

# **Volatility of Agricultural Prices**

**Gerald A. Bange  
Chairperson  
World Agricultural Outlook Board  
Office of the Chief Economist  
U.S. Department of Agriculture**

Presented to  
**Commodity Futures Trading Commission  
Roundtable**

Washington, D.C.  
April 22, 2008

# Price Volatility Factors

- **Strong Demand Worldwide for Agricultural Commodities**
- **Rising Petroleum Prices and Increased Production of Renewable Fuels**
- **Tight Grain and Soybean Stocks**
- **World Wheat Consumption has exceeded Production in 6 of the last 8 years**
- **Restrictions on World Exports of Grains**
- **U.S. Cotton Area and Production Sharply Lower in 2007/08**
- **Rising Input Costs**

# Price Volatility Factors

(continued)

- **Strong Demand Worldwide for Agricultural Commodities**
  - Income growth in developing countries – India, China, etc.
  - Japan and other Asian markets active buyers despite high prices
- **Rising Petroleum Prices and Increased Production of Renewable Fuels**
  - Corn for Ethanol in the United States
  - Oilseeds for biodiesel in the European Union

# Price Volatility Factors

(continued)

- **Tight Grain and Soybean Stocks**
  - U.S wheat stocks at 60-year low
  - World wheat stocks at 30-year low
  - Corn stocks down sharply in 2007/08, likely to decline further in 2008/09
  - U.S. soybean acres down sharply in 2007/08, stocks reduced from record beginning levels as use exceeds production by 400+ million bushels
  - South American soybean acres increased only modestly in 2007/08
  - China imports of soybeans forecast record high

# Price Volatility Factors

(continued)

- **World Wheat Consumption has exceeded Production in 6 of the last 8 years**
  - Yields below trend in major exporting countries for the past 2 years
  - Australia recorded 2 back-to-back crop failures – lost more than one full year's output
  - E.U. crops below par
  - U.S. yields below trend
  - Canadian crops below average

# Price Volatility Factors

(continued)

- **Restrictions on World Exports**
  - **Ukraine, Russia, and Kazakhstan curtailed grain exports**
  - **Argentina shut-off export registrations on corn and wheat and raised taxes on soybean exports**
  - **Vietnam, India, Egypt, Cambodia, and China have imposed various restraints on rice exports**
  - **Thai exporters are having difficulty securing rice supplies to meet contracts**
  - **Australian rice exportable supplies down sharply due to drought**

# Price Volatility Factors

(continued)

- **U.S. Cotton Area and Production Sharply Lower in 2007/08**
  - Cotton acres lost to competing crops, especially soybeans and corn
  - 2007/08 U.S. export forecast reduced as season progressed due to diminished China purchases and increased competition from India
  - Area forecast to decline again - projected net returns expected to favor grains and oilseeds in 2008/09
  - Competitor production has been growing – notably in India
  - China producing excellent crops – plantings at best flat in 2008/09
  - Australian crop reduced by drought
  - Pakistan crop reduced by insect infestation

# Price Volatility Factors

(continued)

- **Rising Input Costs**
  - Fuel prices up sharply
  - Fertilizer prices at record highs
    - Strong global demand with higher incomes, improved cultural practices and more cultivated area amid rising prices for agricultural commodities
    - U.S. dependency on imports is growing – domestic production accounts for less than half of nitrogen needs
    - Disproportionate impact on corn, a more input intensive crop



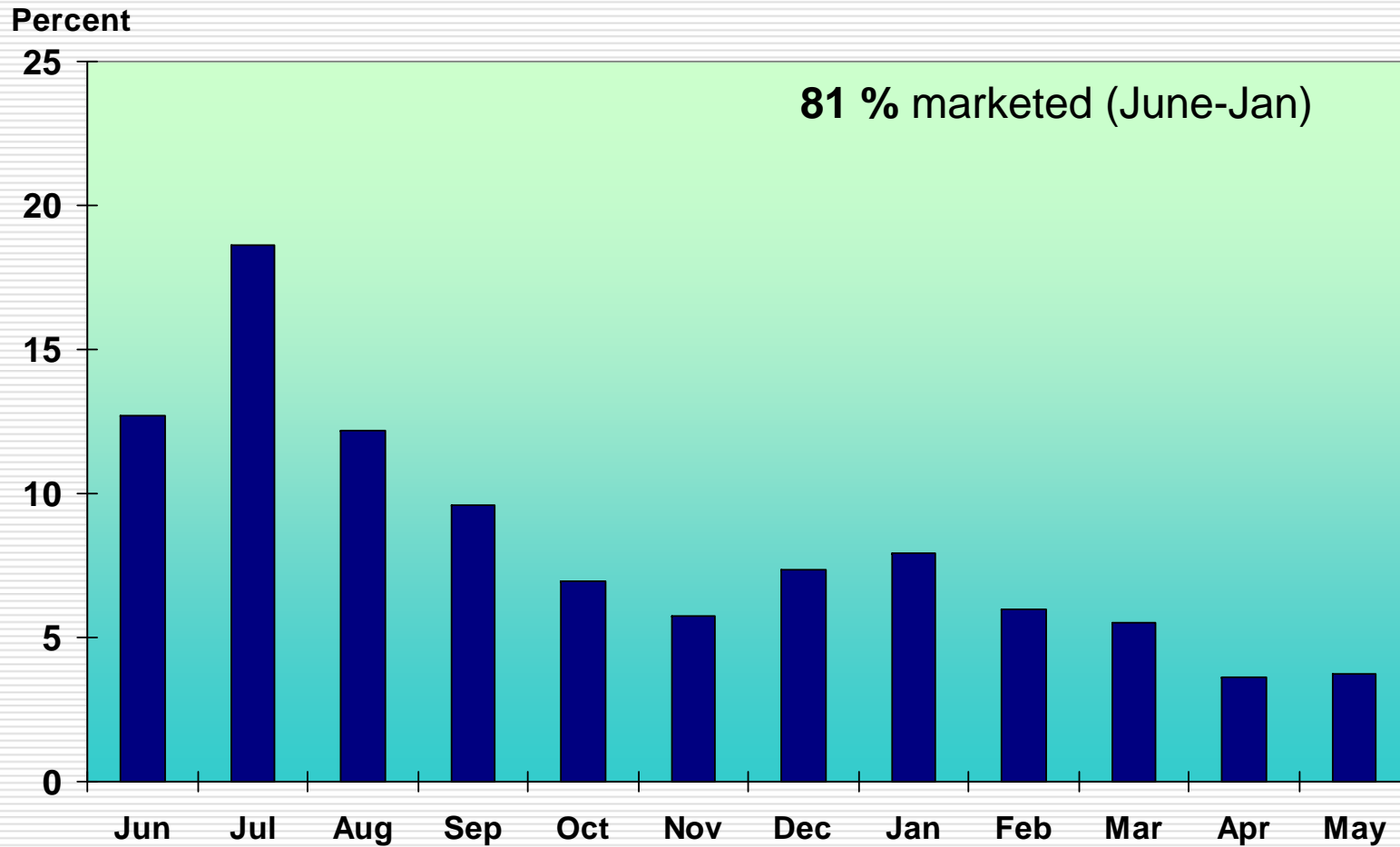
# U.S. Wheat Supply and Demand\*

	2006/07 estimate	2007/08 forecast	2008/09 forecast	Change from 2007/08 <i>Percent</i>
Planted area (million acres)	57.3	60.4	64.0	5.9
Harvested area (million acres)	46.8	51.0	54.4	6.6
Yield (bushels per acre)	38.7	40.5	42.8	5.7
<i>Million bushels</i>				
Beginning stocks	571	456	272	-40.4
Production	1,812	2,067	2,330	12.7
Imports	122	90	100	11.1
Total supply	2,505	2,613	2,702	3.4
Food, seed, and industrial use	1,015	1,036	1,039	0.3
Feed and residual	125	60	175	191.7
Domestic use	1,140	1,096	1,214	10.8
Exports	909	1,275	950	-25.5
Total use	2,049	2,371	2,164	-8.7
Ending stocks	456	242	538	122.4
<i>Percent</i>				
Stocks to use ratio	22.3	10.2	24.9	
<i>Dollars per bushel</i>				
Average market price	4.26	6.65	7.00	5.3

\*The estimates for 2006/07 and the forecasts for 2007/08 are from the *World Agricultural Supply and Demand Estimates* report of April 9, 2008, and the 2008/09 forecasts were released at USDA's *Agricultural Outlook Forum* of February 21-22, 2008.

# Monthly Farmer Wheat Marketings

## 5-year Average



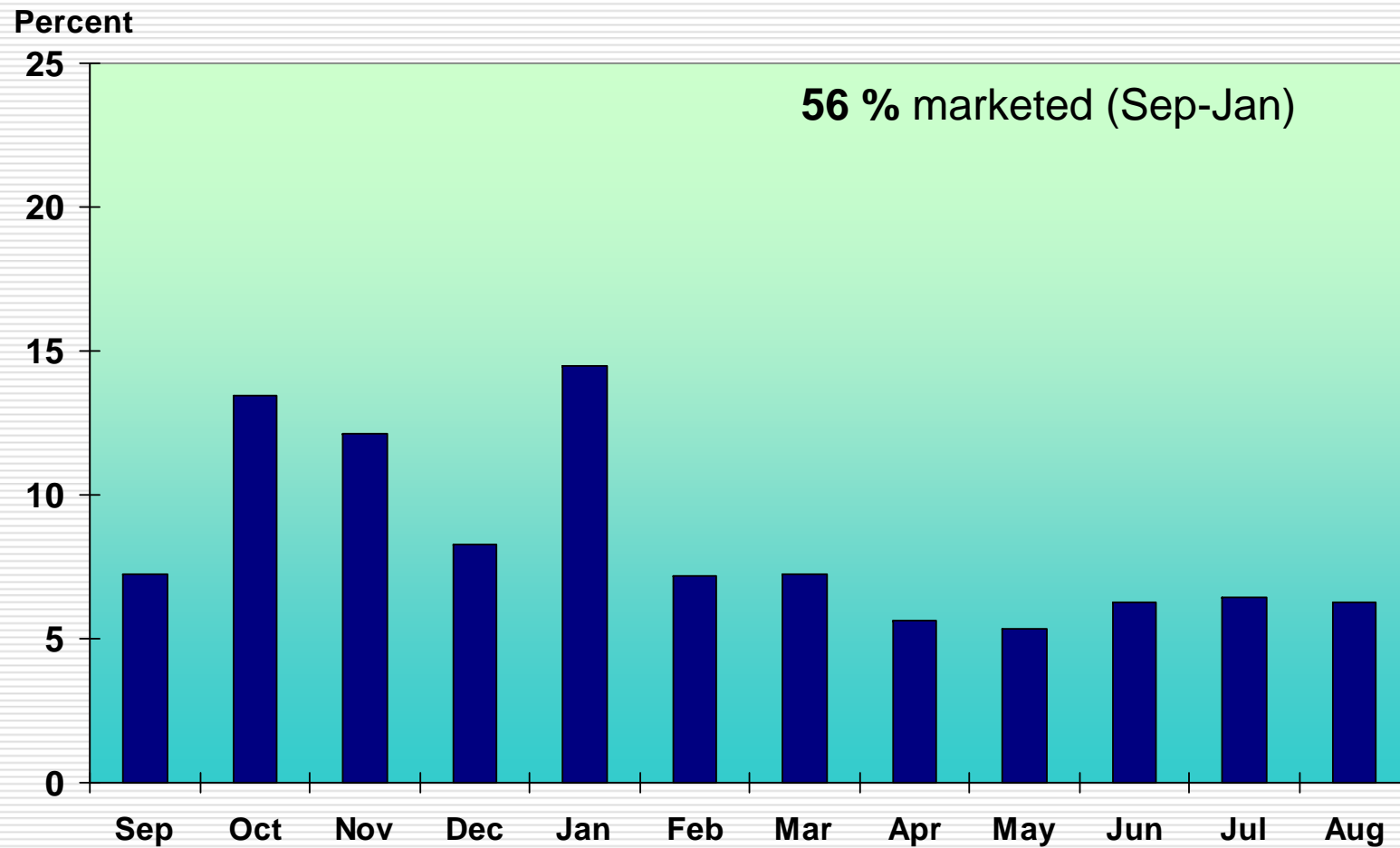
# U.S. Corn Supply and Demand\*

	2006/07 estimate	2007/08 forecast	2008/09 forecast	Change from 2007/08 <i>Percent</i>
Planted area (million acres)	78.3	93.6	90.0	-3.8
Harvested area (million acres)	70.6	86.5	82.7	-4.4
Yield (bushels per acre)	149.1	151.1	154.9	2.5
	<i>Million bushels</i>			
Beginning stocks	1,967	1,304	1,283	-1.6
Production	10,535	13,074	12,810	-2.0
Total supply	12,514	14,393	14,263	-0.9
Feed and residual	5,598	6,150	5,400	-12.2
Food, seed, and industrial	3,488	4,460	5,470	22.6
Ethanol	2,117	3,100	4,100	32.3
Domestic use	9,086	10,610	10,870	2.5
Exports	2,125	2,500	2,150	-14.0
Total use	11,210	13,110	13,020	-0.7
Ending stocks	1,304	1,283	1,243	-3.1
	<i>Percent</i>			
Stocks/use	11.6	9.8	9.5	
	<i>Dollars per bushel</i>			
Average market price	3.04	4.30	4.60	3.0

\*The estimates for 2006/07 and the forecasts for 2007/08 are from the *World Agricultural Supply and Demand Estimates* report of April 9, 2008, and the 2008/09 forecasts were released at USDA's *Agricultural Outlook Forum* of February 21-22, 2008.

# Monthly Farmer Corn Marketings

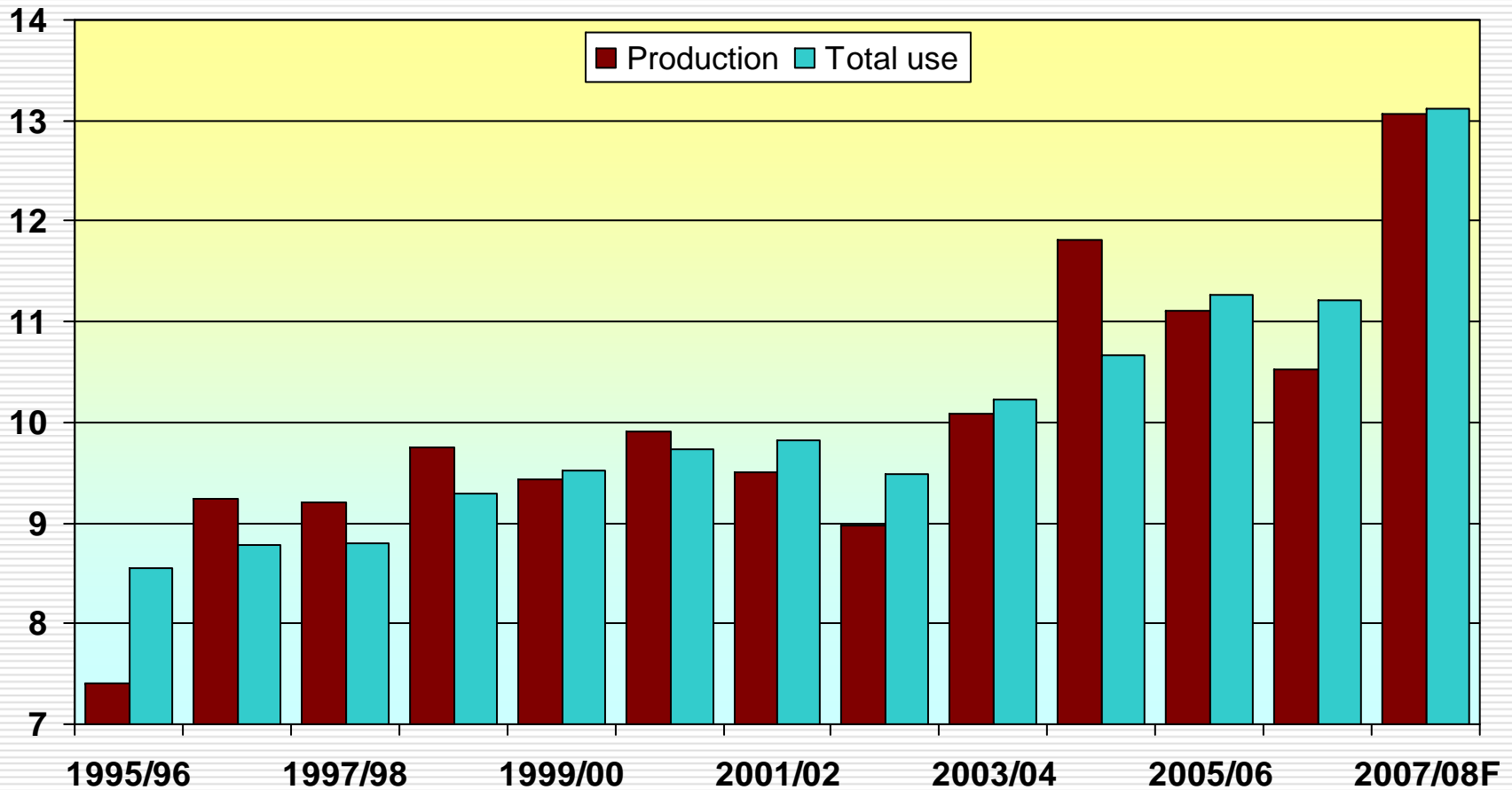
## 5-year Average



# U.S. Corn Production and Total Use

## 1995/96 through 2007/08F

Bil. bushels



Note: 2007/08 production and use are projected based on the *World Agricultural Supply and Demand Estimates*, April 9, 2008.

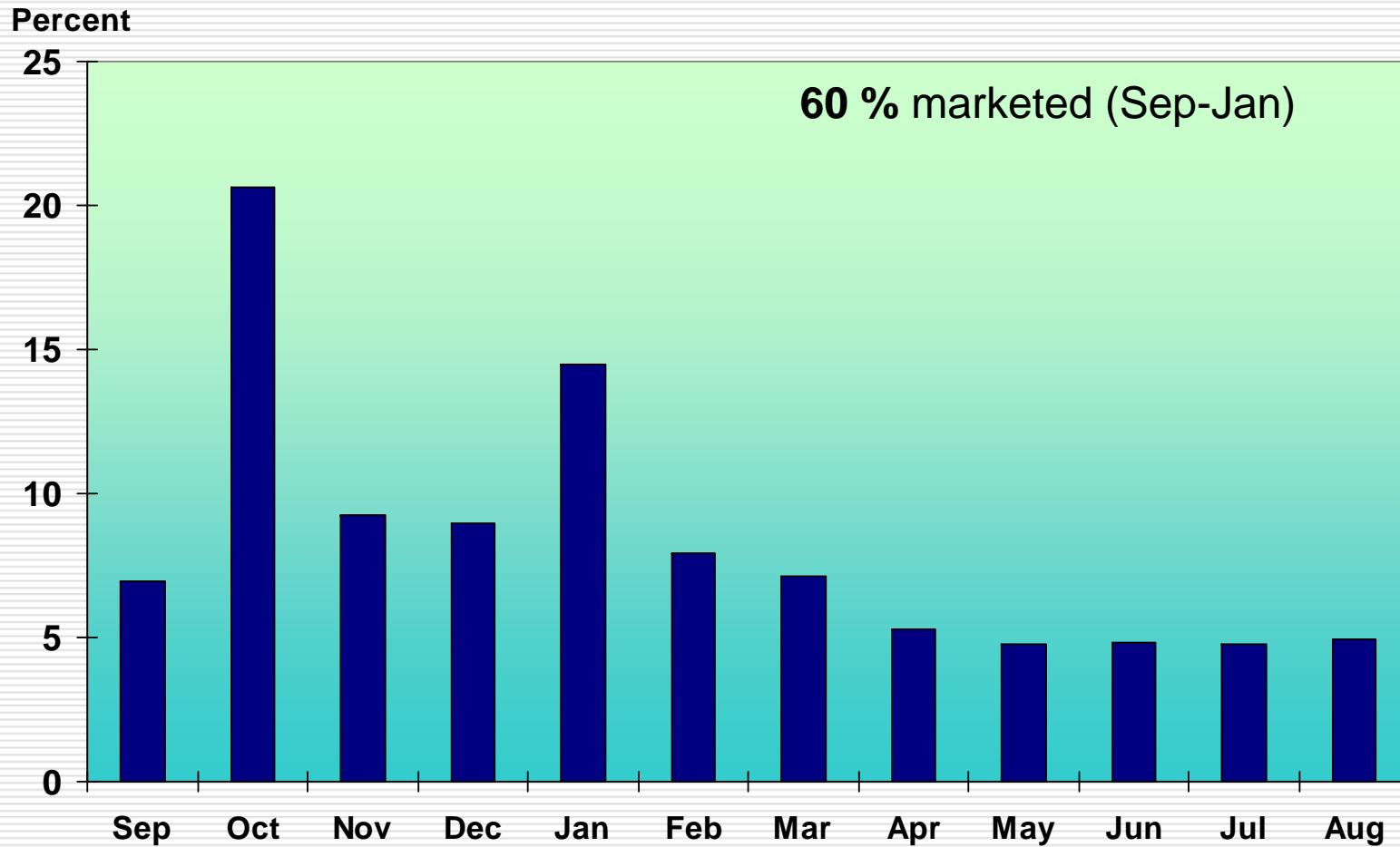
# U.S. Soybean Supply and Demand\*

	2006/07 estimate	2007/08 forecast	2008/09 forecast	Change from 2007/08 <i>Percent</i>
Planted area (million acres)	75.5	63.6	71.0	11.6
Harvested area (million acres)	74.6	62.8	70.1	11.6
Yield (bushels per acre)	42.7	41.2	42.1	2.3
	<i>Million bushels</i>			
Beginning stocks	449	574	160	-72.1
Production	3,188	2,585	2,950	14.1
Imports	9.0	10.0	6.0	-40.0
Total Supply	3,647	3,169	3,116	-1.7
Crush	1,806	1,840	1,860	1.1
Seed and Residual	148	94	177	88.3
Domestic use	1,955	1,934	2,037	5.3
Exports	1,118	1,075	910	-15.3
Total Use	3,073	3,009	2,947	-2.1
Ending stocks	574	160	169	5.6
	<i>Percent</i>			
Stocks/use ratio	18.7	5.3	5.7	
	<i>Dollars per bushel</i>			
Average market price	6.43	10.25	11.50	12.2

\*The estimates for 2006/07 and the forecasts for 2007/08 are from the *World Agricultural Supply and Demand Estimates* report of April 9, 2008, and the 2008/09 forecasts were released at USDA's *Agricultural Outlook Forum* of February 21-22, 2008.

# Monthly Farmer Soybean Marketings

## 5-year Average



# U.S. Soybean Oil Supply and Demand\*

	2006/07 estimate	2007/08 forecast	2008/09 forecast	Change from 2007/08
	<i>Million pounds</i>			<i>Percent</i>
<b>Beginning stocks</b>	3,010	2,904	2,502	-13.9
<b>Production</b>	20,487	21,250	21,205	-0.2
<b>Imports</b>	37	37	50	33.4
<b>Total supply</b>	23,535	24,192	23,757	-1.8
<b>Domestic</b>	18,743	18,700	19,750	5.6
<b>Methyl ester</b>	2,796	2,950	3,500	18.6
<b>Exports</b>	1,888	2,700	1,850	-31.5
<b>Total use</b>	20,630	21,400	21,600	0.9
<b>Ending stocks</b>	2,904	2,792	2,157	-22.7
	<i>Cents per pound</i>			
<b>Average market price</b>	31.02	52.00	49.50	-4.8

\*The estimates for 2006/07 and the forecasts for 2007/08 are from the *World Agricultural Supply and Demand Estimates* report of April 9, 2008, and the 2008/09 forecasts were released at USDA's *Agricultural Outlook Forum* of February 21-22, 2008.



# U.S. Soybean Meal Supply and Demand\*

	2006/07 estimate	2007/08 forecast	2008/09 forecast	Change from 2007/08
	<i>Thousand short tons</i>			<i>Percent</i>
<b>Beginning stocks</b>	314	351	300	-14.5
<b>Production</b>	43,027	43,934	44,235	0.7
<b>Imports</b>	156	165	165	0.0
<b>Total supply</b>	43,497	44,450	44,700	0.6
<b>Domestic</b>	34,360	35,300	35,600	0.9
<b>Exports</b>	8,786	8,850	8,800	-0.6
<b>Total use</b>	43,146	44,150	44,400	0.6
<b>Ending stocks</b>	351	300	300	0.0
	<i>Dollars per short ton</i>			
<b>Average market price</b>	205.44	325.00	300.00	-7.7

\*The estimates for 2006/07 and the forecasts for 2007/08 are from the *World Agricultural Supply and Demand Estimates* report of April 9, 2008, and the 2008/09 forecasts were released at USDA's *Agricultural Outlook Forum* of February 21-22, 2008.

# 2007 Energy Act

---

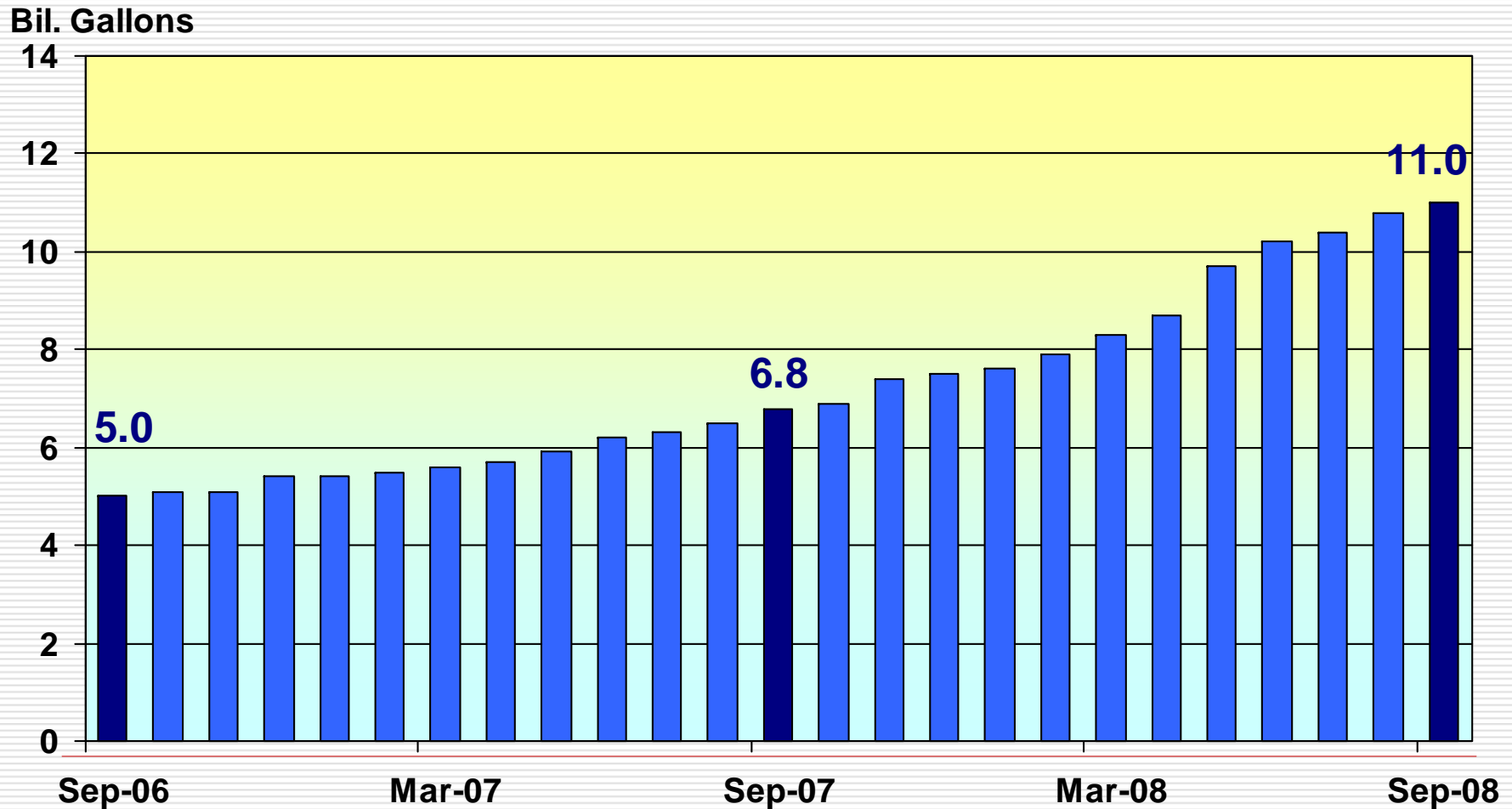
- Mandates very ambitious renewable fuel standard (RFS), starting at 9.0 billion gals in 2008 and increasing to 36 billion gals by 2022. <sup>1</sup>
- 15 billion gallons of the RFS will be corn-based ethanol starting in 2015.
- By 2016, all of the RFS increase must be met with cellulosic ethanol or other non-corn starch biofuels.

<sup>1</sup> In comparison, the 2005 Energy Act had an RFS standard of 5.4 billion gals by 2008, rising to 7.5 billion by 2012.

---

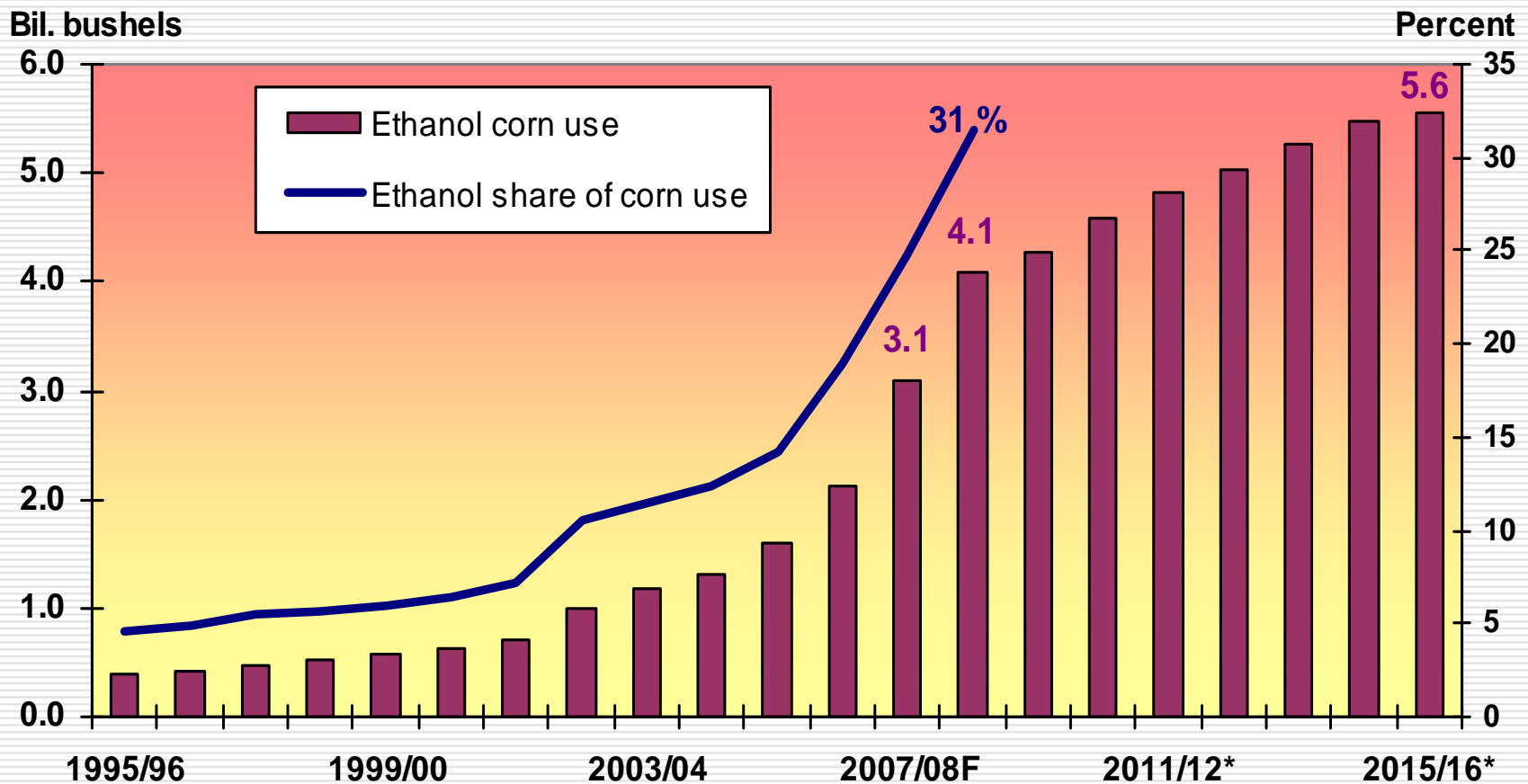
# U.S. Ethanol Production Capacity

## Annual Capacity by Month



# U.S. Corn Used for Ethanol

1995/96 through 2015/16\*

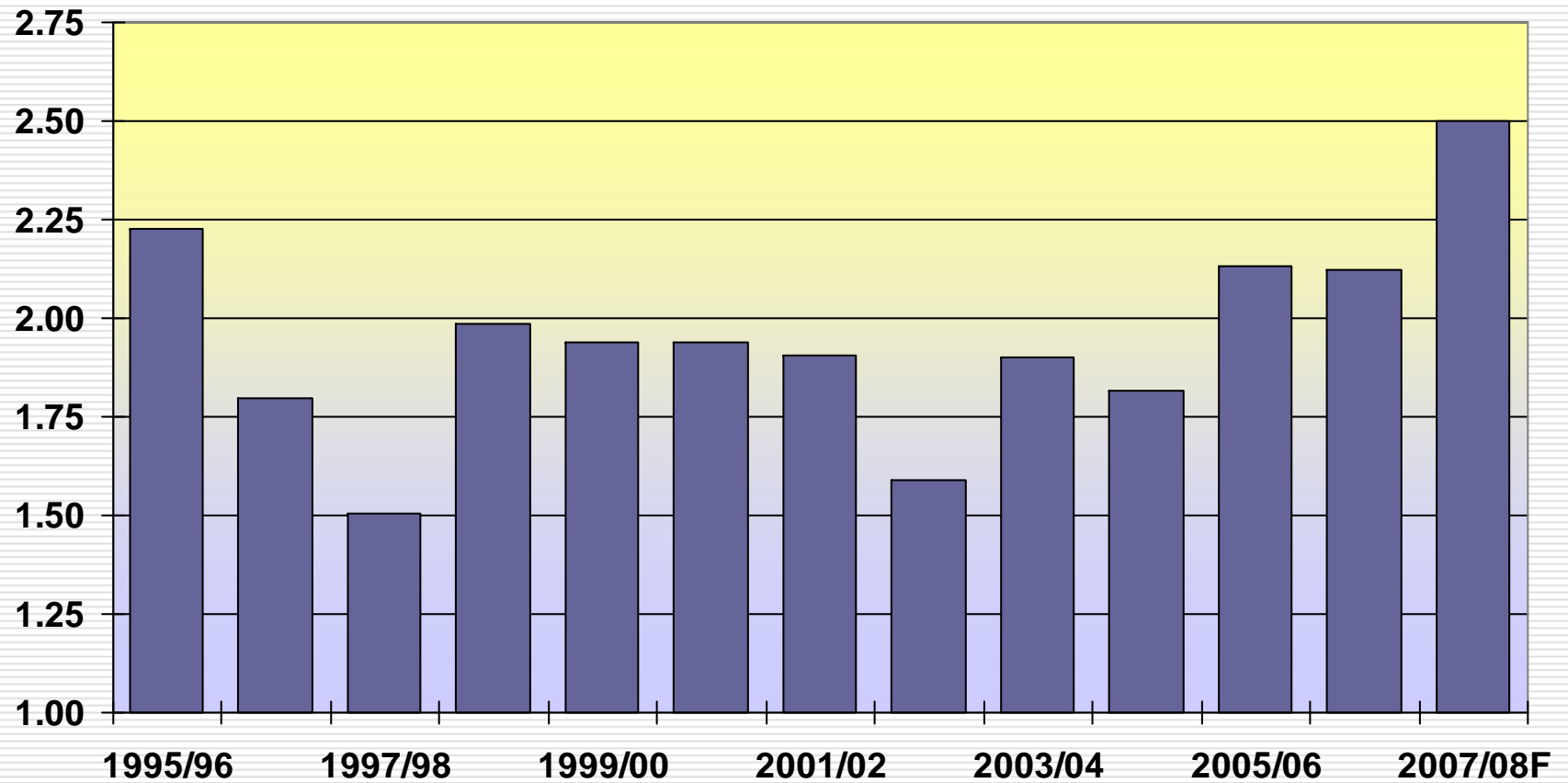


Note: 2007/08 is projected based on the *World Agricultural Supply and Demand Estimates*, April 9, 2008. 2008/09 is projected based on USDA's *Grains & Oilseeds Outlook*, Agricultural Outlook Forum, Washington, D.C., February 22, 2008. \*Projection for 2009/10 based on RFS mandates for corn starch based ethanol under the Energy Independence and Security Act of 2007.

# U.S. Corn Exports

1995/96 through 2007/08F

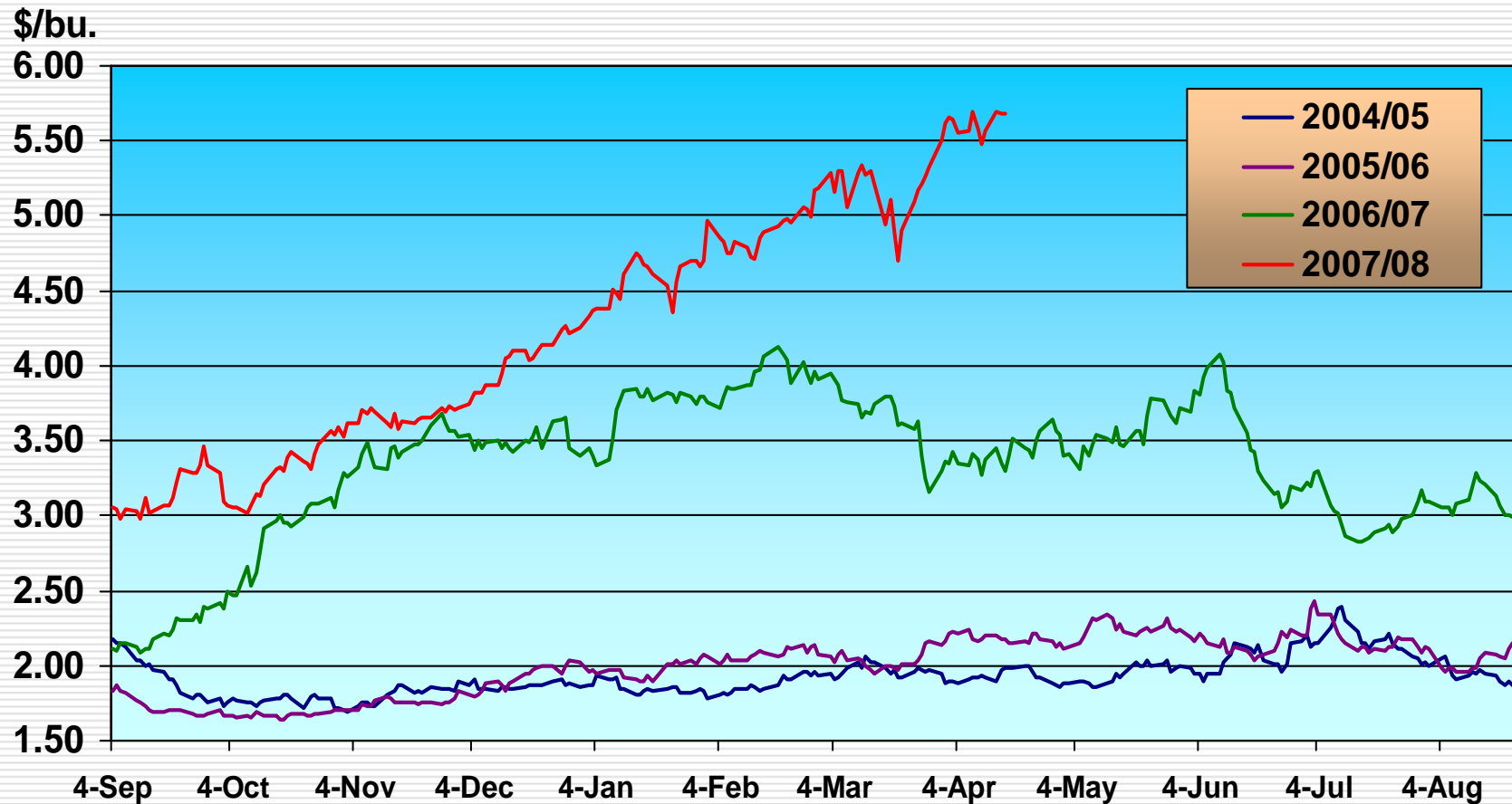
Bil. bushels



Note: 2007/08 exports are projected based on the *World Agricultural Supply and Demand Estimates*, April 9, 2008.

# Daily Cash Market Corn Prices

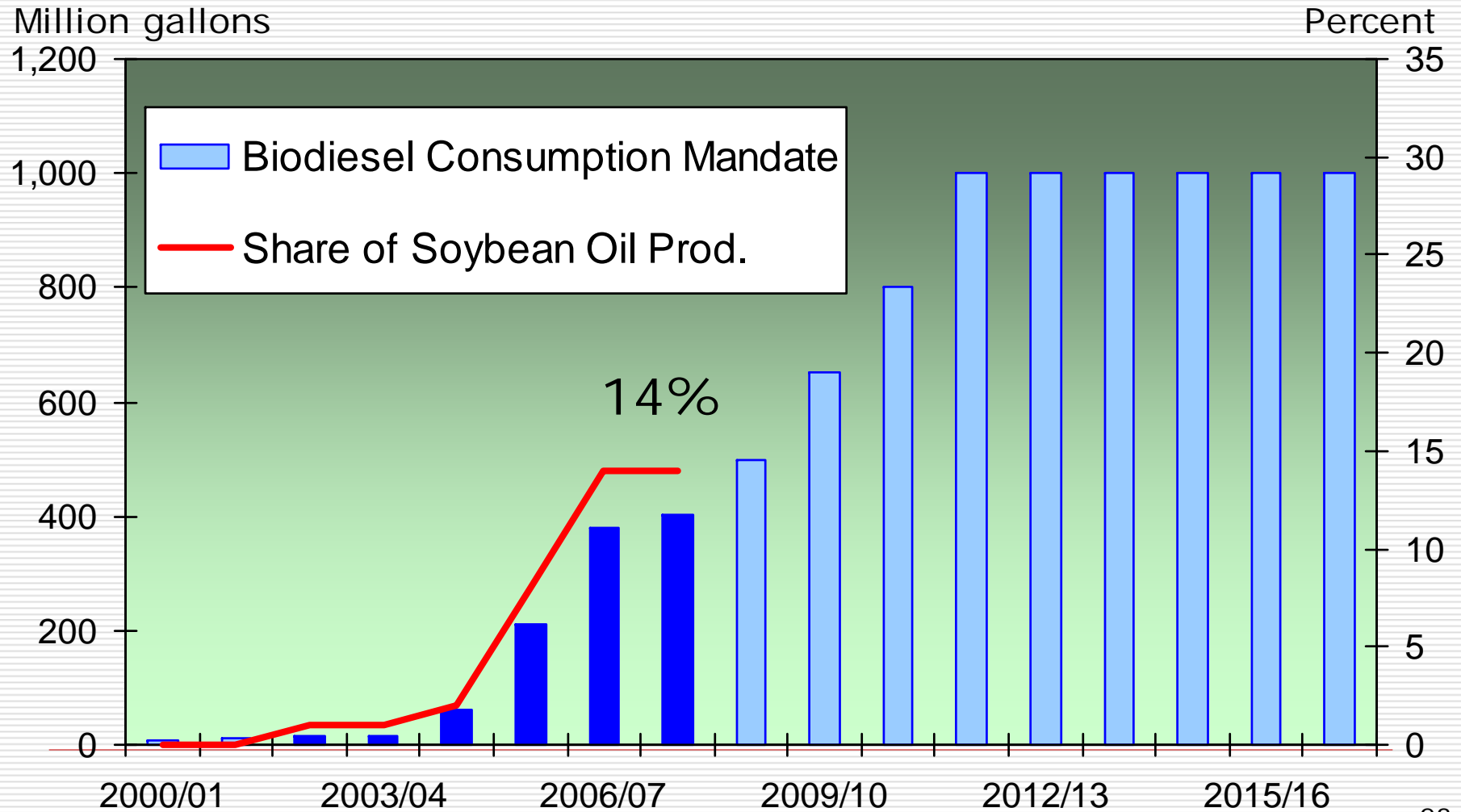
2004/05 through 2007/08 to date



Note: Central Illinois cash bids.

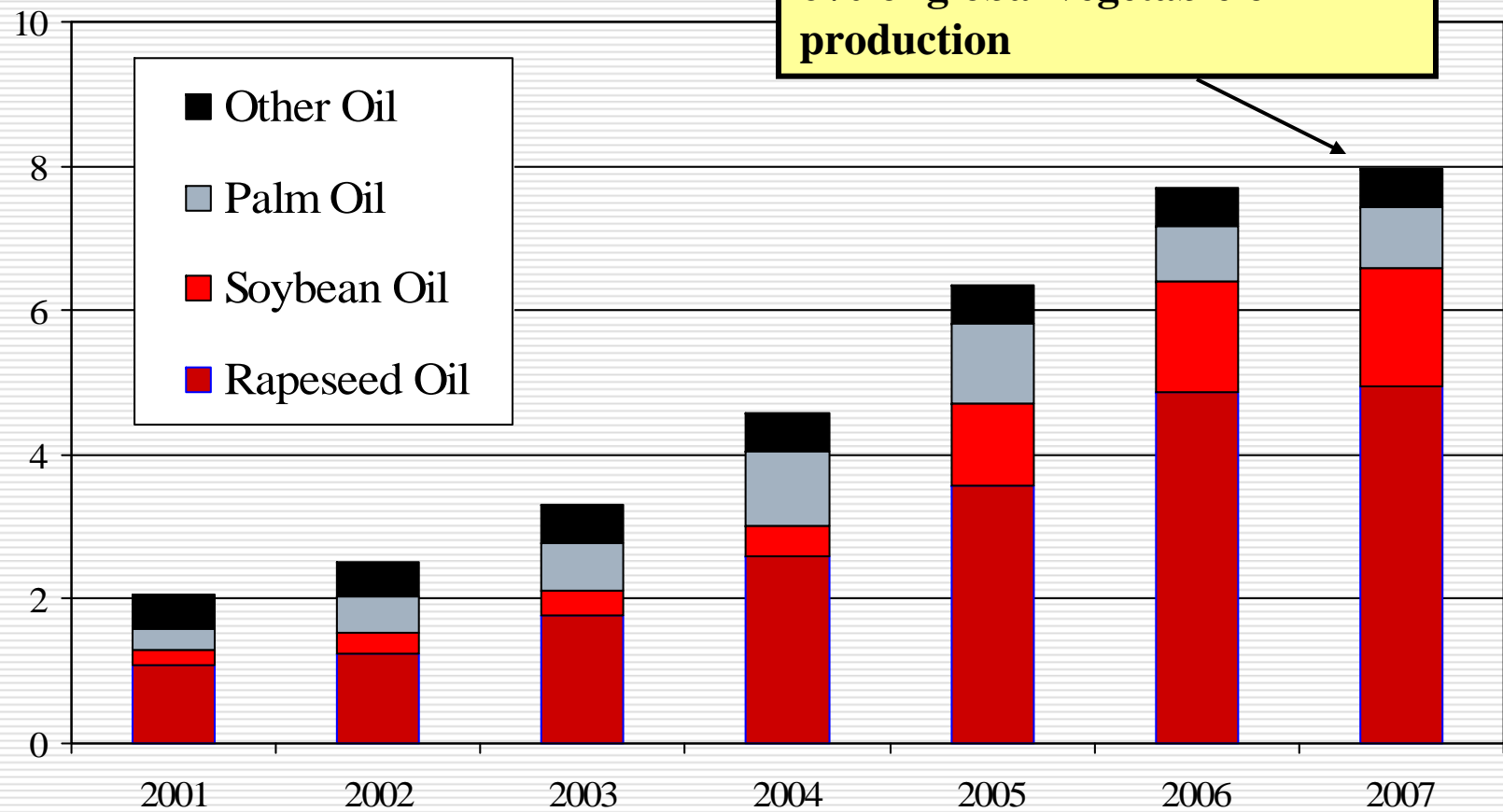
# U.S. Biodiesel Mandate . . .

## (2007 Energy Act)



# EU Industrial Use of Vegetable Oil

Million Tons





# Soybean Oil Futures Prices

December 2008 Contract

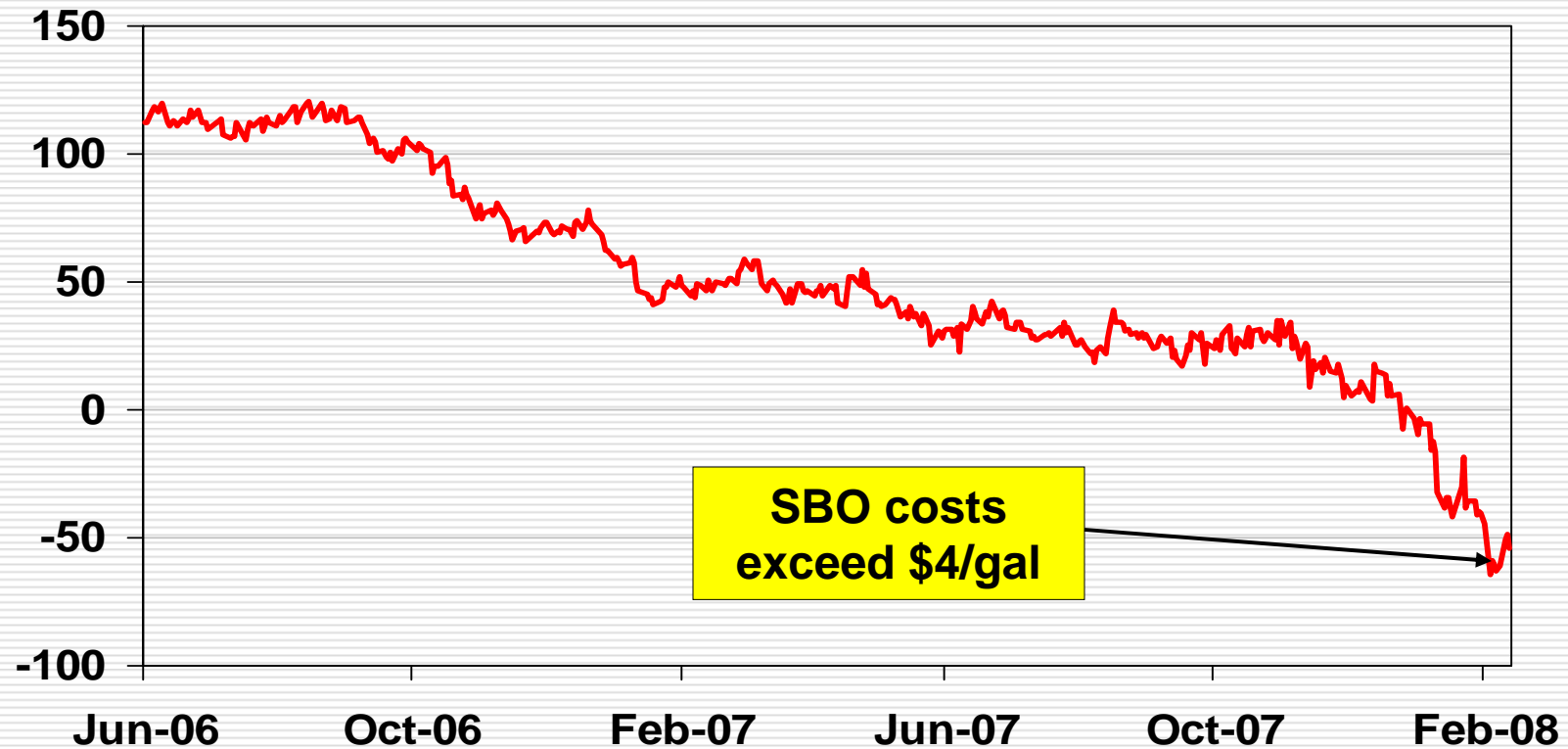
Cents/lb.



Note: Chicago Board of Trade daily settlement prices.

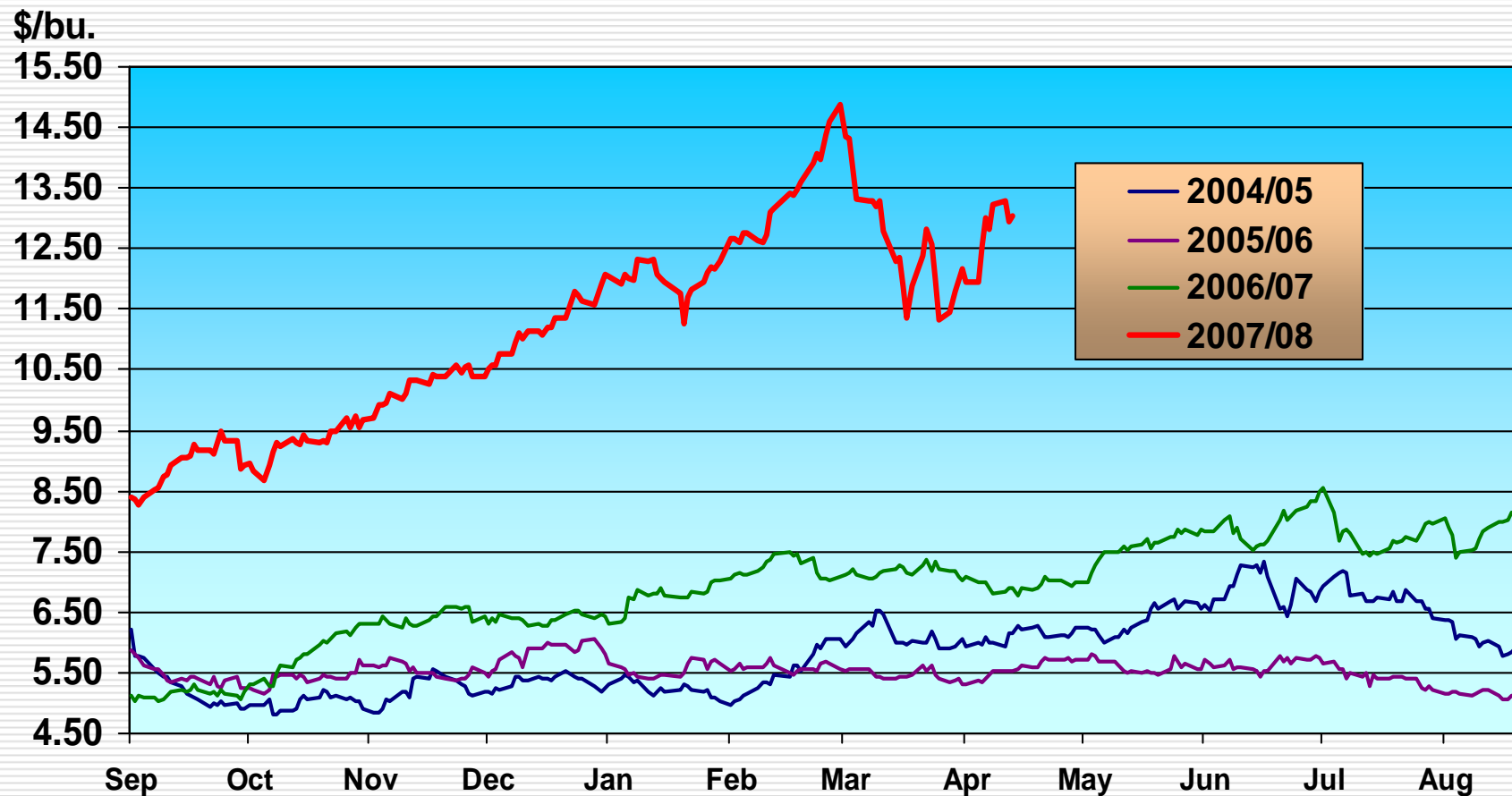
# Biodiesel Margin

cents/lb



# Daily Cash Market Soybean Prices

2004/05 through 2007/08 to date



Note: Central Illinois cash bids.

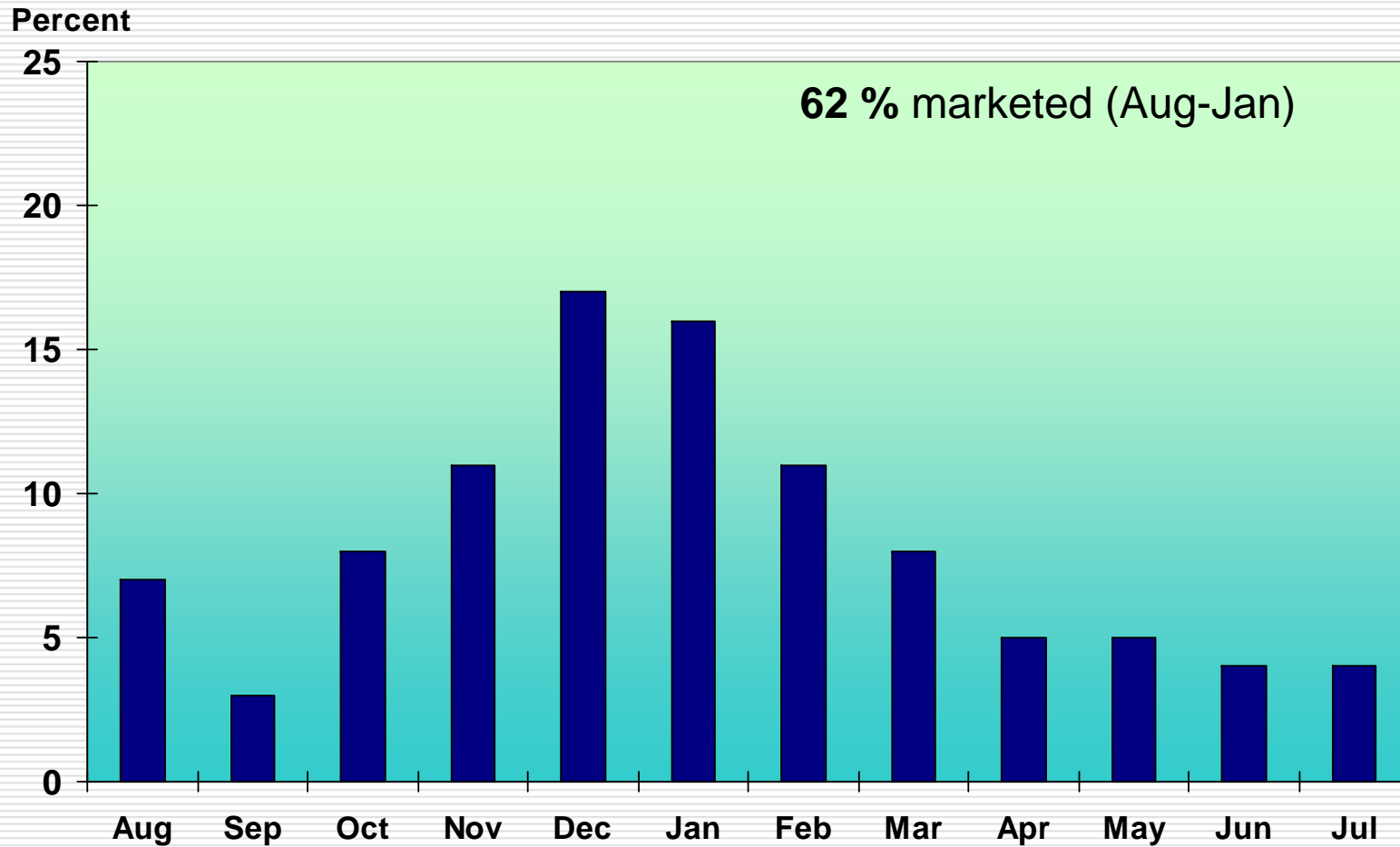
# U.S. Cotton Supply and Demand\*

	2006/07 estimate	2007/08 forecast	2008/09 forecast	Change from 2007/08 <i>Percent</i>
Planted area (million acres)	15.3	10.8	9.5	-12.3
Harvested area (million acres)	12.7	10.5	8.6	-18.0
Yield (pounds per acre)	814.0	888.0	835.0	-6.0
		<i>Million bales</i>		
Beginning stocks	6.1	9.5	8.2	-13.5
Imports	0.0	0.0	0.0	0.0
Production	21.6	19.4	15.0	-22.7
Total supply	27.7	28.9	23.2	-19.6
Mill use	4.9	4.7	4.5	-4.3
Exports	13.0	14.5	15.0	3.4
Total use	18.0	19.2	19.5	1.6
Unaccounted	0.2	0.0	0.0	
Ending stocks	9.5	9.7	3.7	-61.7
		<i>Percent</i>		
Stocks to use ratio	52.8	50.5	19.1	
		<i>Cents per pound</i>		
Average market price	46.50	56.20*		

\*The estimates for 2006/07 and the forecasts for 2007/08 are from the *World Agricultural Supply and Demand Estimates* report of April 9, 2008, and the 2008/09 forecasts were released at USDA's *Agricultural Outlook Forum* of February 21-22, 2008.

# Monthly Farmer Cotton Marketings

## 5-year Average



# Daily Cash Market Cotton Prices

2004/05 through 2007/08 to date

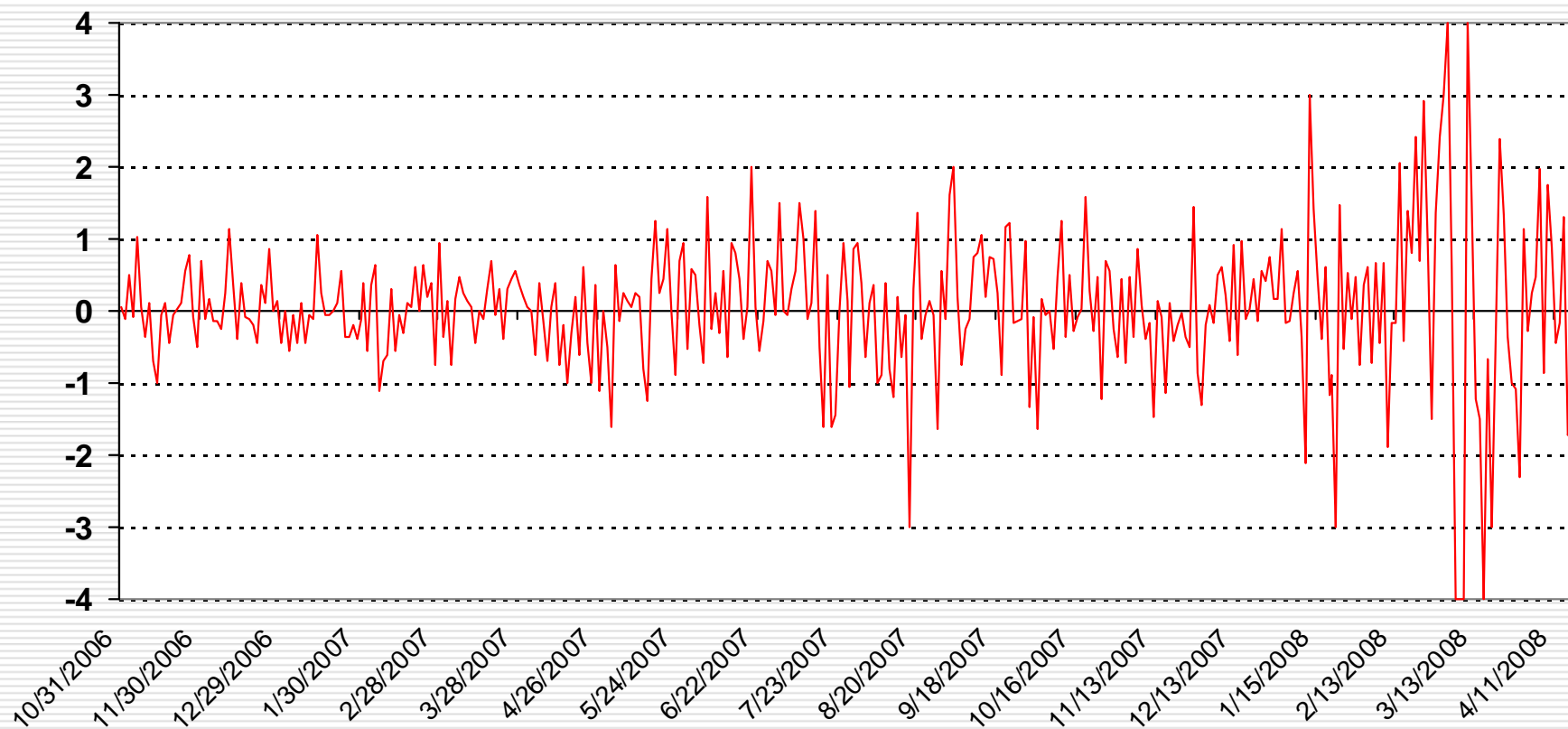


Note: Memphis 1 1/16.

# July 2008 Cotton Futures – Daily Changes

## Volatility Increasing

Cents per pound



# Area Planted, 5 major crops

## *USDA forecasts for 2008/09*

	2007/08 actual	Initial 2008/09 forecast 1/	March 2008/09 forecast 2/	June 2008/09 forecast 3/
Million acres				
Corn	93.6	90.0	86.0	
Soybeans	63.6	71.0	74.8	
Wheat	60.4	64.0	63.8	
All Cotton	10.8	9.5	9.4	
Rice	2.8	2.7	2.8	
5-crop total	231.2	237.2	236.8	

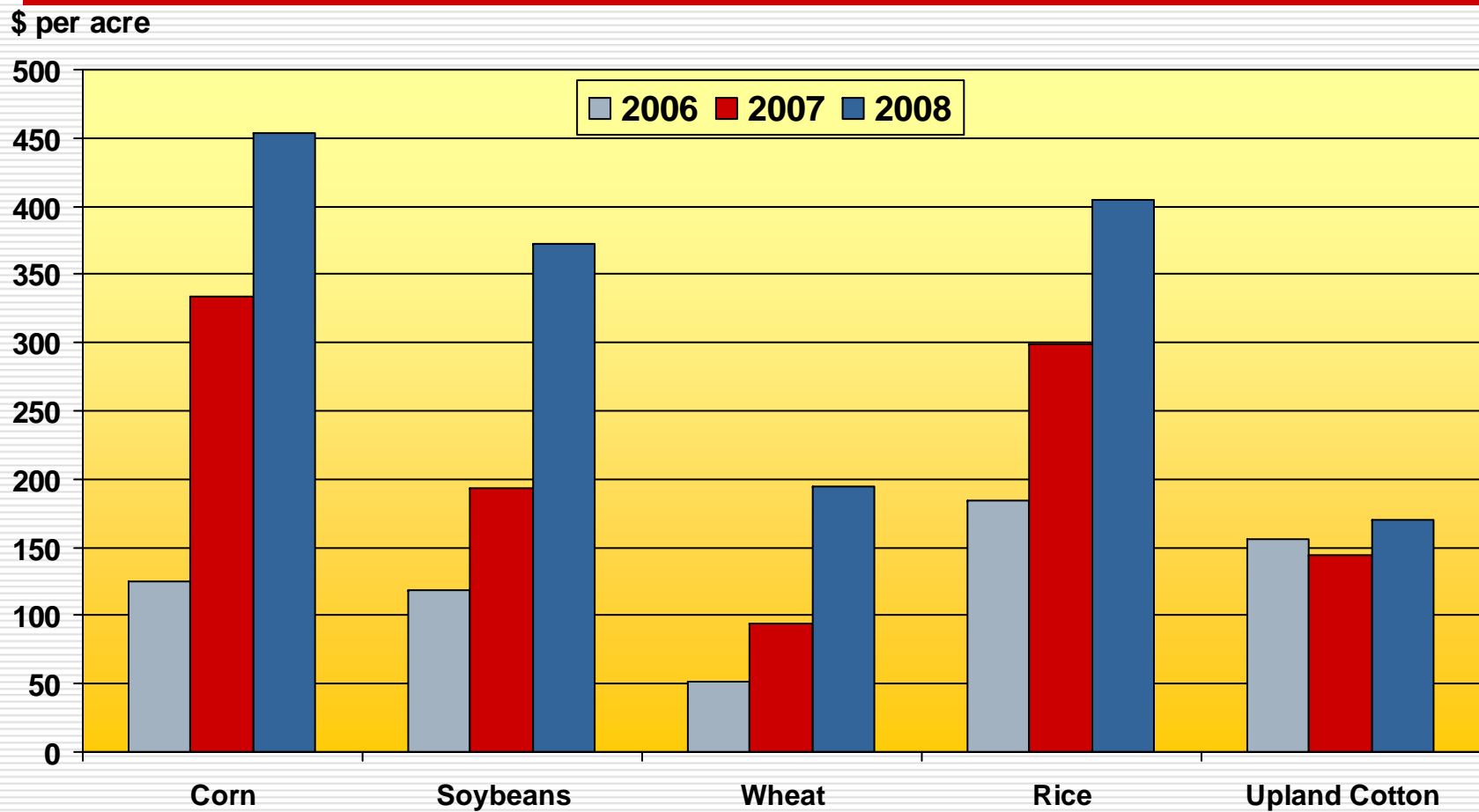
1/ February 22, 2008, Agricultural Outlook Forum.

2/ March 31, 2008, *Prospective Plantings*, from the National Agricultural Statistics Service.

3/ June 30, 2008, *Acreage*, from the National Agricultural Statistics Service.

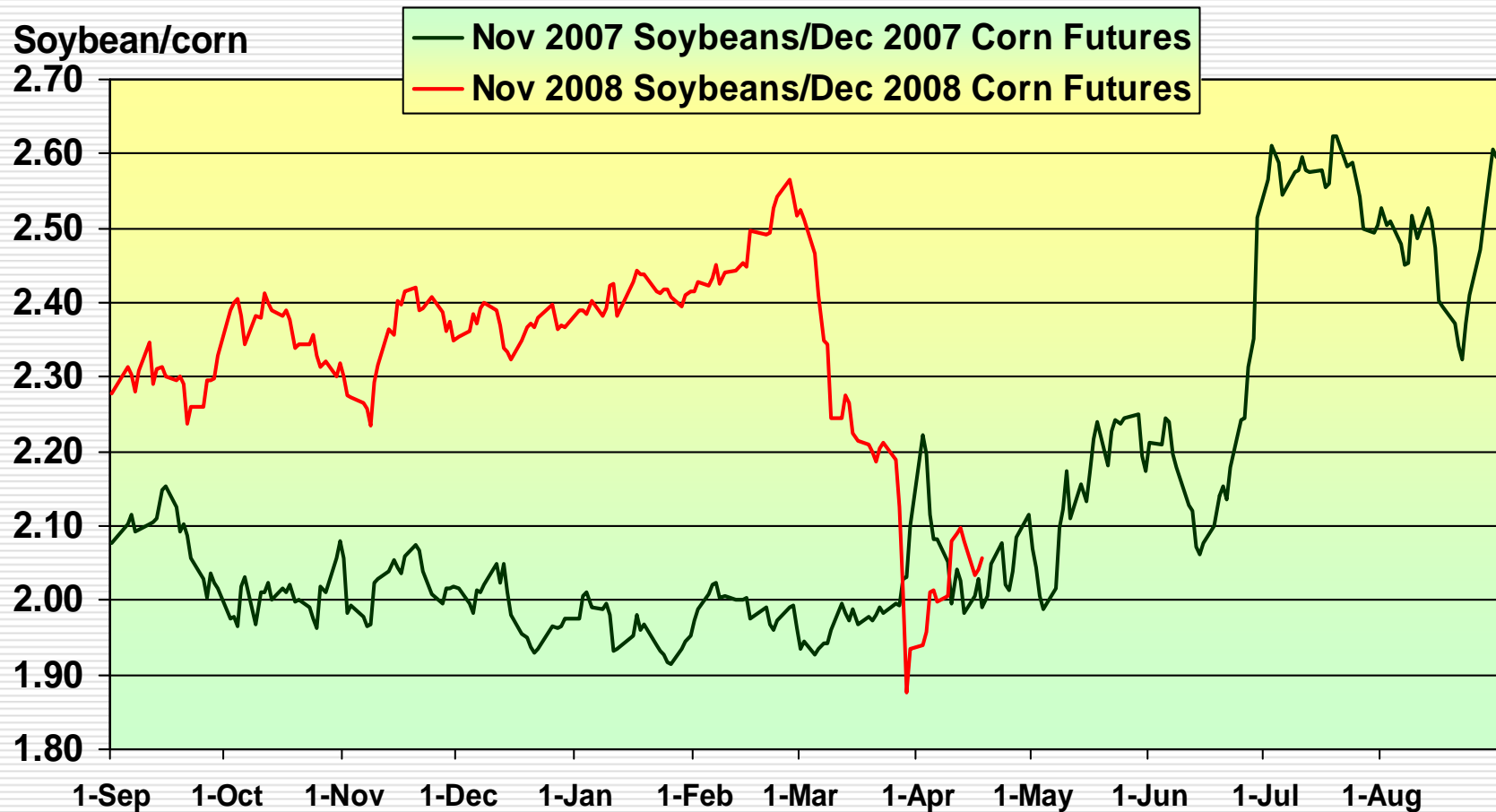


## Net Returns Outlook for the Major Field Crops Spring 2006, 2007, and 2008



# New-crop Soybean/Corn Price Ratios

## 2007-crop and 2008-crop through April 18, 2008



Note: Chicago Board of Trade daily settlement prices.

# Area Planted, 5 major crops

## *USDA forecasts and actual for 2007/08*

	Initial 2007/08 forecast 1/	March 2007/08 forecast 2/	June 2007/08 forecast 3/	Actual 2007/08 acreage
Million acres				
Corn	87.0	90.5	92.9	93.6
Soybeans	70.5	67.1	64.1	63.6
Wheat	60.0	60.3	60.5	60.4
All Cotton	13.0	12.1	11.1	10.8
Rice	2.9	2.6	2.7	2.8
5-crop total	233.4	232.6	231.3	231.2

1/ March 2, 2007, Agricultural Outlook Forum.

2/ March 30, 2007, *Prospective Plantings*, from the National Agricultural Statistics Service.

3/ June 29, 2007, *Acreage*, from the National Agricultural Statistics Service.