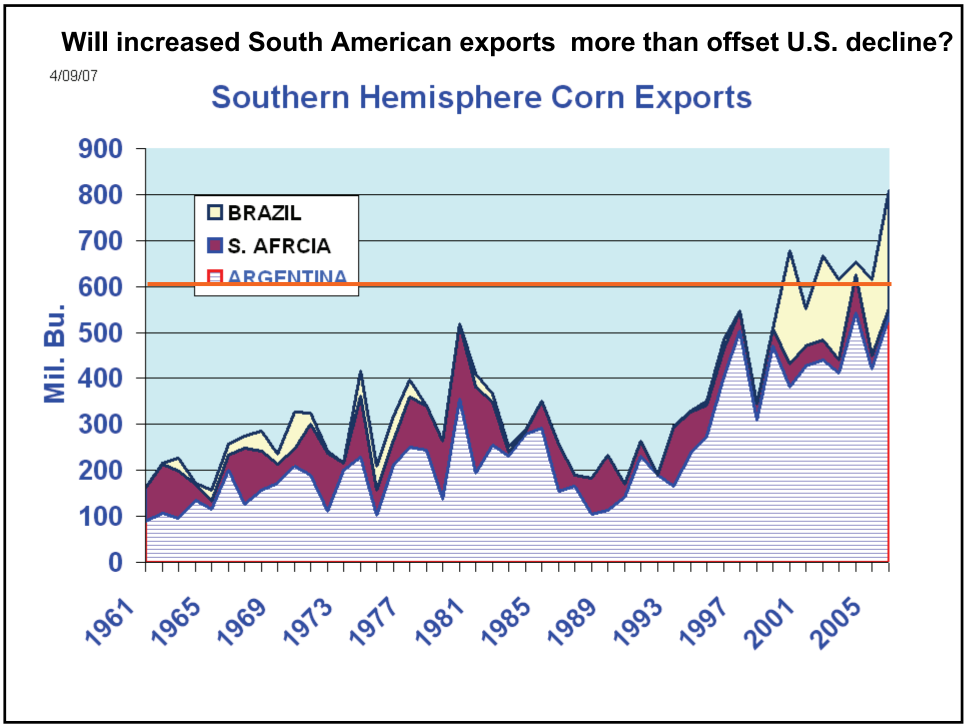
american coalition for ethanol www.ethanol.org

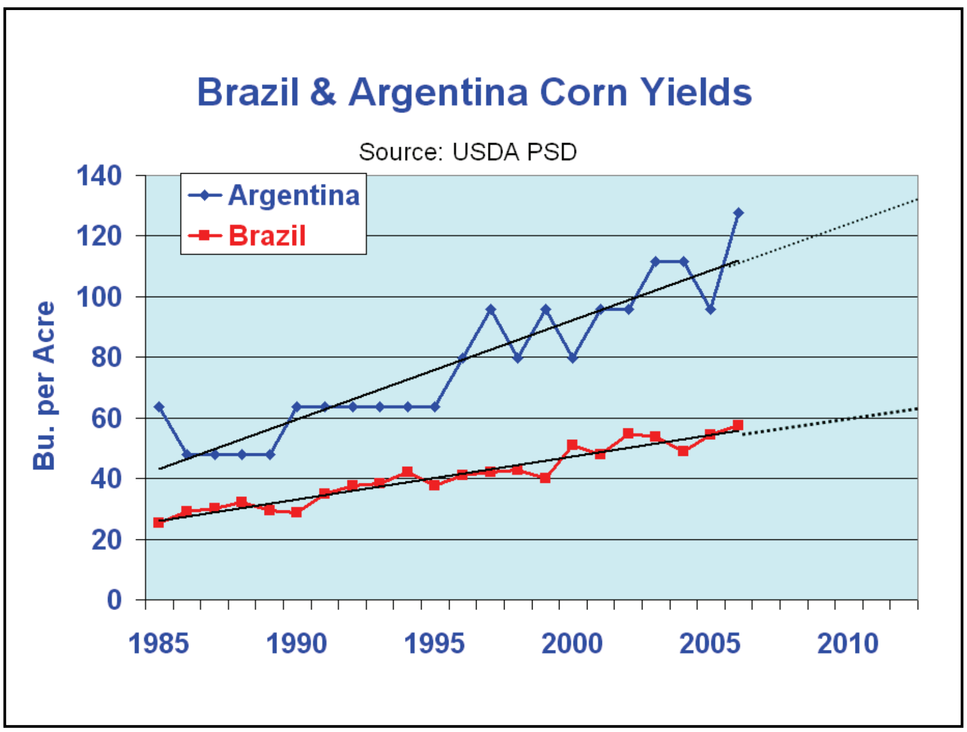
5.9 Bil. Bu. Corn for ethanol by 2012

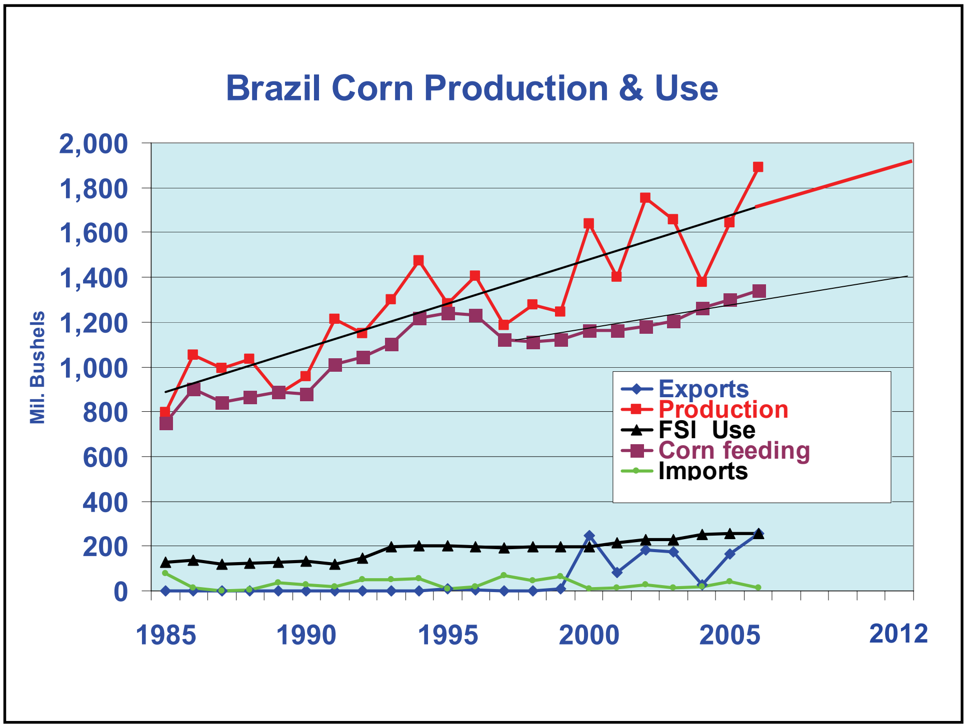
Figure 2. US CORN YIELD 1970-2006 & Needed by 2012

o = Proj. 2007 Yield




Will increased South American exports more than offset U.S. decline?
4/09/07
Southern Hemisphere Corn Exports
900
800
700
600
500
400
300
200
100
0
Mil. Bu.
BRAZIL
S. AFRCIA
ARGENTINA
1961
1965
1969
1973
1977
1981
1985
1989
1993
1997
2001
2005

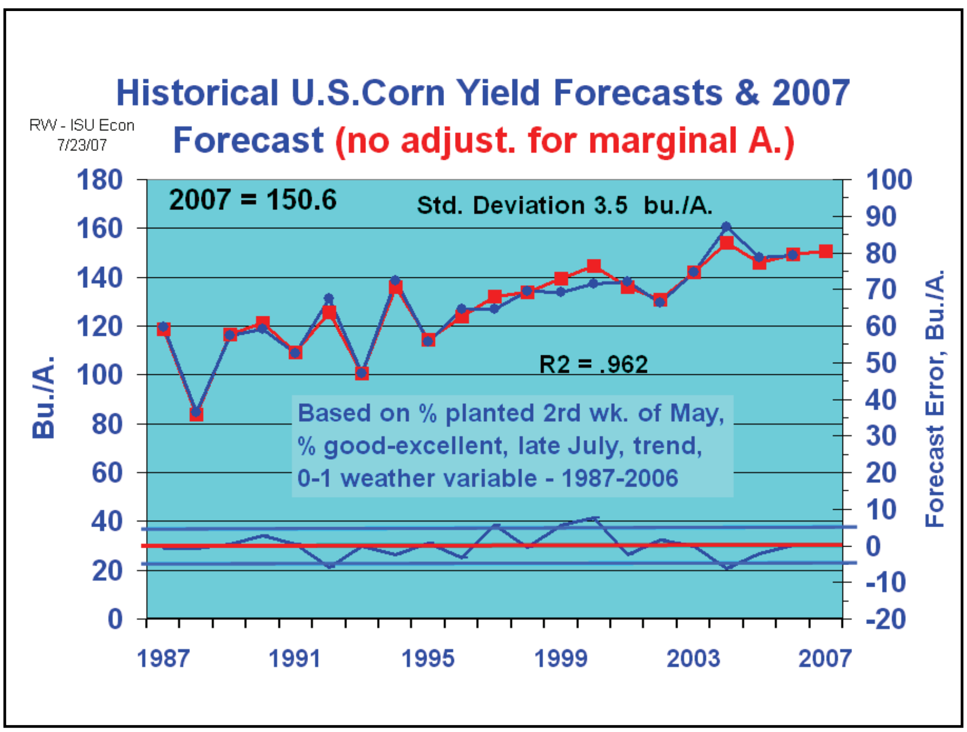

Brazil & Argentina Corn Yields
Source: USDA PSD
140
120
100
80
60
40
20
0
Bu. per Acre
Argentina
Brazil
1985
1990
1995
2000
2005
2010

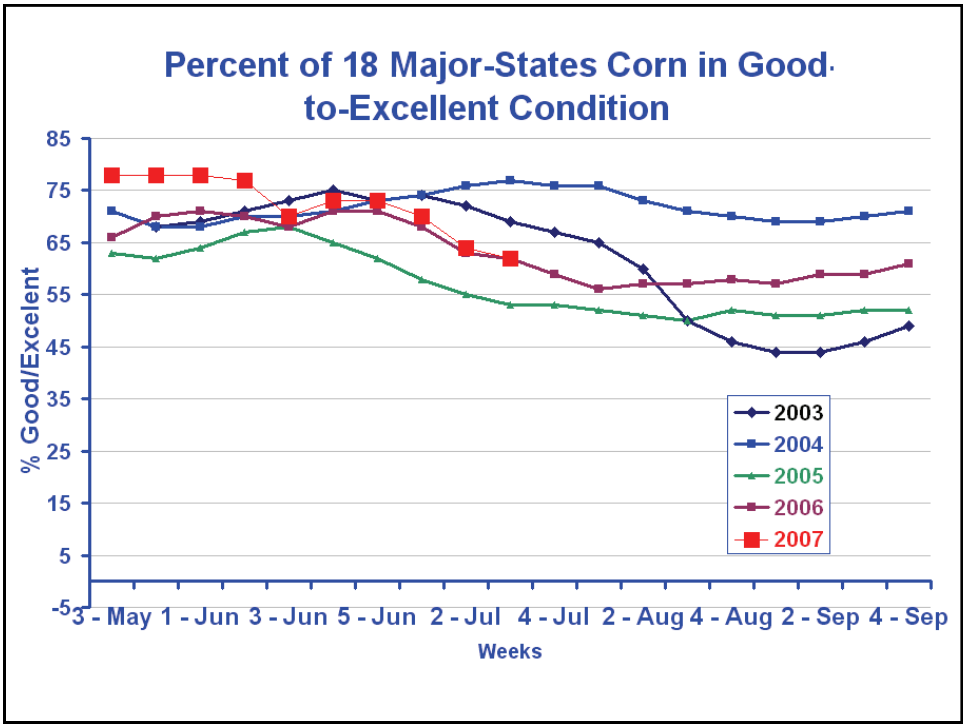


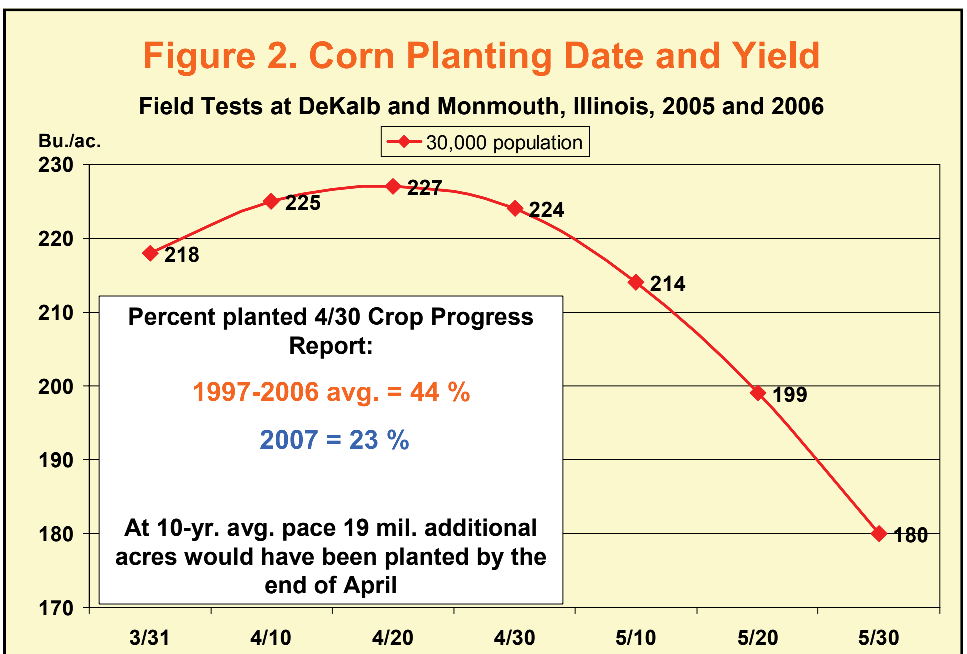
Brazil Corn Production & Use
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Mil. Bushels
Exports
Production
FSI Use
Corn feeding
Imports
1985
1990
1995
2000
2005
2012

Potential area to be cleared for crops


Newly Cleared Land In Brazil
Planted to Upland Rice


Historical U.S.Corn Yield Forecasts & 2007 Forecast (no adjust. for marginal A.)
RW - ISU Econ
7/23/07
2007 = 150.6
Std. Deviation 3.5 bu./A.
R2 = .962
Based on % planted 2rd wk. of May,
% good-excellent, late July, trend,
0-1 weather variable - 1987-2006
Bu./A.
Forecast Error, Bu./A.
180
160
140
120
100
80
60
40
20
0
100
90
80
70
60
50
40
30
20
10
0
-10
-20
1987
1991
1995
1999
2003
2007



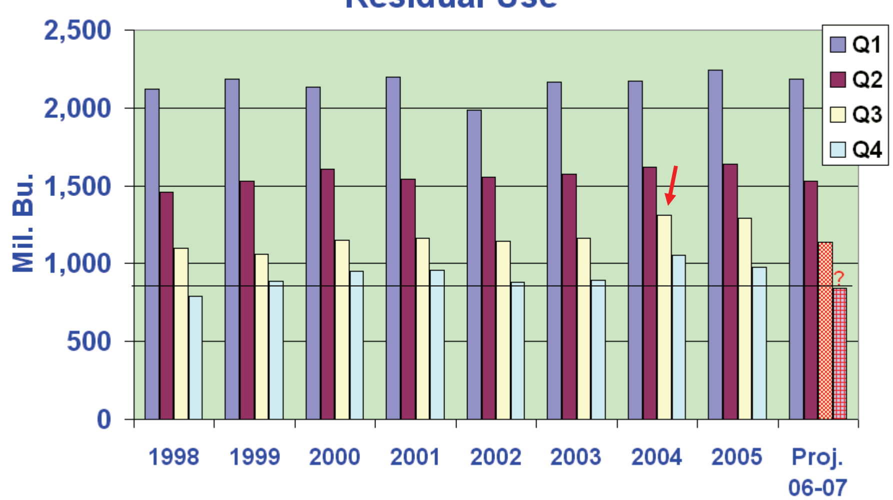


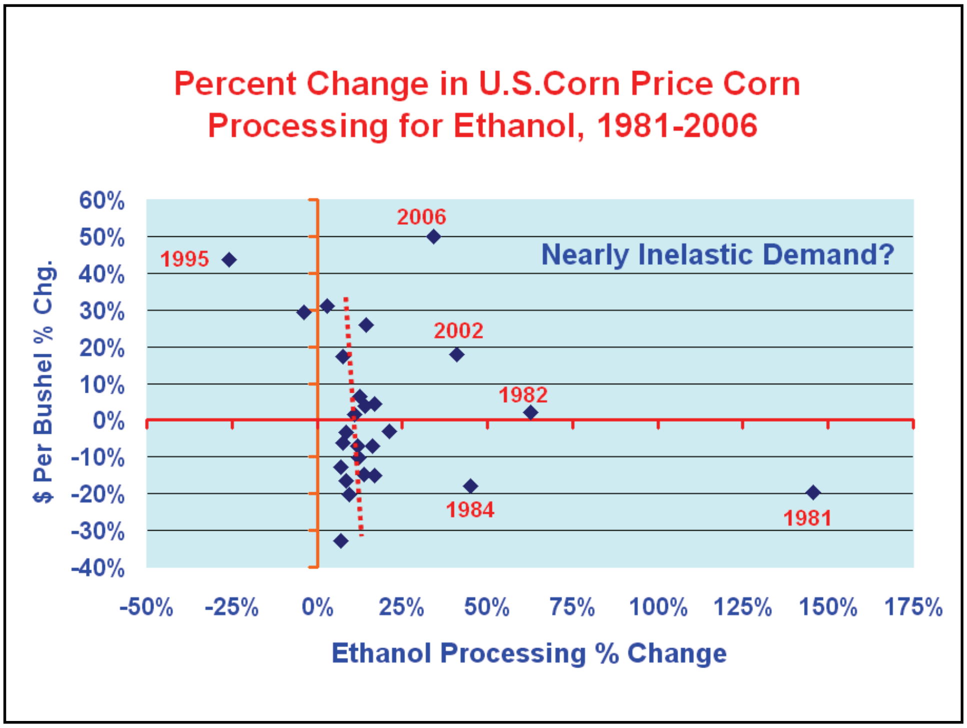
Source: *February 2007 Newsletter Volume 26:2*, Department of Crop Sciences, College of Agricultural, Consumer, and Environmental Sciences, University of Illinois, Urbana-Champaign, Illinois, www.cropsci.uiuc.edu/research/rdc/monmouth/newsletters/2007/Feb_2007.cfm.

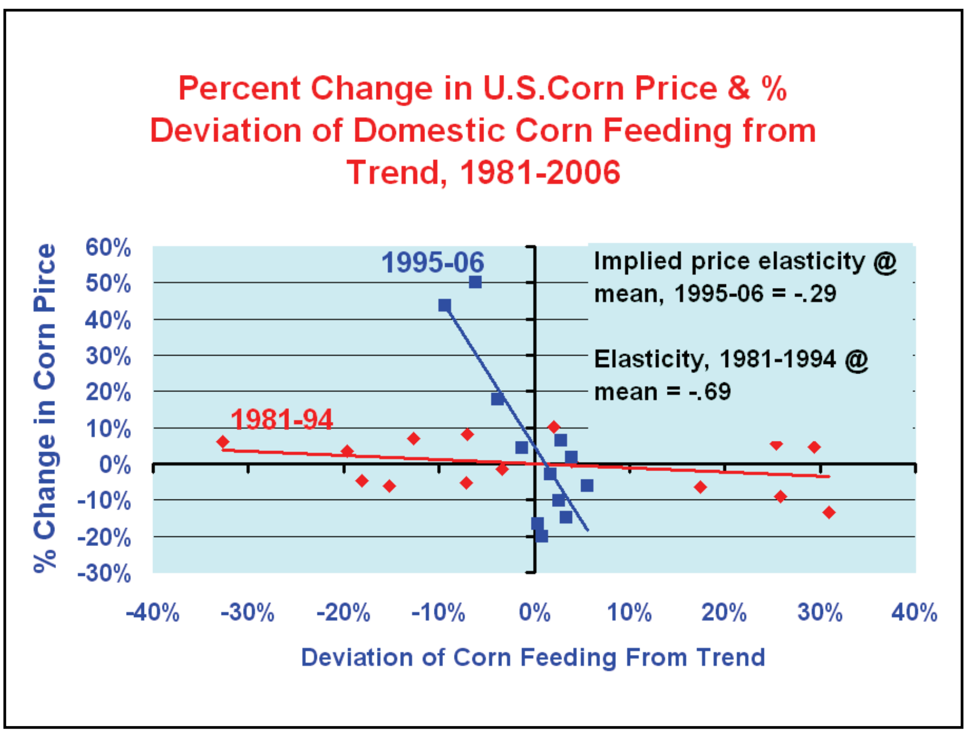
7/12/2007	Corn Balance Sheet (Mil. Bu.)								
	2004-05	2005-06	Est.	Projected 2007-08			Projected 2008-09		
Supplies:			2006-07	A	B	C	A	B	C
Plant. A(mil.)	80.9	81.8	78.3	92.9	92.9	92.9	90.5	91.0	91.0
Harv.A.(mil)	73.6	75.1	70.6	85.1	85.4	85.8	83.0	83.5	83.5
Bu./A.	160.4	147.9	149.1	146.0	150.5	155	146.0	154	157
Production	11,807	11,114	10,535	12,425	12,853	13,299	12,118	12,859	13,110
Carryover	958	2,114	1,967	1,137	1,137	1,137	1,415	1,415	1,415
Total Supply	12,776	13,238	12,512	13,577	14,005	14,451	13,548	14,289	14,539
Feed & resid.	6,158	6,141	5,750	5,750	5,800	5,900	5,485	5,550	5,645
Food, ind. & seed	2,686	2,981	3,525	4,770	4,790	4,830	5,690	5,890	5,920
Corn for fuel ethanol*	1,323	1,603	2,150	3,380	3,400	3,440	4,300	4,500	4,530
Exports	1,818	2,147	2,100	1,975	2,000	2,030	1,850	1,900	1,925
Total Utilization	10,662	11,270	11,375	12,495	12,590	12,760	13,025	13,340	13,490
Carryover	2,114	1,968	1,137	1,082	1,415	1,691	523	949	1,049
U.S. weighted Avg. FARM PRICE	$2.06	$2.00	$3.00	$3.25	2.95	2.65	$4.40	3.45	3.25
IOWA weighted Avg. PRICE, $/Bu.	1.96	1.95	$2.95	3.20	2.90	2.60	4.35	3.40	3.20
Counter-Cyclical Pmt.	0.30	0.35	$0.00	0	0	0	0	0	0
HARV. PRICE, C.IA	1.60	1.40	$2.80	3.25	2.50	2.30	4.00	3.15	2.90
DEC. FUT. @ HARV.	$1.98	$2.00	$3.15	$3.65	$3.05	$2.85	$4.40	$3.65	$3.45
Historical Probability				18%	65%	17%	18%	65%	17%
Weeks carryover supply	10.3	9.1	5.2	4.5	5.8	6.9	2.1	3.7	4.0
Feed use % chg. Drought years vs. current				0.0%			-4.6%		

Model Forecast: $3.16/bu. U.S. '07-08 & $3.14 for '08-09

Figure 2. Quarterly U.S. Corn Feed & Residual Use




Percent Change in U.S.Corn Price Corn Processing for Ethanol, 1981-2006
$ Per Bushel % Chg.
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
-30%
-40%
2006
1995
Nearly Inelastic Demand?
2002
1982
1984
1981
-50%
-25%
0%
25%
50%
75%
100%
125%
150%
175%
Ethanol Processing % Change


Percent Change in U.S.Corn Price & % Deviation of Domestic Corn Feeding from Trend, 1981-2006
% Change in Corn Pirce
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
-30%
1995-06
1981-94
Implied price elasticity @ mean, 1995-06 = -.29
Elasticity, 1981-1994 @ mean = -.69
-40%
-30%
-20%
-10%
0%
10%
20%
30%
40%
Deviation of Corn Feeding From Trend

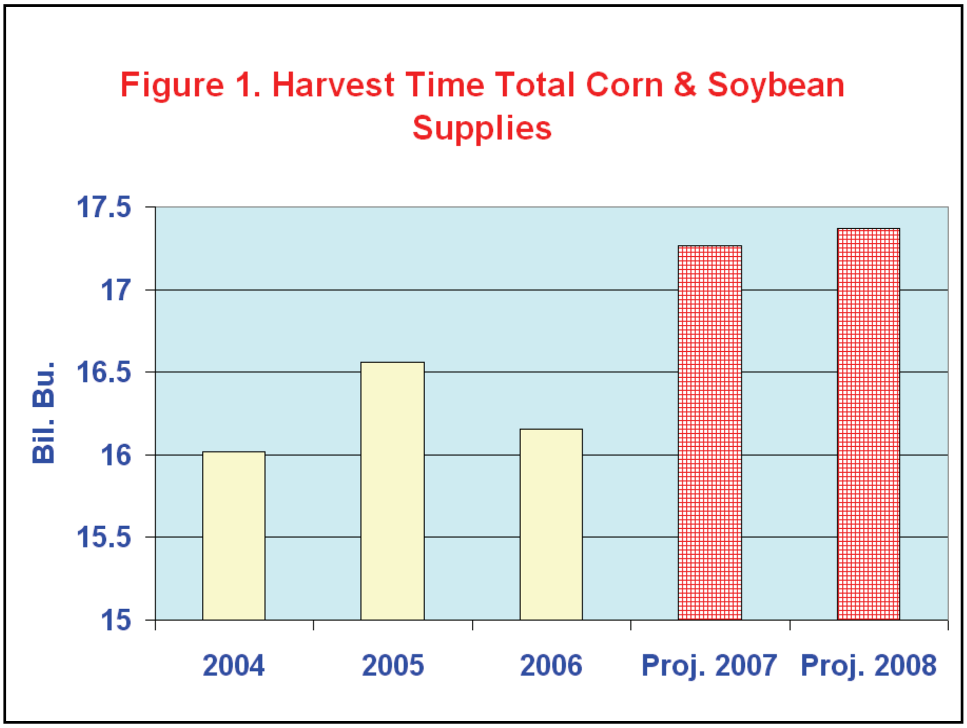


Figure 1. Harvest Time Total Corn & Soybean Supplies
Bil. Bu.
17.5
17
16.5
16
15.5
15
2004
2005
2006
Proj. 2007
Proj. 2008

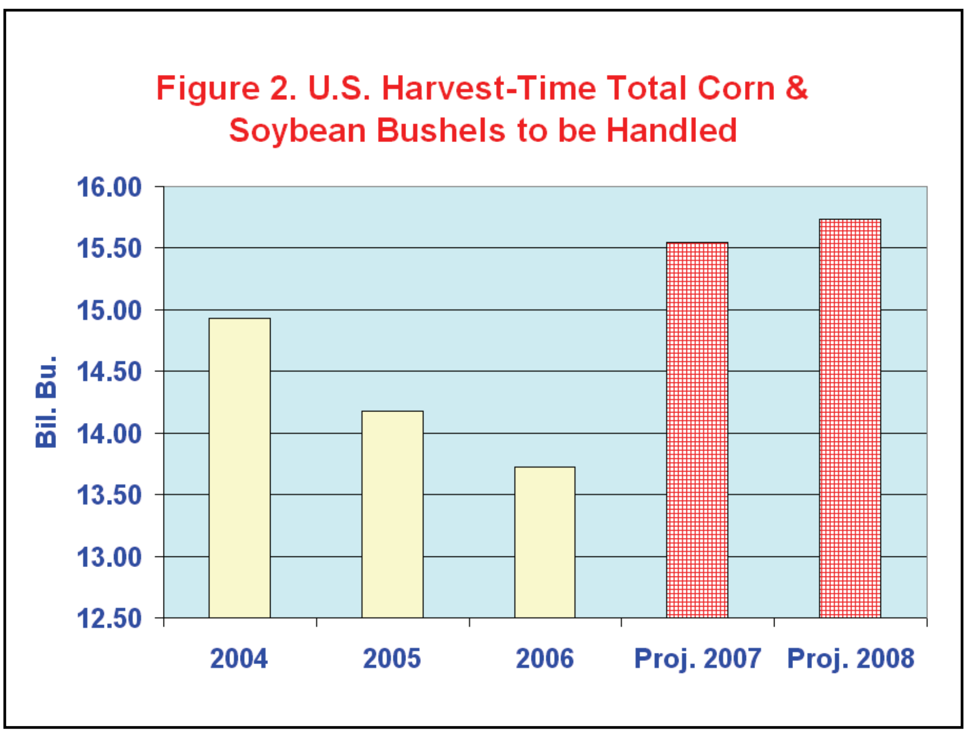
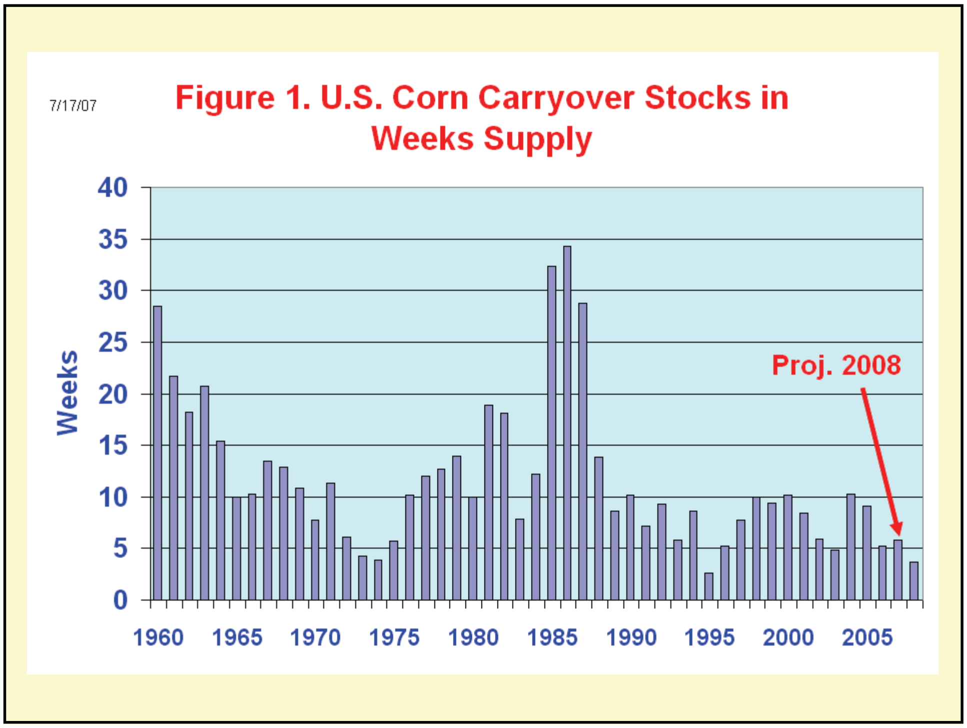
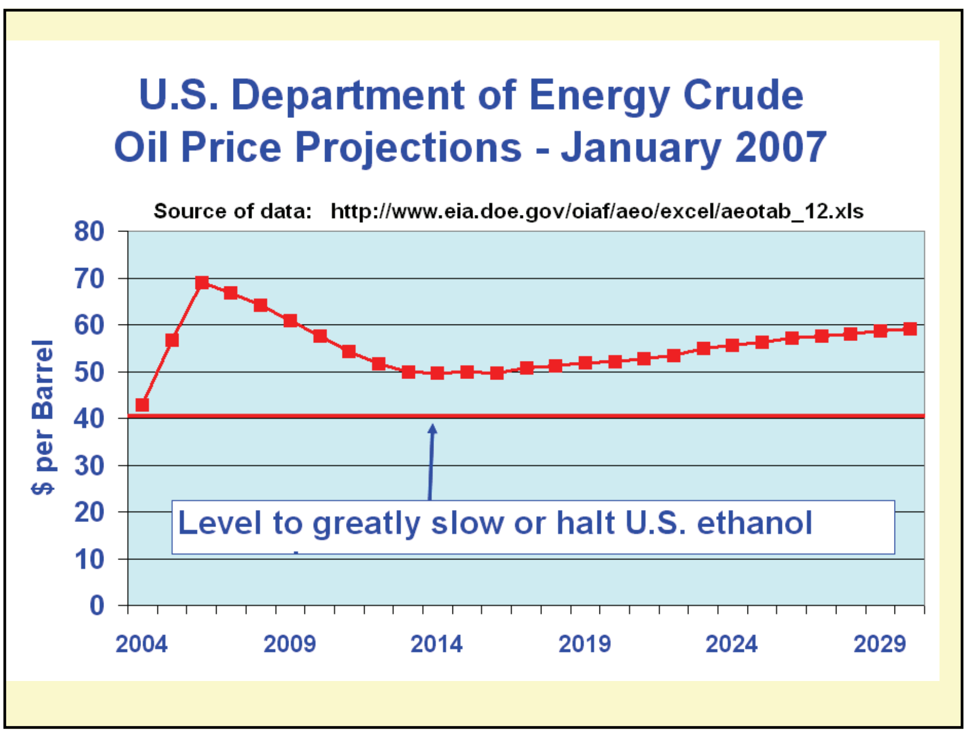


Figure 2. U.S. Harvest-Time Total Corn & Soybean Bushels to be Handled
Bil. Bu.
16.00
15.50
15.00
14.50
14.00
13.50
13.00
12.50
2004
2005
2006
Proj. 2007
Proj. 2008


7/17/07
Figure 1. U.S. Corn Carryover Stocks in Weeks Supply
Weeks
40
35
30
25
20
15
10
5
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
Proj. 2008

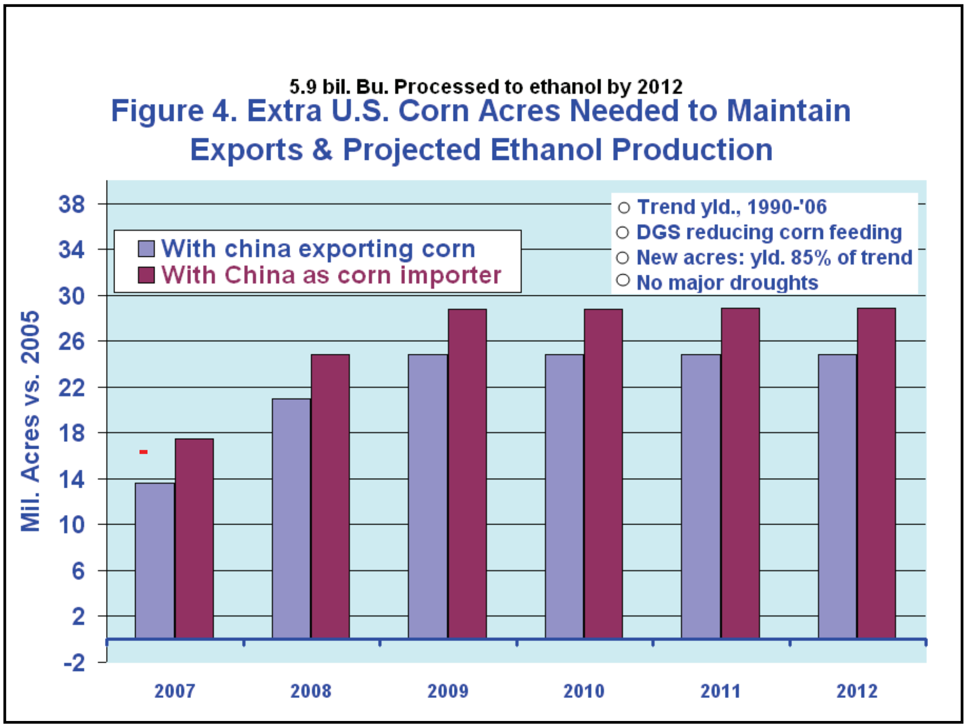

U.S. Department of Energy Crude Oil Price Projections - January 2007
Source of data: http://www.eia.doe.gov/oiaf/aeo/excel/aeotab_12.xls
$ per Barrel
80
70
60
50
40
30
20
10
0
2004
2009
2014
2019
2024
2029
Level to greatly slow or halt U.S. ethanol

Ethanol Economics – new plants
U. of Minn. 2005 costs

- $0.10/gal. increase in ethanol price raises break-even Corn price $0.28/bu.
- $1.00/bu. rise in corn price increases cost/gal. $0.36/gal.

Ethanol Economics – new plants

- Ethanol prod'n cost $1.30/gal. (Univ. of Minnesota- @$2/bu. corn -- 2005)
- July 24,'07 Iowa ethanol price: $2.17/gal.
- Recent margin: $0.62/gal. (40%) Drops to 20%@ corn price of about $3.55/bu. in IA -- up 32% from July 24 price
- Note: "Drop-out" corn price for existing plants is much higher
- Other variables: DDGS price, Natural Gas
- Note: Plant construction costs have risen sharply since 2005


5.9 bil. Bu. Processed to ethanol by 2012
Figure 4. Extra U.S. Corn Acres Needed to Maintain Exports & Projected Ethanol Production
With china exporting corn
With China as corn importer
Trend yld., 1990-'06
DGS reducing corn feeding
New acres: yld. 85% of trend
No major droughts
Mil. Acres vs. 2005
38
34
30
26
22
18
14
10
6
2
-2
2007
2008
2009
2010
2011
2012

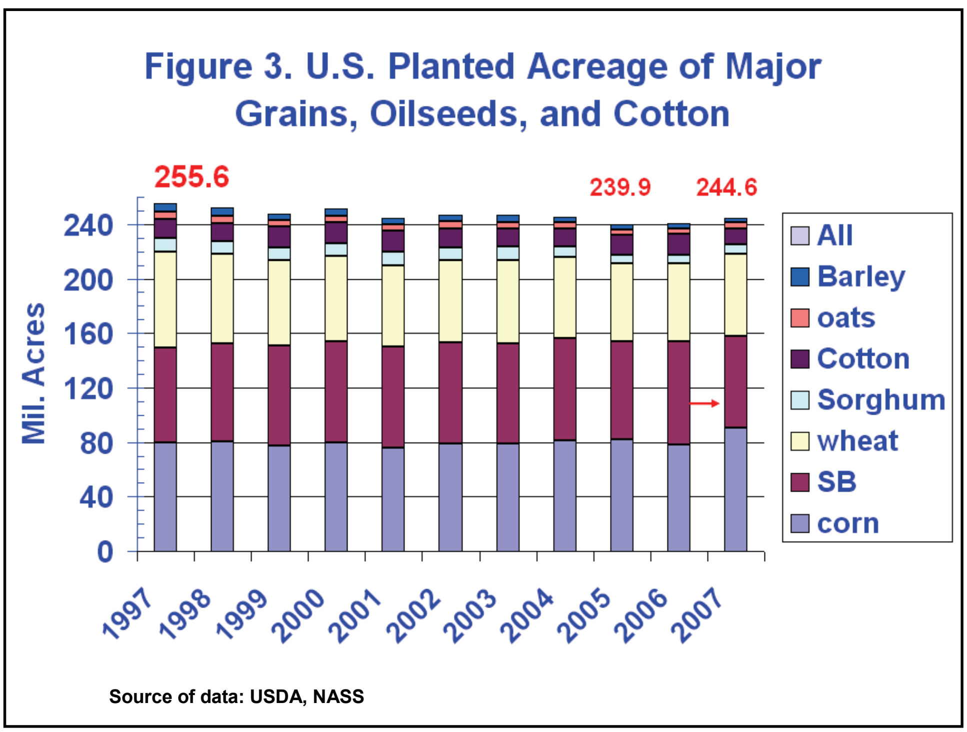


Figure 3. U.S. Planted Acreage of Major Grains, Oilseeds, and Cotton
255.6
239.9
244.6
Mil. Acres
240
200
160
120
80
40
0
All
Barley
oats
Cotton
Sorghum
wheat
SB
corn
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Source of data: USDA, NASS

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.	

Illinois Corn Yields
Drought Tolerant?

	2004	2005	% 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

Implications for U.S. and World Livestock, Poultry & Food Costs

- U.S. supplies 2/3 of world corn exports, 20-25% of wheat & 35-40% of cotton exports
- Cost of livestock & poultry feed will increase
- Large increase in variability of feed & food costs
- Food aid impacts?
- Accelerated ag expansion into areas with fragile eco systems
- Shift livestock industries from U.S. to South America?
- Rural employment implications in U.S.

What Could Change Prospects of Tightening Global Grain Supply?

- Accelerated corn yield increases
- Crude oil price collapse
- Early break-through in economical cellulose conversion
- U.S.Ethanol import tax removed – longer term impacts
- U.S. $0.51 blending credit reduced or made variable
- Declining global livestock feeding

Need for Both Ethanol and Animal Agriculture

- **100 million gallon ethanol plant**
  - 37 million bushels of corn
  - 80 workers directly employed
- **37 million bu corn**

37 million bu corn	Direct jobs
Farrow-finish	800
Or Wean-finish	242
Or Beef feedlot	278

Source: Dr. John Lawrence, Head of ISU Beef Center

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

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