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Wheat Year in Review (Domestic): Higher Domestic Use and Exports Lower 2010/11 Ending Stocks

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Abstract

Total U.S. wheat supplies for the 2010/11 marketing year (June 1, 2010-May 31, 2011) were above those of the previous year as much higher beginning stocks more than offset slightly lower production and imports. All domestic use was down slightly year to year as reduced feed and residual use more than offset higher food and seed use. Exports were up substantially because of reduced production in competing countries mostly due to adverse weather conditions. The sharply higher exports lowered total U.S. ending stocks for 2010/11 below those of 2009/10. The loss of production and quality in competing exporter countries due to adverse weather led to a very strong rally in global wheat prices, pushing the U.S. season average price for 2010/11 substantially above the previous year.

Keywords: Wheat, United States, world, production, feed, consumption, supply, use, stocks, price, USDA, U.S. Department of Agriculture, ERS, Economic Research Service

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Summary

The Economic Research Service's wheat situation and outlook program publishes 12 monthly reports each year detailing the factors underlying the month-to-month changes in the U.S. Department of Agriculture's wheat supply and demand projections as published in the *World Agricultural Supply and Demand Estimates* (WASDE). This report provides an annual year-in-review discussion of the 2010/11 domestic marketing year (June 1, 2010-May 31, 2011), covering supply, utilization, ending stocks, and prices.

The dominant feature of the 2010/11 marketing year was the big price rise that began in June 2010. The catalyst for the price rally was a severe drought in Russia and neighboring countries. Many farmers, anticipating lower prices because of expected big U.S. and world wheat supplies, sold part of their 2010 production for low, pre-rally prices. As global markets became concerned about the production and quality losses of high-protein hard wheats in North American, Europe, and Australia, prices of U.S. high-protein hard wheats outpaced the lower protein grades of hard wheat. Supported by rising corn prices, the U.S. monthly average farmgate wheat price nearly doubled from June 2010 to May 2011.

Supplies. Total U.S. supplies for 2010/11, at 3,279 million bushels, were up 286 million bushels from those of the previous year as much higher beginning stocks more than offset slightly lower production and imports. Beginning stocks for 2010/11 were 976 million bushels, 319 million bushels more than in 2009/10.

All-wheat production was estimated at 2,207 million bushels for 2010, down 11 million bushels from that of 2009. All-wheat harvested area for 2010 was 47.6 million acres, down 2.3 million acres from that of the previous year. The U.S. all-wheat yield was a record high 46.3 bushels per acre, surpassing the previous record of 44.9 bushels per acre in 2008.

Utilization. Domestic use of wheat in 2010/11 was down year to year by 7 million bushels to 1,128 million bushels. Rising population, nearly steady per capita flour use, and continued high flour extraction rates resulted in a slight increase in bushels of wheat milled compared with the year before. High wheat prices relative to corn limited wheat used for livestock feeding. U.S. exports for 2010 were up 410 million bushels from 2009/10 to 1,289 million bushels as adverse weather conditions in competing countries reduced wheat production and lowered milling quality, which raised demand for U.S. wheat.

Ending stocks. Total U.S. ending stocks for 2010/11, at 862 million bushels, were down 114 million bushels, or 12 percent, from those of 2009/10. Despite the decline, 2010/11 ending stocks were the third-highest of the past decade and still 556 million bushels above 2007/08 ending stocks. Ending stocks for 2007/08 were the lowest since the late 1940s.

Price. The all-wheat season-average price (SAP) for 2010/11 was \$5.70 per bushel. This price was above the SAP for the preceding marketing year of \$4.87, but less than the all-time record \$6.78 in 2008/09 and the previous record of \$6.48 in 2007/08. The 2010/11 price was higher than all years prior to 2007/08.

All Wheat Situation for 2010/11

Global Origins of 2010/11 U.S. Price Spike

World wheat ending stocks for 2009/10 grew to 201 million metric tons (mmt) after dropping to an exceedingly tight 127 mmt 2 years before. The sharp increase in stocks over such a short period was driven by 2 years of record world production. Record high prices with low ending stocks resulted in more planted wheat area around the world. Weather also cooperated and yields were at a record level for both years. The combination took world wheat production from 596 mmt in 2006 to 683 mmt in 2008 and 684 mmt for 2009. The previous record world wheat crop was 626 mmt in 2004. The world quickly produced its way out of the extreme tightness, resulting in lower wheat prices by the start of 2009 fall planting of the 2010 winter wheat crop in the United States. Reduced prospects for returns and adverse fall weather resulted in lower winter wheat seedings for the 2010 crop.

A severe drought in Russia was the catalyst for the 2010/11 price rally that began in mid-June of 2010. This drought started late in the spring. Many farmers, anticipating low prices because of expected big U.S. and world wheat supplies, sold part of their 2010 production for low, pre-rally prices. Supported by additional production losses in other countries due to adverse weather and rising corn prices, U.S. farmgate prices increased \$4.00 per bushel (96 percent) from June 2010 to May 2011.

As global markets became concerned about the production and quality losses of high-protein hard wheats in North American, Europe, and Australia, prices of U.S. high-protein hard wheats outpaced the low-protein grades of hard wheat. The relative global shortage of high-protein hard wheats led to unusually large protein premiums in the United States.

U.S. Supplies for 2010/11

Total U.S. supplies for 2010/11, at 3,279 million bushels, were up 286 million bushels from the previous year (table 1). Much higher beginning stocks more than offset slightly lower production and imports.

Beginning Stocks. Beginning stocks for 2010/11 were 976 million bushels, the largest since 1988/89 and 319 million bushels above the 2009/10 beginning stocks of 657 million bushels.

Imports. Imports for 2010/11, at 97 million bushels, were down 22 million bushels from 2009/10 because of more-than-adequate U.S. supplies and some quality problems with the Canadian wheat crop.

Production. U.S. all-wheat production was 2,207 million bushels for 2010, down 11 million bushels from that of 2009. All-wheat harvested area for 2010 was 47.6 million acres, down 2.3 million acres from that of the previous year. The U.S. all-wheat yield was a record-high 46.3 bushels per acre, up 1.8 bushels from 2009. The previous record yield was 44.9 bushels per acre in 2008.

U.S. planted area for 2010/11, at 53.6 million acres, was down 5.6 million acres from the 2009 acreage of 59.2 million, because of a 6.0-million-acre decrease in

winter wheat area. Winter wheat seedings in the fall of 2009 were down 14 percent from the previous year to 37.3 million acres. This was the lowest winter wheat seeding since 1913. Winter wheat acreage was down because of low prices and adverse weather. Low Black Sea feed and milling wheat prices had pushed down U.S. and world prices. In addition, delayed fall harvest of corn and soybeans in the eastern Corn Belt further reduced soft red winter (SRW) wheat seedings. There were also seeding problems in Kansas because of wet planting conditions. Therefore, after harvesting corn, sorghum, and soybean crops, some Kansas acres were not planted to wheat as intended. Nationwide, there was a 10-percent decrease in HRW planted area and 37-percent decrease in SRW planted area.

Spring wheat seedings in 2010 were expected to be later than normal. Eastern North Dakota and western Minnesota in early 2010 had saturated soils and a heavy snow cover. There was still some standing corn waiting for harvest in the spring. However, an early spring thaw and warm temperatures advanced the planting season and prompted Northern Plains producers to increase their spring wheat seedings from the previous year. Still, there were 1.7 million acres of prevented plantings in North Dakota. Nationwide, other spring wheat planted area was up 3 percent from 2009 and durum planted area was virtually unchanged.

The 2010 acreage continues the 30-year declining trend in the United States. In 1981 and 1982, wheat planted area was 88.3 million acres and 86.2 million acres, respectively (fig. 1). With the enhanced planting flexibility in the 1996 and succeeding Farm Acts, low returns led to the substitution of competing crops for wheat, particularly on the Plains. For information about the long-term forces behind this large decline in wheat area in the United States, follow the link in the box, “USDA Wheat Baseline, 2011-20.”

USDA Wheat Baseline, 2011-20

Each year, USDA updates its 10-year projections of supply and utilization for major field crops grown in the United States, including wheat (see Overview of the USDA Baseline Process for more information). One key use of the projections is as a “baseline” from which to analyze the impacts of potential policy changes affecting U.S. agriculture.

This discussion summarizes analysis underlying the wheat projections for 2011-20. Details about projections for the U.S. macroeconomy, other U.S. crops, U.S. livestock, farm income and food prices, and U.S. and global agricultural trade, which are critical components of this analysis, can be found in the Agricultural Baseline Projections briefing room.

The U.S. wheat sector faces many long-term challenges:

- The long-term projections point to smaller U.S. wheat planted area compared to recent years, a continuation of a long-term trend as profitability relative to other crops, particularly corn and soybeans, has declined.
- The sharp decline in domestic food use of wheat since 2000—arising from changing consumer preferences—appears to have ended. Future growth is likely to be limited to population growth.

- Internationally, in addition to traditional global competitors (Canada, Argentina, Australia, and the European Union), Ukraine and Russia have emerged as new competitors with the United States in foreign markets in years when their production is high. The overall result in the projections is a smaller U.S. share of an expanding world wheat trade market.

For more information on USDA's 10-year baseline projections for wheat, see <http://www.ers.usda.gov/Briefing/Wheat/2011baseline.htm/>.

U.S. all-wheat harvested area for 2010 decreased less than planted area because favorable weather for the 2010 crop resulted in fewer abandoned acres than in 2009. In 2009, Oklahoma and Texas, in particular, saw adverse weather conditions that resulted in more abandoned acres than average. Abandoned acres in Texas in 2009 were the third-highest on record. The national 2009 HRW wheat harvested-to-planted ratio was 0.76 compared with 0.84 for 2010.

A large contributor to the higher all-wheat average yield for 2010 was the 4.3-bushel-per-acre increase in average HRW yields from 2009. In particular, yields in both Texas and Oklahoma were up 9.0 bushels per acre because of the improved weather conditions in 2010. White wheat yields also improved: up 5.6 bushels per acre in 2010. White wheat yields were up because growing conditions in the Pacific Northwest were generally better than in 2009.

The high yields in 2010 for HRW and hard red spring (HRS) wheat crops resulted in a relative shortage of high-protein hard wheat for making bread products. The favorable weather that produces high yields also results in plump wheat kernels with low protein content. The 2010 hard-wheat crop was the second year in a row with a relative shortage of high-protein hard wheats. The 2010 protein shortage, in combination with the low-protein supplies in the carryin stocks from the 2009 crop, led to higher-than-normal premiums for the available high-protein HRW and HRS supplies.

Table 1--Wheat: U.S. market year supply and disappearance

Item and unit		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Area:							
Planted	Million acres	57.2	57.3	60.5	63.2	59.2	53.6
Harvested	Million acres	50.1	46.8	51.0	55.7	49.9	47.6
Yield	Bushels per acre	42.0	38.6	40.2	44.9	44.5	46.4
Supply:							
Beginning stocks	Million bushels	540	571	456	306	657	976
Production	Million bushels	2,103	1,808	2,051	2,499	2218	2207
Imports 1/	Million bushels	81	122	113	127	119	97
Total supply	Million bushels	2,725	2,501	2,620	2,932	2993	3279
Disappearance:							
Food use	Million bushels	917	938	948	927	919	926
Seed use	Million bushels	77	82	88	78	69	71
Feed and residual use	Million bushels	157	117	16	255	150	132
Total domestic use	Million bushels	1151	1137	1051	1260	1138	1128
Exports 1/	Million bushels	1003	908	1263	1015	879	1289
Total disappearance	Million bushels	2154	2045	2314	2275	2018	2417
Ending stocks	Million bushels	571	456	306	657	976	862
CCC inventory 2/	Million bushels	43	41	0	0	0	0
Stocks-to-use ratio, %		26.5	22.3	13.2	28.9	48.4	35.7
Loan rate	Dollars per bushel	2.75	2.75	2.75	2.75	2.75	2.94
Contract/direct payment rate	Dollars per bushel	0.52	0.52	0.52	0.52	0.52	0.52
Farm price 3/	Dollars per bushel	3.42	4.26	6.48	6.78	4.87	5.70

Totals may not add due to rounding.

1/ Includes flour and selected other products expressed in grain-equivalent bushels.

2/ Stocks owned by USDA's Commodity Credit Corporation (CCC). Most CCC-owned inventory was in the Bill Emerson Humanitarian Trust.

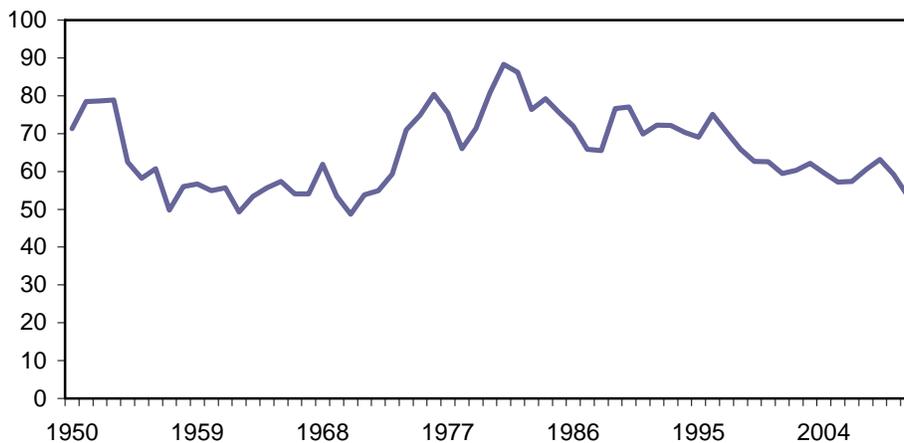
3/ U.S. season-average price based on monthly prices weighted by monthly marketings.

Source: USDA, World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates* and supporting materials.

Figure 1

U.S. wheat planted area, 1950-2010 1/

Million acres



1/ Includes winter wheat area planted in the preceding fall.

Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

Foreign Demand Exceeds Domestic Demand for 2010/11

Domestic use decreased slightly year to year and was 161 million bushels less than U.S. exports for 2010/11. Total domestic use in 2010/11, at 1,128 million bushels, was down 10 million bushels, as reduced feed and residual use more than offset slightly higher food and seed use. U.S. exports, at 1,289 million bushels, were up sharply by 410 million bushels from 2009/10 as adverse weather conditions in competing countries reduced wheat production and milling quality, raising demand for U.S. wheat.

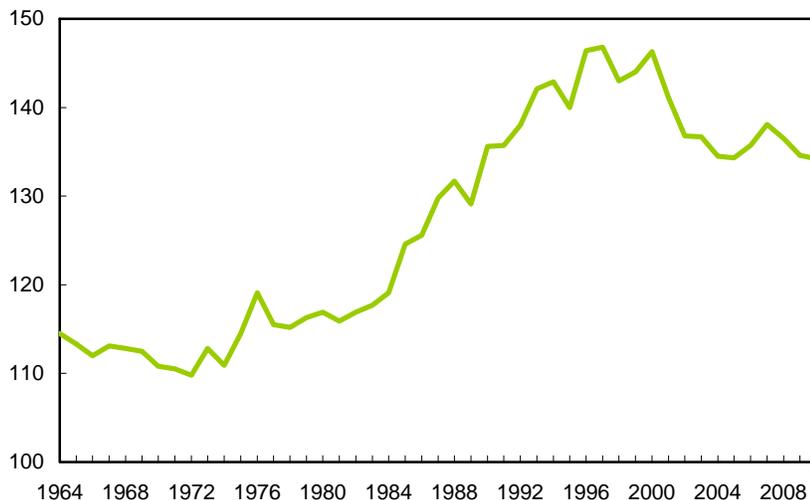
Total Food Use. Total domestic food use of wheat, at 926 million bushels, was up 7 million bushels from 2009/10. Rising population, nearly steady per capita flour use, and continued high flour extraction rates resulted in a slight increase in bushels of wheat milled compared with the year before. The flour extraction rate varies partly with the plumpness of the grain kernels and with the diligence with which mills are kept adjusted to optimize flour extraction. Plumpness is greater when the wheat crop is not stressed by moisture shortages during the grain-filling production stage. The higher the wheat price, the more important it is for mill managers to more frequently adjust their mills to maximize flour extraction. Significant portions of the 2009/10 and 2010/11 crops were not stressed by moisture shortages, and prices were high in both years.

The 2010/11 flour extraction rate continued at extraordinarily high levels, by historical standards, for a third straight year. High flour extraction rates mean that fewer bushels of wheat need to be milled to produce a given quantity of flour. At 76.9 percent, the 2010/11 rate was down slightly from the 77.1-percent rate for the 2009/10 marketing year and the 77.0 percent for 2008/09. The average monthly flour extraction rate from 1990/91 to 2007/08 was 74.6 percent. During this 18-year period, the highest rate was 75.9 percent in 1996/97, the marketing year of with the second highest average wheat prices of the 1990s.

Per Capita Flour Use. Per capita all-wheat flour use for 2010 is estimated at 134.2 pounds. Per capita flour use dropped 0.4 pounds from the 2009 estimate and is now down 3.9 pounds from 2007, a recent peak (fig. 2). Per capita flour use in 2010 is marginally lower than the previous low of 134.3 in 2005. This 2005 low was reached after sharp declines in per capita use from 146.3 pounds in 2000, apparently due to increased consumer interest in low-carbohydrate diets. Time series data of flour consumption can be found at <http://www.ers.usda.gov/Data/Wheat/YBtable29.asp/>.

Figure 2
U.S. per capita wheat flour use

Pounds/person



Source: USDA, Economic Research Service.

From the early 1970s until the late 1990s, U.S. wheat producers could count on rising per capita food use to expand the domestic market for their crop. The growth of the domestic market from the early 1970s to 2000 reflected changes that included the boom in away-from-home eating, the desire of consumers for greater variety and more convenience in food products, promotion of wheat flour and pasta products by industry organizations, and wider recognition of the health benefits of eating high-fiber, grain-based foods.

Feed and Residual Use. Feed and residual use for 2010/11 was down 18 million bushels from 2009/10 to 132 million bushels. High wheat prices relative to corn, particularly in the summer quarter, limited wheat use for livestock feeding.

Exports. U.S. wheat exports for 2010/11 totaled 1,289 million bushels, up from 879 million bushels for 2009/10. The increase in exports for 2010/11 was concentrated in two hard wheat classes. HRW and HRS were up year to year by 246 million bushels and 125 million bushels, respectively. White wheat exports were also up, while exports of SRW and durum were down slightly.

Chronology of weather conditions affecting the global 2010 wheat crop. A sequence of adverse weather events that affected 2010 global wheat quality and supplies resulted in a world shortage of high-protein wheat. Two years of low-protein North American hard-wheat crops coupled with the Russian drought, weather problems in Australia (dry in the west and floods in the east), and a wet harvest in Germany and Canada left the United States as the supplier of last resort for hard wheat.

The weather difficulties for the year began in Canada where spring wheat acres dropped from the previous year. Excessive rainfall at planting time prevented the seeding of many spring wheat acres and constant rains drowned some additional acres that were planted.

Later in the year, a severe drought hit Russia, Kazakhstan, and Ukraine, reducing their production to about two-thirds of their 2009 output. These production losses were a major factor in the 2010/11 price spike. With exports of 18.6 mmt, Russia was the world's fourth-largest wheat exporter in the 2009/10 marketing year, but the country exported only 4 mmt in 2010/11.

Beginning August 15, 2010, Russia's Government banned all grain exports in an attempt to keep inflation in check and protect domestic milling and feed industries. The ban was intended to remain in place until December 31 and included already-signed contracts. Some traders were reportedly in support of the ban since it allowed them to renege on contracts made when prices were much lower. The ban was later extended until the 2011 harvest. Ukraine put into place export quotas that were eventually extended to the end of the marketing year.

EU wheat production was reduced by a combination of a heat wave in Western Europe (especially France, Germany, and the UK) and excessive rainfall in Eastern Europe (Bulgaria, Hungary, and Romania). Then the wheat crops in Germany and Hungary were adversely affected by too much rain at harvest, reducing a significant portion of these crops to feed quality.

Similar quality problems due to excessive harvest-time moisture developed across most of western Canada's primary crop production region and parts of the U.S. Northern Plains. The problem was especially severe in Canada and restricted that country's exports of quality spring wheat.

Excessive dryness for much of the growing season significantly reduced wheat yields and production in western Australia, traditionally the country's top producing State with about 40 percent of the national wheat crop. In eastern Australia, abundant moisture in August and early September led to high yields, but excessive rainfall at harvest reduced a large portion of the crop to feed quality.

One notable weather exception was India, the world's second-largest wheat producer. India harvested a record crop as an above-average monsoon season allowed for plentiful irrigation.

Ending Stocks. Total U.S. ending stocks for 2010/11, at 862 million bushels, were down 114 million bushels, or 12 percent, from those of 2009/10. However, the 2010/11 ending stocks were still 556 million bushels above 2007/08 ending stocks, which were the lowest since the late 1940s (fig. 3). The U.S. stocks-to-use ratio for 2010/11 was 35.7 percent, lower than the 48.4 ratio for 2009/10. The 2009/10 ratio was very high by recent historical standards.

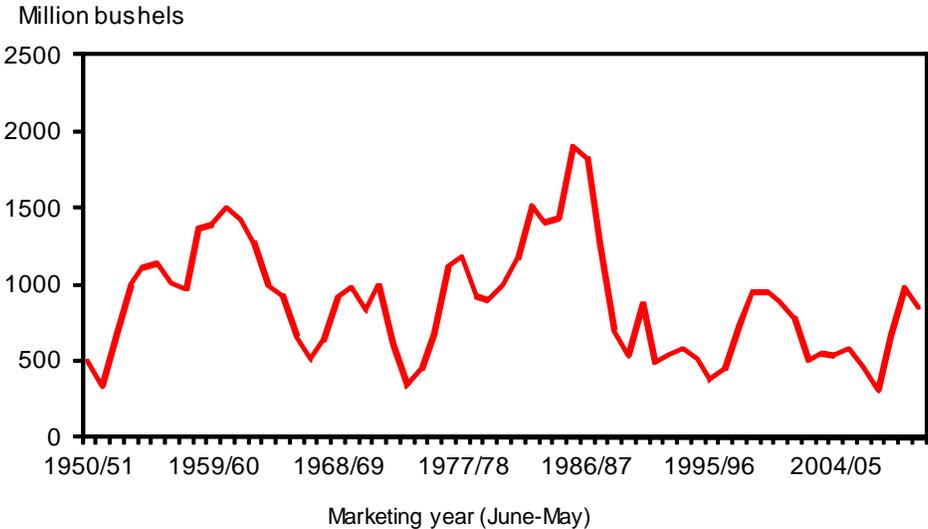
The U.S. stocks-to-use ratio averaged 24.3 percent in the 3 years before the 2007/08 price spike. In 2007/08, the U.S. stocks-to-use ratio dropped to 13.2 percent as world demand for U.S. wheat exports rose to a 15-year high. World production recovered in 2008/09 and reached a record high as farmers responded to the price spike with increased plantings, and favorable weather boosted yields. World

demand for U.S. wheat slowed, and the U.S. stocks-to-use ratio climbed to 28.9 percent in 2008/09. With continued high global wheat production and U.S. prices remaining historically high, U.S. exports slowed even more in 2009/10 and the U.S. stocks-to-use ratio soared to 48.4 percent.

Monthly Wheat Prices Rose During 2010/11

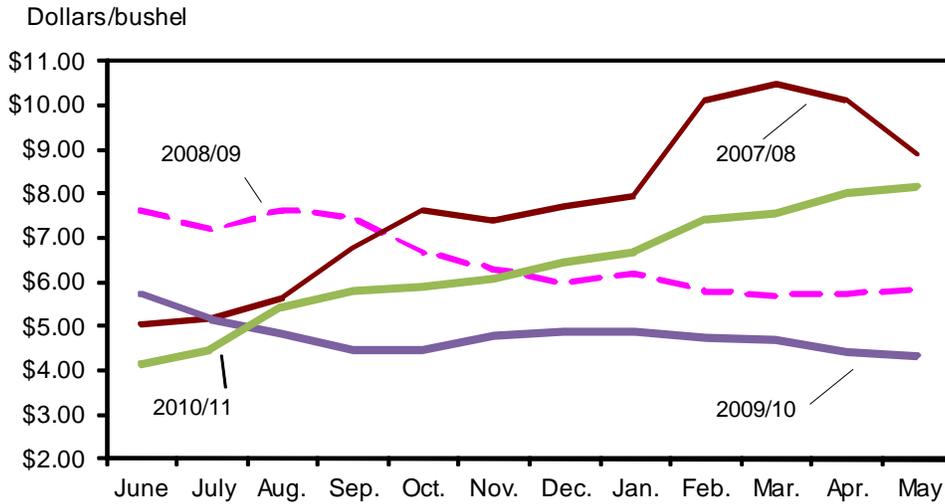
Though 2010/11 supplies were higher than for 2009/10, mostly because of higher beginning stocks, ending stocks were down year to year because of sharply increased exports. This increased export demand, and strong corn prices, resulted in steadily rising farmgate prices. Prices rose each month of the marketing year from the season low of \$4.16 per bushel in June to the marketing-year high \$8.16 in May (fig. 4). The season-average price (SAP) for 2010/11 was \$5.70 per bushel, the third-highest on record. The 2010/11 SAP was higher than the 2009/10 SAP of \$4.87 per bushel but below the previous 2 years. The SAP for 2008/09 was a record \$6.78 per bushel. The second-highest SAP was \$6.48 per bushel for 2007/08.

Figure 3
U.S. wheat ending stocks, 1950/51-2010/11



Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

Figure 4
Monthly wheat prices for 2010/11 have rallied since June



Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

High Prices Result in Low Farm-Program Expenditures for 2010 Wheat

The U.S. wheat sector receives various forms of Government assistance, including marketing assistance loans, direct and countercyclical payments, crop insurance, and export assistance through credit guarantees and food donation programs.¹ Some payments depend on market prices, so when prices are high, those payments are relatively low.

Marketing Loans. Nonrecourse marketing assistance loans provide benefits to producers when market prices are low. Farmers can get these benefits through the loan program and market loan gains, or equivalently, through loan deficiency payments (LDP).

With high prices, 2010 crop marketing loan activity for wheat was low. Marketing loans were made on 66.5 million bushels, down from 103 million bushels the previous year and down from the 5-year average of 96 million bushels. Marketing loan benefits (including marketing loan gains, LDPs, and eLDPs (electronic LDPs)) were \$106 million for the 2010 crop year, down from \$109 million the previous year. The vast majority of these payments were made for durum wheat.

Direct Payments (DP). DPs under the 2002 and 2008 Farm Acts are similar to production flexibility contract (PFC) payments under the 1996 Farm Act. DPs are decoupled (separated) from current production and prices, providing farmers with a predetermined payment that does not depend on market conditions. DP expenditures related to wheat base acres have averaged \$1.1 billion annually under the 2002 and 2008 Farm Acts.

¹ For more information on these programs, see <http://www.ers.usda.gov/Briefing/FarmPolicy/ProgramProvisions.htm/>.

Counter-cyclical Payments (CCP). CCPs are decoupled from current production, but linked inversely to season-average farm prices. CCP rates rise as the season-average market price falls below certain levels. For 2009/10 wheat, CCPs would have been paid if the season-average price were below \$3.40 per bushel (\$3.92 target price minus the \$0.52 direct payment rate). With the 2010/11 season average at \$5.70 per bushel, no CCPs were made for wheat base acres for the 2010 crop.

Crop Insurance Subsidies. Since the 2001 crop year, roughly 75 percent of planted wheat acres have been insured annually under the Federal crop insurance program, including both yield and revenue products. In 2010, about 46 million wheat acres were insured. Total crop insurance premiums paid for wheat were about \$1.1 billion, of which about \$0.7 billion were premium subsidies paid by the Government. About \$0.6 billion were paid to wheat producers in crop insurance indemnities on the 2010 crop. Participation in revenue insurance rose in 2010 to about 77 percent of wheat-insured acres.

Export Assistance and Food Aid. U.S. food assistance programs provide agricultural products to individual countries with food aid needs through direct donations and through loans at concessional rates. The United States provides food assistance through Public Law (P.L.) 480 (Food for Peace) and the Food for Progress Program. Title I of P.L. 480 finances sales of commodities under long-term credit arrangements to developing countries that are deemed to have insufficient foreign exchange. Title II provides for donations for emergency food relief and nonemergency humanitarian assistance to international organizations, such as the World Food Program and to recipient Governments. Section 416(b) of the Agricultural Act of 1949, as amended, provides for donations of Commodity Credit Corporation (CCC)-owned surplus commodities to developing countries.

Food for Progress authorizes the donation or sale of food aid commodities to assist developing countries that are implementing market-oriented policy reform. However, by the end of the 2007/08 marketing year, the U.S. Department of Agriculture had sold all CCC-owned stocks that were in the Bill Emerson Humanitarian Trust (formerly the Food Security Commodity Reserve). Instead, the Bill Emerson Humanitarian Trust currently has \$316.7 million in funding, which may be drawn from the Treasury to purchase wheat, corn, sorghum, and/or rice. The McGovern-Dole International Food for Education and Child Nutrition Program was authorized by the 2002 Farm Act to provide donations of U.S. agricultural products and technical assistance for school feeding projects in low-income countries. Annual appropriations the last two fiscal years have been about \$200 million and include wheat flour.

The share of U.S. wheat exports under Section 416 donations and other food assistance programs dropped sharply in the middle of this decade before recovering toward the end of the decade. In 2000/01, the food-assistance share of total wheat exports was 28 percent. Food assistance's share fell to only 7 percent in 2006/07 and 2007/08 as U.S. exports expanded and food assistance declined. Food assistance's share partially recovered toward the end of the decade as the volume of wheat shipped under these programs increased while total U.S. wheat exports declined. For levels by program see table 27 at <http://www.ers.usda.gov/Data/Wheat/WheatYearbook.aspx/>.

Wheat Situation by Class for 2010/11

HRS and SRW Have Largest Year-to-Year Changes in Ending Stocks

Two classes of wheat had relatively large year-to-year changes in ending stocks. Percentage decreases in 2010/11 ending stocks by wheat class were: SRW, -29 percent; and HRS, -21 percent. Ending stocks for the other three classes were unchanged to up slightly: HRW nearly unchanged; durum, +2 percent; and white, +6 percent.

Hard Red Winter (HRW) Production Up in 2010 With Improved Weather Conditions in Texas and Oklahoma

HRW production for 2010, at 1,018 million bushels, was up 98 million bushels from 2009, despite smaller planted area in 2010 (table 2). Partially offsetting the smaller planted area was a lower rate of abandonment on the Southern Plains with better weather conditions than the year before. In 2009, dryness and an April freeze significantly hurt Texas and Oklahoma wheat crops. Abandoned acres in 2009 in Texas were the third-highest on record. Nationally, the HRW harvested-to-planted ratio was 0.84 for 2010 compared with 0.76 for 2009.

HRW planted area for 2010 was 28.6 million acres, down 3.1 million acres from 2009. With the lower rate of abandonment in 2010, harvested area was only down 0.1 million acres from the previous year.

The improved weather conditions in 2010 also resulted in higher HRW wheat yields than in 2009. HRW wheat yields averaged 42.4 bushels per acre in 2010, up from 38.1 bushels in 2009.

Yields in both Oklahoma and Texas were much higher than in 2009, rising 9 bushels per acre in 2010. The initial HRW wheat harvested on the Southern Plains had high yields and very low protein content (as low as 9- and 10-percent protein, compared to more than 12 percent in a typical year). The favorable weather that produces high yields also results in plump wheat kernels with a low protein content, especially if nitrogen application rates were for more typical, lower yields (nitrogen is needed for the plant to produce protein).

Because this low-protein HRW wheat was difficult to market in milling and export markets, cash prices dropped sharply when harvest began on the Southern Plains. However, average protein percentage content increased as the HRW wheat harvest moved northward to areas that had received less rainfall. The end result, however, was a relative shortage of high-protein HRW production in 2010 (table 3). This was the second year in a row with a relative shortage of high-protein HRW production.

The hard red spring (HRS) high-protein supply situation in 2009 and 2010 was the same as with HRW supplies—a relative shortage of high-protein HRS wheat (see next section). The 2010 protein shortage for HRW and HRS, in combination with the low-protein supplies in the carryin stocks from the 2009 crop, led to higher-than-normal premiums for the available high-protein HRW and HRS supplies.

Table 2--Hard red winter wheat supply and demand 1/

Item	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Million acres										
Area:										
Planted	28.9	30.1	32.6	30.8	30.0	29.3	33.0	31.3	31.7	28.6
Harvested	20.9	19.9	25.6	23.4	24.6	21.3	25.7	25.9	24.1	24.0
Bushel per harvested acre										
Yield	36.7	31.1	41.7	36.6	37.8	32.0	37.2	39.9	38.1	42.4
Million bushels										
Supply:										
Beg. stocks	411	363	188	227	193	215	165	138	254	385
Production	766	620	1,071	856	930	682	956	1,035	920	1,018
Imports	1	0	0	1	0	1	1	2	2	1
Total supply	1,178	984	1,260	1,084	1,123	898	1,121	1,174	1,176	1,404
Domestic use:										
Food	364	377	378	382	370	366	397	385	361	359
Seed	34	37	35	33	33	37	35	35	32	32
Feed & residual	68	74	109	86	77	50	15	52	28	11
Total domestic	465	488	522	502	481	453	448	472	421	403
Exports	349	308	510	389	428	280	536	447	370	616
Total use	815	795	1,033	891	908	733	984	919	791	1,018
Ending stocks	363	188	227	193	215	165	138	254	385	386
Stocks-to-use ratio, %	45	24	22	22	24	23	14	28	49	38

1/ ERS estimates of area, yield, and domestic use.

Source: USDA, Economic Research Service, *Wheat Outlook*.

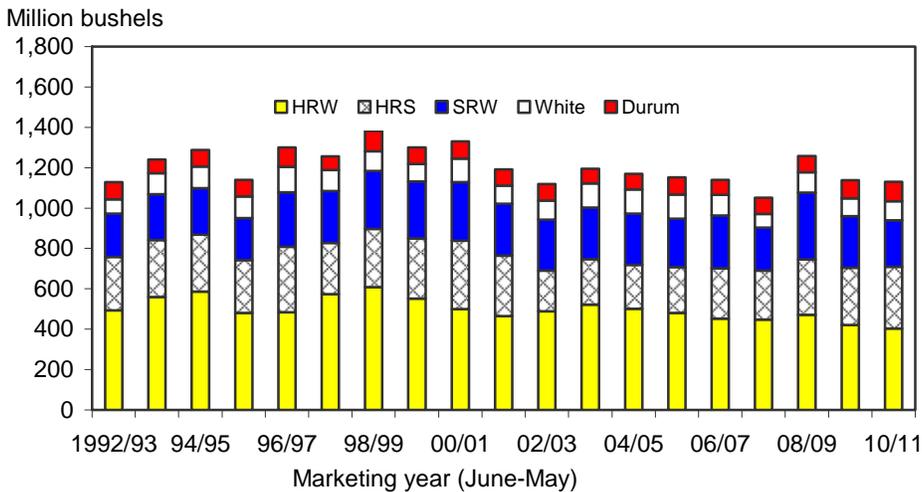
Table 3--Summary of wheat class qualities for 2010

Class	Protein (Percent)	Flour/semolina extraction (Percent)	Test weight (Pounds/bushel)	Wheat falling numbers (Seconds)
2010 wheat crop:				
Hard red winter	11.8	70.9	61.0	406
Hard red spring	13.7	70.0	61.6	387
Soft red winter	10.3	70.0	57.9	333
Soft white	9.7	71.0	59.6	337
Durum	13.4	66.3	60.0	335
2009 wheat crop:				
Hard red winter	12.1	70.7	60.6	410
Hard red spring	13.2	68.7	61.6	374
Soft red winter	10.0	67.2	57.6	325
Soft white	10.3	70.5	59.8	324
Durum	13.5	65.5	61.4	398
5-year average:				
Hard red winter	12.4	70.0	60.2	412
Hard red spring	14.3	68.9	60.8	405
Soft red winter	10.3	69.0	59.4	334
Soft white	10.4	69.6	59.8	332
Durum	14.4	64.4	60.4	370

Source: U.S. Wheat Associates, *Crop Quality Report 2010*.

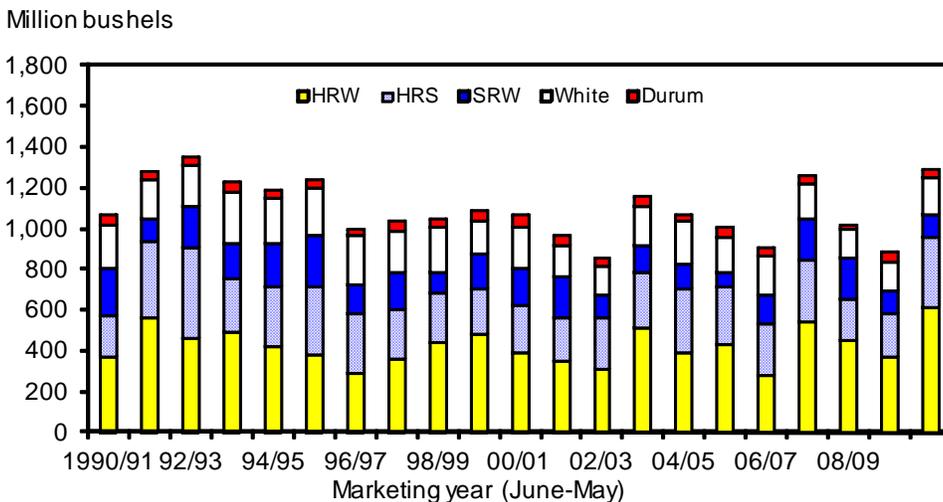
HRW supplies in 2010/11, at 1,404 million bushels, were up sharply from the previous marketing year with both higher beginning stocks and higher production. Total use, at 1,108 million bushels, was 228 million bushels higher than the previous year (figs. 5 and 6). Domestic use was down 19 million bushels from 2009/10, while exports were up 246 million bushels.

Figure 5
U.S. domestic wheat use for 2010/11 slightly lower than previous year



HRW = Hard red winter. HRS = Hard red spring. SRW = Soft red winter.
 Source: USDA, Economic Research Service, *Wheat Outlook*.

Figure 6
Wheat exports up sharply in 2010/11



HRW = Hard red winter. HRS = Hard red spring. SRW = Soft red winter.
 Source: USDA, Economic Research Service, *Wheat Outlook*.

The net result of the supply and use changes from 2009/10 to 2010/11 was that HRW ending stocks were nearly unchanged year to year. The HRW ending stocks for 2010/11 were 386 million bushels, with a stocks-to-use ratio of 38 percent, down from a 49-percent ratio for 2009/10. For comparison, the HRW ending stocks-to-use ratio was 14 percent in 2007/08, the year of the global wheat shortage. The HRW stocks-to-use ratio averaged 23 percent over the 5 years before 2007/08.

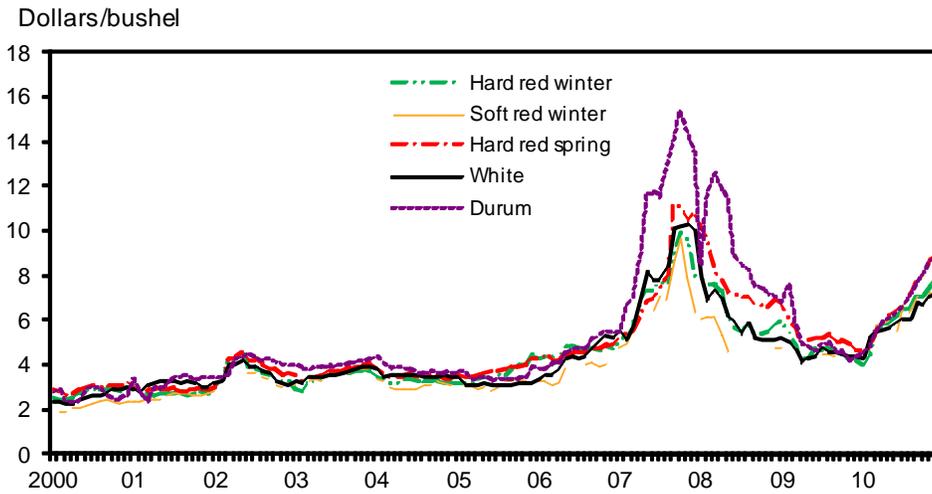
Seasonal price movement for HRW followed the same pattern as all-wheat farmgate prices. Monthly farmgate prices received by farmers for HRW rose steadily from the June season low of \$3.94 per bushel to a marketing-year high of \$8.00 in May (fig. 7). The season-average price (SAP) at the farmgate for 2010/11 HRW was \$6.49 per bushel, up from the 2009/10 SAP of \$4.84, but less than the \$6.90 SAP for 2008/09.

Hard Red Spring (HRS) Production Up in 2010 Due to Favorable Weather and Expanded Area

HRS production for 2010, at 570 million bushels, was up 22 million bushels from 2009 because of slightly expanded planted and harvested areas and slightly higher yields (table 4). HRS plantings, at 13.0 million acres were up 0.4 million acres from 2008. However abandonment was slightly less than in the previous year, so harvested area was only down 0.3 million acres to 12.6 million acres.

Most of the HRS crop was planted early. Continued precipitation and below-normal temperatures throughout the season were favorable for high yields, the same as in 2009. The HRS yield was a record-high 45.1 bushels per acre, 0.6 bushels higher than in 2009, the previous record-high HRS yield. The average protein content was well below normal due to above-average yields in most areas. With the below average protein content for HRW (see previous section), the result was much higher-than-normal premiums for the available high-protein HRS supplies.

Figure 7
Average monthly prices received by wheat farmers, June 2000-May 2010



Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Table 4--Hard red spring wheat supply and demand 1/

Item	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Million acres										
Area:										
Planted	14.8	14.8	13.1	13.0	13.3	14.4	12.7	13.5	12.6	13.0
Harvested	13.7	12.6	12.7	12.5	12.9	13.4	12.4	12.8	12.3	12.6
Bushels per harvested acre										
Yield	34.6	27.9	39.2	42.2	36.0	32.2	36.3	39.9	44.5	45.1
Million bushels										
Supply:										
Beg. stocks	210	230	145	157	159	132	117	68	142	234
Production	475	351	500	525	467	432	450	512	548	570
Imports	61	23	9	8	12	50	48	45	41	28
Total supply	746	605	654	690	638	614	615	625	731	832
Domestic use:										
Food	250	215	223	228	227	236	233	224	239	247
Seed	23	20	19	21	21	19	20	17	17	14
Feed & residual	26	-33	-17	-33	-22	-6	-11	32	27	46
Total domestic	299	202	225	216	226	248	243	273	283	308
Exports	217	258	272	315	280	248	304	210	214	339
Total use	516	460	497	531	506	497	547	483	497	647
Ending stocks	230	145	157	159	132	117	68	142	234	185
Stocks-to-use ratio, %	45	32	32	30	26	24	12	29	47	29

1/ ERS estimates of area, yield, and domestic use.

Source: USDA, Economic Research Service, *Wheat Outlook*.

HRS supplies in 2010/11, at 832 million bushels, were up 101 million bushels from the previous marketing year. A substantially larger carryin and increased production easily offset the resulting decline in imports. Total use, at 647 million bushels, was up 150 million bushels from 2009/10. Domestic use was up 25 million bushels, while exports rose 125 million bushels above the previous marketing year.

The net result was lower HRS ending stocks for 2010/11, down 49 million bushels from 2009/10 to 185 million bushels. The HRS ending stocks-to-use ratio of 29 percent for 2010/11 was down from 47 percent for 2009/10. For comparison, the stocks to use ratio was 12 percent for the price-spike-year of 2007/08. The average stocks to use ratio over the 5 years prior to 2007/08 was 29 percent.

The seasonal price movement for HRS followed the same pattern as all-wheat farmgate prices. Monthly farmgate prices received by farmers for HRS rose steadily from the June season low of \$4.59 per bushel to a marketing-year high of \$8.95 in May (fig. 7). The 2010/11 SAP at the farmgate for HRS was \$6.54 per bushel, higher than the SAP the previous year of \$5.26, but lower than the SAPs of \$7.39 and \$7.16 for 2008/09 and 2007/08, respectively.

Soft Red Winter (SRW) Production Down Sharply in 2010

SRW production for 2010, at 237 million bushels, was down 167 million bushels from 2009 and down 376 million bushels from 2008. The 2008 output of 614 million bushels was the highest since the record output of 678 million bushels in 1981 (table 5). The 2010 harvested area was down 2.8 million acres from 2009 to 4.4 million acres mostly because of reduced plantings. Planted acres decreased from the year before across all of the SRW growing area due to the late row crop harvest and wet weather during seeding in the fall of 2009. Illinois, Indiana, Missouri, and Ohio set record lows for planted acres. Production was down from the previous year in all of the SRW growing States. Production was down 50 percent or more from 2009 in Arkansas, Georgia, Illinois, Indiana, Missouri, and North Carolina.

SRW yields were also down from the previous year because growing conditions were not as favorable as they were for the 2009 crop. The average 2010 SRW yield was 54.3 bushels per acre, down 1.8 bushels from 2009.

An additional factor complicating the 2009 SRW supply was the outbreak of disease in some areas. Very heavy rains in May and June followed by unusually hot temperatures favored the growth of the fusarium mold, adversely affecting quality.²

SRW supplies for 2010/11, at 508 million bushels, were down 99 million bushels from those of 2009/10 because sharply reduced production more than offset higher carryin stocks, while imports were nearly unchanged. Of the five classes of wheat, SRW is the only class to have smaller supplies in 2010/11 than in 2009/10. Total SRW use, at 337 million bushels, was down 28 million bushels compared with the previous marketing year because of lower domestic use; exports were unchanged year to year.

Despite lower production, ending stocks for 2010/11, at 171 million bushels, were down 71 million bushels from that of 2009/10. The ending stocks-to-use ratio for 2010/11 dropped to 51 percent, substantially below the 2009/10 level of 66 percent.

²*Fusarium graminearum* is known to produce two important mycotoxins, deoxynivalenol (DON) and zearalenone, which can contaminate the diseased grain. The mycotoxin DON can cause reduced feed intake and lower weight gain in animals when DON levels in feed are as low as 1 to 3 parts per million (ppm), especially in swine. Vomiting and feed refusal can occur when DON levels exceed 10 ppm. Humans are also sensitive to DON, and the U.S. Food and Drug Administration has recommended that DON levels not exceed 1 ppm in human food.

The stocks-to-use ratio for 2007/08, the price-spike year, was 13 percent, much less than the average of the previous 5 years of 23 percent.

The seasonal price movement for SRW followed much the same pattern as all-wheat farmgate prices. Monthly farmgate prices received by SRW producers rose from a marketing-year low of \$4.50 per bushel in June to a season high of \$7.27 in April (fig. 7). The 2010/11 SAP at the farmgate for SRW was \$5.16 per bushel, higher than the 2009/10 SAP of \$4.35, but lower than the SAPs of \$5.78 and \$5.20 for 2008/09 and 2007/08, respectively.

White Wheat Production Up for 2010

The Pacific Northwest (PNW) generally received adequate rainfall during the winter and early spring, along with cool temperatures during the early growing season with some limited periods of high temperatures. These weather conditions contributed to average or above-average yields in most of the dryland farming areas in the PNW. In contrast, higher temperatures in 2009 toward the end of the growing season led to a crop with below-average to average yields in dryland farming areas of the region.

Total white wheat production for 2010, at 275 million bushels, was up 38 million bushels from 2009 (table 6). Of this 2010 total, 216 million bushels were soft white winter (SWW), 13 million bushels were hard white winter (HWW), 37 million bushels were soft white spring (SWS), and 9 million bushels were hard white spring (HWS). The planted and harvested areas, respectively, were 3.176 million acres and 3.041 million for SWW, 0.332 million acres and 0.289 million for HWW, 0.599 million acres and 0.587 million for SWS, and 0.130 million acres and 0.127 million for HWS. The 2010 yields by type of white wheat were 70.9 bushel per acre for SWW, 46.7 bushel per acre for HWW, 62.6 bushel per acre for SWS, and 72.9 bushel per acre for HWS.

Total 2010/11 white wheat supplies, at 362 million bushels, were up 51 million bushels from those of 2009/10 because higher beginning stocks and production more than offset the resulting slightly lower imports. Total use, at 277 million bushels, was up 46 million bushels compared with 2009/10, with domestic use and exports up, 7 million bushels and 39 million bushels, respectively.

Table 5--Soft red winter wheat supply and demand 1/

Item	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Million acres										
Area:										
Planted	8.6	8.1	8.3	8.2	6.1	7.4	8.6	11.2	8.3	5.3
Harvested	7.1	6.5	6.8	7.0	5.1	6.2	7.0	10.1	7.2	4.4
Bushels per harvested acre										
Yield	55.8	49.6	55.6	54.2	59.9	63.2	50.0	60.9	56.1	54.3
Million bushels										
Supply:										
Beg. stocks	135	78	55	64	88	106	109	55	171	242
Production	397	321	380	380	308	390	352	614	404	237
Imports	3	13	22	22	26	20	14	34	32	29
Total supply	535	412	457	466	423	515	475	702	607	508
Domestic use:										
Food	155	165	153	155	155	165	150	155	156	150
Seed	16	16	16	12	14	16	21	16	10	16
Feed & residual	87	72	87	89	71	80	41	161	90	62
Total domestic	258	253	256	255	241	261	212	332	256	228
Exports	200	105	138	122	76	145	208	199	109	109
Total use	457	357	393	378	317	406	420	531	365	337
Ending stocks	78	55	64	88	106	109	55	171	242	171
Stocks-to-use ratio, %	17	15	16	23	33	27	13	32	66	51

1/ ERS estimates of area, yield, and domestic use.

Source: USDA, Economic Research Service, *Wheat Outlook*.

Table 6--White wheat supply and demand 1/

Item	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Million acres										
Area:										
Planted	4.2	4.4	5.2	5.1	4.9	4.3	4.0	4.5	4.0	4.2
Harvested	4.0	4.1	5.0	4.8	4.7	4.1	3.7	4.3	3.8	4.0
Bushels per harvested acre										
Yield	56.9	56.4	59.5	64.5	63.7	61.5	59.1	59.5	62.4	68.0
Million bushels										
Supply:										
Beg. stocks	75	73	75	72	63	78	44	37	64	80
Production	226	233	297	305	297	251	221	255	237	275
Imports	8	11	11	11	10	10	9	8	9	7
Total supply	309	317	383	388	370	339	275	300	311	362
Domestic use:										
Food	75	80	85	75	85	85	85	85	83	85
Seed	6	7	7	6	6	5	6	5	6	6
Feed & residual	8	8	27	36	27	9	-23	10	-1	4
Total domestic	89	94	119	118	118	100	68	100	88	95
Exports	147	147	192	208	174	195	169	136	143	182
Total use	236	242	311	326	292	295	238	236	231	277
Ending stocks	73	75	72	63	78	44	37	64	80	85
Stocks-to-use ratio, %	31	31	23	19	27	15	16	27	35	31

1/ ERS estimates of area, yield, and domestic use.

Source: USDA, Economic Research Service, *Wheat Outlook*.

White wheat ending stocks for 2010/11, at 85 million bushels, were up 5 million bushels from those of a year earlier. The ending stocks-to-use ratio for 2010/11 fell to 31 percent from 35 percent in 2009/10. For the price-spike year of 2007/08 the stocks-to-use ratio was 16 percent, sharply lower than the average of the previous 5 years of 23 percent.

The seasonal price movement for white wheat followed the same pattern as all-wheat farmgate prices. Monthly farmgate prices received by white wheat producers rose from a marketing-year low of \$4.28 per bushel in June to a season high of \$7.22 in May (fig. 7). The 2010/11 SAP at the farmgate for white wheat was \$5.88 per bushel, higher than the SAP of \$4.52 for 2009/10, but less than the SAPs of \$6.01 and \$7.23 for 2008/09 and 2007/08, respectively.

Durum Production Down Slightly for 2010

Durum production was down 3 million bushels from 2009 to 106 million bushels for 2010 as lower yields more than offset higher planted and harvested area (table 7). Planting was delayed slightly by a wet spring. However, the spring moisture, with continued wet, cool conditions through the season, led to excellent yields. The average yield was 42.1 bushels per acre, 2.8 bushels lower than the record yield set in 2009 but still the second-highest on record. The 2009 durum yield was a record-high of 44.9 bushels per acre, 12.3 bushels higher than that of the previous year and 5.2 bushels higher than the previous record set in 1992.

Planted and harvested areas for the 2010 durum crop were up 0.01 million acres and 0.10 million acres, respectively, from those of 2009. For 2010, planted area was 2.56 million acres and harvested area was 2.52 million acres.

Table 7—Durum supply and demand 1/

Item	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Million acres										
Area:										
Planted	2.9	2.9	2.9	2.6	2.8	1.9	2.2	2.7	2.6	2.6
Harvested	2.8	2.7	2.9	2.4	2.7	1.8	2.1	2.6	2.4	2.5
Bushels per harvested acre										
Yield	30.0	29.5	33.7	38.0	37.2	29.5	34.1	32.6	44.9	42.1
Million bushels										
Supply:										
Beg. stocks	45	33	28	26	38	40	21	8	25	35
Production	84	80	97	90	101	53	72	84	109	106
Imports	34	30	21	29	32	41	40	38	35	33
Total supply	163	143	145	145	171	135	134	130	169	173
Domestic use:										
Food	83	81	73	70	80	86	83	78	80	84
Seed	5	5	3	5	3	4	4	4	4	2
Feed & residual	-6	-4	-3	2	3	-15	-6	-1	6	8
Total domestic	81	82	73	77	85	74	81	81	91	95
Exports	49	33	46	31	45	40	45	24	44	43
Total use	130	115	119	108	131	114	126	105	134	138
Ending stocks	33	28	26	38	40	21	8	25	35	35
Stocks-to-use ratio, %	25	24	22	35	31	18	6	24	26	25

1/ ERS estimates of area, yield, and domestic use.

Source: USDA, Economic Research Service, *Wheat Outlook*.

Overall, 2010/11 durum supplies, at 173 million bushels, were 4 million bushels higher than those of a year earlier. Slightly higher beginning stocks were partly offset by smaller imports and reduced production. Total use, at 138 million bushels, was up 4 million bushels from that of 2009/10 as domestic use was up, more than offsetting a 1-million-bushel decline in exports.

Per capita consumption of semolina and durum flour has followed a different pattern than consumption for all wheat. Per capita semolina and durum flour use for 2010 is estimated at 11.8 pounds, up 0.3 pounds from 2009. Semolina and durum flour per capita use has risen marginally 2 years in row. Time series data of durum consumption can be found at <http://www.ers.usda.gov/Data/Wheat/YBtable31.asp/>.

Ending durum wheat stocks for 2010/11, at 35 million bushels, were unchanged year to year. The ending stocks-to-use ratio for 2010/11 was 26 percent, nearly unchanged from 26 percent for 2009/10. The ratio for 2007/08 was only 7 percent, much lower than the average of 26 percent for the previous 5 years. Durum's 2009/10 stocks-to-use ratio did not soar above its long-term average ratio like that of HRW, HRS, and SRW did because of its very strong export performance, especially to the European Union and North Africa.

The seasonal price movement for durum wheat followed a similar pattern as all-wheat farmgate prices. Monthly farmgate prices received by durum wheat producers rose from a marketing year low of \$4.44 per bushel in July to a marketing-year high of \$8.60 in April (fig. 7). The SAP at the farmgate for 2010/11 for durum was \$5.50, higher than the 2009/10 SAP of \$5.47 per bushel, but much less than the SAPs of \$9.26 and \$9.92 for 2008/09 and 2007/08, respectively.