



Grain Price OUTLOOK



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CORN: FOCUS REMAINS ON WEATHER AND CROP DEVELOPMENT

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Summary

The USDA's June *Acreage* report confirmed that planted area of corn in 2005 exceeded March intentions. However, the 179,000 acre increase was less than expected. Planted area is at the highest level since 1985 and exceeds 2004 acreage by 662,000 acres.

Stocks of U.S. corn on June 1 were estimated at 4.32 billion bushels, the most since 1987 and 45 percent larger than stocks of a year ago, which were at a 7-year low. The level of inventory was smaller than expected, indicating that either domestic use of corn is proceeding more rapidly than forecast and/or the 2004 U.S. corn crop was slightly over-estimated. Year ending stocks of U.S. corn are expected to be near 2.115 billion bushels, the largest inventory since 1988.

Corn prices traded in an extremely narrow range during the winter months of 2004-05, but became more volatile in the spring and early summer months on the basis of production uncertainty. December 2005 futures established a contract low of \$2.2075 in May 2005 and traded to a high of \$2.65 in mid July 2005. The contract high of \$2.885 was established in April 2004. Prices are expected to remain volatile through the end of the growing season. At this juncture a crop between 10 and 10.3 billion bushels is

expected, suggesting a 2005-06 marketing year average farm price between \$2.20 and \$2.30 per bushel.

Adequate Old Crop Stocks

The USDA estimated June 1 stocks of corn in the U.S. at 4.32 billion bushels (Table 1). That estimate exceeds the inventory of a year ago by 1.35 billion and is the largest since 1988. During the third quarter of the marketing year, U.S. corn disappearance totaled 2.439 billion bushels, 133 million above the previous record of last year. Census Bureau estimates showed exports of 427 million bushels during the third quarter of the marketing year and cumulative shipments through the first three quarters of 1.36 billion bushels. Through July 7, cumulative exports were at 1.535 billion. As of July 7, the USDA reported unshipped export sales of U.S. corn at 225.4 million bushels, suggesting that 1.76 billion bushels of corn had been committed to export during the current marketing year. With just under 8 weeks left in the marketing year, new sales need to total only 65 million bushels to reach the USDA projection of 1.825 billion for the year. Weekly shipments, however, need to average near 38 million bushels to reach the USDA projection. Weekly shipments in June averaged 36.5 million bushels. It appears that exports will

reach the USDA projection of 1.825 billion bushels.

The use of corn for seed, food, and industrial purposes during the third quarter of the year was estimated at 699 million bushels. The remainder of the total quarterly disappearance, 1.313 billion bushels, was in the feed and residual category. That figure is 152 million larger than use in that category during the same quarter last year and 147 million above the record use of three year ago. Use during the quarter was larger than expected based on the number of livestock and poultry being fed and suggests that "residual" use may have been unusually large during the quarter. The implication is that the 2004 corn crop may have been smaller than the current estimate of 11.807 billion bushels. It appears that 2004-05 marketing year ending stocks of U.S. corn will be near 2.115 billion bushels (Table 2). That level of inventory would be the largest in 12 years. Year ending stocks as a percent of marketing year disappearance is projected at 19.8 percent, the largest in 12 years.

2005 Production Very Uncertain

The USDA's June *Acreage* report indicated that U.S. producers planted 81.593 million acres of corn in 2005, 662,000 more than planted last year and the most since 1985 (Table 3). Year over year increases in corn acreage totaled 350,000 in Illinois; 100,000 in Indiana, Ohio and Wisconsin; 300,000 in Iowa; 350,000 in Kansas; and 150,000 in Missouri and Nebraska. Acreage declined by 300,000 in North Dakota and 250,000 in South Dakota and was unchanged in Minnesota.

The outlook for corn acreage to be harvested for grain and for the average U.S. yield is very uncertain due to adverse growing conditions in large sections of the eastern corn belt. In addition, some private forecasts in mid-July suggest that stressful weather might also impact crops in portions of the western corn belt. On the other hand, the National Weather

Service forecast for the remainder of July indicated normal to above normal rainfall in most growing areas. As of July 10, the USDA reported that 58 percent of the U.S. corn crop was in good or excellent condition and 17 percent was in poor or very poor condition. Crop conditions were best in Nebraska, Minnesota, Iowa, and the Dakotas and the worst in Illinois, Indiana, and Ohio. In Illinois, only 16 percent of the crop was in good or excellent condition. It now appears that some acreage in the driest areas of the eastern corn belt, particularly in Illinois, may not be harvested for grain due to crop failure. In addition, average yields of harvested acreage will be well below trend in the most stressed areas. Anticipating U.S. production under these conditions is very difficult. For now a forecast of acreage harvested for grain of 73.9 million acres is used, down from the USDA's June forecast of 74.368 million.

Over the past 19 years, there has been a fairly strong relationship between the percentage of the crop rated good or excellent in the last USDA report of the season and the U.S. average trend-adjusted yield. Crop condition ratings have explained 89 percent of the variation in annual yield (trend adjusted) over that 19 year period. Deviations between predicted and actual yields were small in 16 of the 19 years, with one of the largest deviation occurring in 2004 (yields higher than predicted by crop condition ratings). The relationship between crop conditions and yield for 2005 is estimated as: $\text{yield} = 105.65 + .6567 (\% \text{ of crop in good or excellent condition})$, with crop rating being the last of the season.

For the 2005 average yield to be below the trend value of about 145, less than 60 percent of the crop would have to be in the good to excellent category at the end of the season. Examples of year ending crop ratings and expected yield are as follows:

% Good or Excellent	Expected Yield
60	145.1
55	141.8
50	138.5
45	135.2
40	131.9
35	128.6
30	125.4

Unless weather conditions improve significantly, U.S. crop ratings are expected to continue to decline from the current 58 percent good to excellent. A decline below 45 percent is not expected at this time, suggesting a U.S. average yield above 135 bushels per acre. With an average yield of 137 bushels, the 2005 crop would be very near 10.125 billion bushels.

Use to Increase

Use of U.S. corn for all purposes during the current marketing year is projected at a record 10.66 billion bushels. Some of the increase over that of 2003-04, however, appears to be in "residual" or unexplained use, perhaps related to an over-estimate of the size of the 2004 crop. For the 2005-06 marketing year, domestic feed and residual use could be somewhat smaller than use during the current year, with little expansion in livestock numbers and a more typical level of residual use. Use in that category is projected at 5.9 billion bushels (Table 2). Domestic processing use of corn is expected to continue to expand, driven almost exclusively by an increase in ethanol production. An increase of 185 million bushels (13 percent) in the amount of corn used for ethanol is projected, resulting in a projection of 2.875 billion bushels for all food, seed, and industrial purposes.

U.S. corn exports during the current marketing year have been smaller than projected last fall. Increased competition from wheat feeding and

larger than projected corn exports from China have contributed to the shortfall in U.S. exports. For the 2005-06 marketing year, wheat feeding will continue to provide competition for corn, even with a smaller world wheat crop. However, a sharp decline in world coarse grain production and a 50 percent expected decline in Chinese corn exports should support the demand for U.S. corn exports. An increase of 125 million bushels, to a total of 1.95 billion is projected. The use of U.S. corn for all purposes during the year ahead is projected at 10.725 billion bushels, leaving year-ending stocks of 1.575 billion. The year-ending stocks to use ratio, then, is projected to decline to 14.6 percent, about equal to the average of the previous 5 years.

Price Prospects

For the 2004-05 marketing year, the average central Illinois daily spot price of corn reached a low of \$1.695 on November 4, 2004, recovered to \$1.85 by the end of November, remained near that level through mid-February 2005, traded over \$2.00 in mid-March and reached a post-harvest high of \$2.30 on July 14. The monthly weighted US average farm price was highest in September 2004, at \$2.20, reflecting some old crop sales and forward contracts of new crop corn. The average was lowest in February 2005 at \$1.95. Based on historical marketing patterns, about 90 percent of the intended sales of 2004 crop corn have likely been completed. The average price for the 2004-05 marketing year will be near \$2.05.

December 2005 corn futures established a contract high of \$2.885 in April 2004 and a contract low of \$2.2075 in May 2005. That contract is currently trading near \$2.60, with a recent high of \$2.65. At the close of trade on July 14, 2005, the futures market reflected a 2005-06 marketing year average farm price of about \$2.48, assuming average basis levels and a typical farmer marketing pattern for the 2005 crop. That price is well above

the \$1.70 to \$2.10 average price forecast by the USDA in its July report of supply and consumption prospects. The difference in opinion about the value of corn between the market and the USDA lies in part in the market's perception that the 2005 average corn yield will be below the 145 bushel average projected by the USDA. Each two-bushel reduction in yield would raise the expected average price by about \$.05 per bushel, all else remaining unchanged.

Part of the difference in opinion about value may also be related to the uncertainty about the value of corn for a given level of supply, consumption, and stocks. We have previously discussed the seeming shift in the relationship between the average marketing year farm price and the level of year ending stocks-to-use. Based on the time period from 1989-90 through 1997-98, that relationship is estimated as:

$$\text{price} = (6.89 \div \text{stocks-to-use}) + \$1.90.$$

Based on the period 1998-99 through 2003-04, that relationship is estimated as:

$$\text{price} = (9.58 \div \text{stocks-to-use}) + \$1.38.$$

The USDA currently projects the 2005-06 marketing year ending stocks to use ratio at 21 percent. Based on the early time period, that ratio suggests a marketing year average price of \$2.23 per bushel. Based on the latter time period, that ratio suggests an average price of \$1.84. Much like the current marketing year, the USDA sees the average price during the year ahead somewhere in between these two estimates.

Under the early relationship, the current market price offered by the futures market (\$2.48) implies an ending stocks-to-use ratio of 11.9 percent (1.272 billion bushels), production of 9.82 billion bushels, and an average yield of 132 to 133 bushels per acre. Under the latter relationship, the current futures market implies an ending stocks-to-use ratio of 8.7 percent (933 million bushels), production of 9.53 billion and an average yield of 128 to 129 bushels per acre.

The bottom line is that the market may have as much as a 15 bushel yield reduction (compared to the USDA forecast of 145 bushels) already built into the price structure. A crop condition report showing about 40 percent of the crop in good or excellent condition will be required to confirm such a reduction. With so much of the growing season left, it is not possible to judge whether the market has over-reacted. However, historical evidence suggests that the market does tend to build in too much yield loss so that pre-harvest selling opportunities do (or will) exist. For now, December futures near the recent high of \$2.65 appears to be an attractive pricing target. There is some chance that continued stressful weather could push the price of that contract higher, but there is now also some significant downside risk.

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Table 1. Corn Quarterly Balance Sheet

	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
	million bushels																					
September 1 stocks	3,523	1,006	1,648	4,040	4,882	4,259	1,930	1,344	1,521	1,100	2,113	850	1,558	426	883	1,308	1,787	1,718	1,899	1,596	1,087	958
Production	4,174	7,672	8,875	8,226	7,131	4,929	7,532	7,934	7,475	9,477	6,338	10,051	7,400	9,233	9,207	9,759	9,431	9,915	9,503	8,968	10,089	11,807
TOTAL ^a	7,699	8,680	10,534	12,267	12,016	9,191	9,464	9,282	9,016	10,584	8,472	10,910	8,974	9,672	10,099	11,085	11,232	11,640	11,412	10,578	11,190	12,780
September-November																						
Seed, food, ind.	227	244	276	295	296	302	312	338	361	370	383	410	417	388	435	450	459	466	492	549	588	642
Export	493	503	415	318	396	471	582	383	421	488	435	449	660	487	380	450	535	507	448	393	470	498
Feed, residual	1,326	1,301	1,219	1,348	1,551	1,344	1,487	1,619	1,673	1,814	1,701	1,963	1,778	1,885	2,030	2,118	2,188	2,131	2,200	1,986	2,167	2,176
TOTAL	2,046	2,048	1,910	1,961	2,243	2,117	2,381	2,339	2,455	2,672	2,519	2,822	2,856	2,759	2,845	3,018	3,182	3,104	3,140	2,928	3,226	3,316
December 1 stocks	5,652	6,631	8,615	10,305	9,771	7,072	7,082	6,940	6,547	7,906	5,937	8,080	6,106	6,903	7,247	8,052	8,039	8,530	8,265	7,638	7,954	9,451
Seed, food, ind.	212	236	262	281	288	301	313	330	362	365	379	410	405	400	425	434	447	465	482	563	609	637
Export	506	580	460	313	405	502	682	471	362	463	330	590	562	525	380	465	465	415	448	390	499	439
Feed, residual	1,069	1,192	1,306	1,463	1,444	1,065	1,276	1,351	1,267	1,401	1,240	1,492	1,344	1,486	1,503	1,460	1,529	1,607	1,540	1,557	1,578	1,621
TOTAL	1,787	2,008	2,028	2,057	2,137	1,868	2,271	2,152	1,991	2,229	1,949	2,493	2,311	2,411	2,308	2,359	2,441	2,488	2,471	2,510	2,686	2,697
March 1 stocks	3,865	4,623	6,587	8,248	7,636	5,204	4,812	4,789	4,561	5,678	3,996	5,592	3,800	4,494	4,940	5,698	5,602	6,043	5,795	5,132	5,271	6,754
Seed, food, ind.	253	294	307	333	337	353	376	384	414	414	423	452	433	471	470	495	512	514	539	617	676	694
Export	513	475	201	496	510	592	601	454	371	411	270	568	610	433	350	497	451	455	497	393	469	427
Feed, residual	954	1,019	1,091	1,088	951	841	993	960	1,042	1,146	950	1,159	1,044	1,097	1,084	1,097	1,058	1,153	1,166	1,141	1,161	1,313
TOTAL	1,720	1,788	1,599	1,917	1,798	1,786	1,970	1,798	1,828	1,971	1,642	2,180	2,087	2,001	1,904	2,089	2,022	2,122	2,203	2,151	2,306	2,439
June 1 stocks	2,145	2,836	4,990	6,332	5,839	3,419	2,843	2,992	2,739	3,709	2,360	3,415	1,718	2,497	3,040	3,616	3,586	3,924	3,597	2,985	2,970	4,320
Seed, food, ind.	238	293	307	324	331	341	369	374	396	407	429	442	373	460	475	467	496	512	532	611	664	
Export	374	292	151	365	406	463	503	419	430	301	293	570	396	353	394	572	485	564	512	411	459	
Feed, residual	527	603	499	761	843	685	627	679	816	891	789	846	527	809	865	792	890	951	958	879	892	
TOTAL	1,139	1,188	957	1,450	1,580	1,489	1,499	1,472	1,642	1,599	1,511	1,858	1,295	1,617	1,734	1,831	1,871	2,027	2,002	1,900	2,014	
September 1 stocks	1,006	1,648	4,040	4,882	4,259	1,930	1,344	1,521	1,100	2,113	850	1,558	426	883	1,308	1,787	1,718	1,899	1,596	1,087	958	
Annual																						
Seed, food, ind.	930	1,067	1,152	1,233	1,251	1,298	1,370	1,425	1,533	1,556	1,613	1,715	1,628	1,714	1,805	1,846	1,913	1,957	2,046	2,340	2,537	
Export	1,887	1,850	1,227	1,492	1,716	2,029	2,367	1,727	1,584	1,663	1,328	2,177	2,228	1,797	1,504	1,989	1,937	1,941	1,905	1,588	1,897	
Feed, residual	3,876	4,115	4,114	4,660	4,789	3,934	4,382	4,609	4,798	5,252	4,680	5,460	4,693	5,277	5,482	5,468	5,665	5,842	5,864	5,563	5,798	
TOTAL	6,693	7,032	6,494	7,385	7,757	7,260	8,120	7,761	7,916	8,471	7,622	9,352	8,548	8,789	8,791	9,298	9,515	9,741	9,815	9,491	10,232	

^a Includes imports for the

Table 2. Corn Annual Balance Sheet

	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06 ^a
	million bushels																
Carryin	1,930	1,344	1,521	1,100	2,113	850	1,558	426	883	1,308	1,787	1,718	1,899	1,596	1,087	958	2,115
Production	<u>7,532</u>	<u>7,934</u>	<u>7,475</u>	<u>9,477</u>	<u>6,338</u>	<u>10,051</u>	<u>7,400</u>	<u>9,233</u>	<u>9,207</u>	<u>9,759</u>	<u>9,431</u>	<u>9,915</u>	<u>9,503</u>	<u>8,968</u>	<u>10,089</u>	<u>11,807</u>	<u>10,125</u>
TOTAL ^b	9,464	9,282	9,016	10,584	8,472	10,910	8,974	9,672	10,099	11,085	11,232	11,659	11,412	10,578	11,190	12,775	12,250
Seed, food, industrial	1,370	1,425	1,533	1,556	1,613	1,715	1,628	1,714	1,805	1,846	1,913	1,957	2,046	2,340	2,537	2,685	2,875
Export	2,367	1,727	1,584	1,663	1,328	2,177	2,228	1,797	1,504	1,981	1,937	1,935	1,905	1,588	1,897	1,825	1,950
Feed and residual	<u>4,382</u>	<u>4,609</u>	<u>4,798</u>	<u>5,252</u>	<u>4,680</u>	<u>5,460</u>	<u>4,693</u>	<u>5,277</u>	<u>5,482</u>	<u>5,471</u>	<u>5,664</u>	<u>5,848</u>	<u>5,864</u>	<u>5,563</u>	<u>5,798</u>	<u>6,150</u>	<u>5,900</u>
TOTAL	8,120	7,761	7,915	8,471	7,621	9,352	8,548	8,789	8,791	9,298	9,515	9,741	9,815	9,491	10,232	10,660	10,725
Carryout	1,344	1,521	1,100	2,113	850	1,558	426	883	1,308	1,787	1,718	1,899	1,596	1,087	958	2,115	1,525
U.S. average price	\$2.36	\$2.28	\$2.37	\$2.07	\$2.50	\$2.26	\$3.24	\$2.71	\$2.45	\$1.94	\$1.82	\$1.85	\$1.97	\$2.32	\$2.42	\$2.05	\$2.25

^a Projected^b Includes imports

Table 3. United States Corn Planting Intentions, Actual Plantings, and Acres Harvested

Year	Planted Acreage			Actual	Harvested Acreage
	February/January Intentions	March Intentions	June Intentions		
			thousand acres		
1976	80,822	82,727	84,092	84,588	71,506
1977	84,526	83,923	82,735	84,328	71,614
1978	80,944	80,237	78,717	81,675	71,930
1979	80,676	79,209	79,751	81,394	72,400
1980	83,131	82,022	83,478	84,043	72,961
1981	...	83,977	84,677	84,097	74,524
1982	...	84,735	82,129	81,857	72,719
1983	69,569 ^a	58,812	60,129	60,217	51,479
1984	...	81,766	79,940	80,617	71,897
1985	...	82,021	83,217	83,398	75,209
1986	...	78,066	76,646	76,580	68,907
1987	...	67,556	66,024	66,200	59,505
1988	...	66,926	67,519	67,717	58,250
1989	...	73,253	72,790	72,322	64,783
1990	...	74,804	74,574	74,166	66,952
1991	77,500	76,124	75,909	75,957	68,822
1992		79,007	79,335	79,311	72,077
1993		76,486	74,259	73,239	62,933
1994		78,625	78,767	78,921	72,514
1995		75,323	72,800	71,479	65,210
1996		79,920	80,355	79,229	72,644
1997		81,416	80,227	79,537	72,671
1998		80,781	80,798	80,165	72,589
1999		78,219	77,611	77,386	70,487
2000		77,881	79,579	79,551	72,440
2001		76,693	76,109	75,702	68,768
2002		79,047	78,847	78,894	69,330
2003		79,022	79,066	78,603	70,944
2004		79,004	80,968	80,930	73,632
2005		81,413	81,592		74,368

^a February

Table 4. United States Corn Yield Estimates

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
	bushels per acre																														
July 1	93.0	90.5	89.4	90.1	95.8	99.3	95.9	87.0																	
August 1	87.4	86.7	87.3	96.1	102.1	93.0	104.3	113.9	99.9	107.9	110.6	120.4	121.4	78.5	112.8	117.7	107.8	121.3	116.0	128.4	125.6	118.7	125.3	130.0	134.7	141.9	133.9	125.2	139.9	148.9	
September 1	85.1	82.8	89.7	100.3	104.6	91.8	107.1	113.9	85.1	106.3	113.3	119.7	119.9	78.5	112.4	121.7	106.1	121.4	113.1	129.0	121.1	120.2	125.2	132.0	132.2	141.8	133.5	125.4	138.5	149.4	
October 1	86.2	82.7	90.8	100.7	106.4	90.8	109.0	114.2	82.9	105.5	115.1	119.2	119.9	80.2	114.4	120.3	108.8	123.8	110.3	133.8	116.6	123.0	125.8	132.0	133.5	139.6	136.3	127.2	142.2	158.4	
November 1	87.2	85.5	91.5	101.2	109.2	90.8	109.2	114.2	80.5	105.9	116.6	119.3	120.3	82.3	116.6	119.0	108.6	129.3	103.1	138.4	113.7	126.5	126.4	133.3	134.5	137.7	138.0	127.6	143.2	160.2	
January 1	86.2	87.4	90.8	101.2	109.4	91.0	109.9	114.8	81.6	106.6	118.0	119.3	119.4	84.6	116.2	118.5	108.6	131.4	100.7	138.6	113.5	127.1	127.0	134.4	133.8	137.1	138.2	130.0	142.2	160.4	
FINAL	86.4	88.0	90.8	101.0	109.5	91.0	108.9	113.2	81.1	106.7	118.0	119.3	119.8	84.6	116.3	118.5	108.6	131.5	100.7	138.6	113.5	127.1	126.7	134.4	133.8	136.9	138.2	129.3	142.2		

Table 5. United States Corn Production Estimates

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	million bushels																							
July	7,116	5,200																
August	7,735	8,315	5,237	7,668	8,266	8,316	7,231	4,479	7,348	7,850	7,418	8,762	7,423	9,214	8,122	8,695	9,276	9,592	9,561	10,369	9,266	8,886	10,064	10,923
September	7,940	8,319	4,390	7,552	8,469	8,268	7,141	4,462	7,321	8,118	7,295	8,770	7,229	9,257	7,832	8,804	9,268	9,738	9,381	10,362	9,238	8,849	9,944	10,961
October	8,081	8,315	4,259	7,498	8,603	8,220	7,139	4,553	7,449	8,022	7,479	8,938	6,962	9,602	7,541	9,012	9,312	9,743	9,467	10,192	9,430	8,970	10,207	11,613
November	8,097	8,330	4,121	7,527	8,717	8,223	7,166	4,671	7,590	7,935	7,479	9,329	6,503	10,010	7,374	9,265	9,359	9,836	9,537	10,054	9,546	9,003	10,278	11,741
January	8,201	8,397	4,204	7,656	8,865	8,253	7,064	4,921	7,527	7,933	7,474	9,479	6,344	10,103	7,374	9,293	9,366	9,761	9,437	9,968	9,507	9,008	10,114	11,807
FINAL	8,119	8,235	4,174	7,672	8,875	8,226	7,131	4,929	7,532	7,934	7,475	9,477	6,338	10,051	7,400	9,233	9,207	9,759	9,431	9,915	9,503	8,967	10,089	