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2012 Outlook of the U.S. and World Wheat Industries, 2012-2021

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TABLE OF CONTENTS

	Page
List of Tables	ii
List of Figures	iii
Abstract	iv
Highlights	v
Introduction	1
World Wheat Industry.....	2
Wheat Classes.....	2
Wheat Production	3
Wheat Exports	7
Recent Changes in the World Wheat Industry.....	8
Outlook for the World Wheat Industry.....	13
United States.....	14
Canada	17
European Union.....	19
Australia	21
Argentina	22
Former Soviet Union	22
Importing Countries	23
Asian Importers	23
African Importers	24
Latin America Importers	26
Concluding Remarks.....	26
References.....	29
Appendix.....	30

LIST OF TABLES

<u>No.</u>	<u>Page</u>
1. Wheat Production by Class, 2007 to 2011	3
2. Harvested Area, Yields, and Production for Major Wheat Producing Countries/Regions.....	5
3. Wheat Imports by Country, 2007 to 2011	7
4. Wheat Exports by Class, 2007 to 2011	8
5. Wheat Exports by the Major Exporting Countries, 1990 and 2011	13
6. Wheat Production, Consumption, Exports, and Carry-over Stocks in the United States	15
7. Wheat Production, Consumption, Exports, and Carry-over Stocks in Canada	17
8. Wheat Production, Consumption, Exports, and Carry-over Stocks in the European Union ...	19
9. Wheat Production, Consumption, Exports, and Carry-over Stocks in Australia.....	21
10. Wheat Production, Consumption, Exports, and Carry-over Stocks in Argentina	22
11. Wheat Production and Exports in the Former Soviet Union	23
12. Imports of Common and Durum Wheat by Major Importing Countries	23

LIST OF FIGURES

<u>No.</u>	<u>Page</u>
1. Changes in Wheat Production in Major Producing Countries/Regions.....	6
2. Historical Farm Wheat Price, by Class, 1990-2011.....	9
3. World Wheat Production, 1995 to 2011	10
4. Wheat Production in Argentina and Australia	10
5. Wheat Production in Canada, the EU, and the United States	11
6. Wheat Production in China, the FSU, and India.....	12
7. Projected U.S. Farm Wheat Price, by Class, 2012 to 2021	14
8. U.S. Wheat Production by Class, 2012 to 2021.....	15
9. U.S. Common Wheat Utilization, 2012 to 2021	16
10. U.S. Durum Wheat Utilization, 2012 to 2021	16
11. Canadian Western Red Spring Wheat Utilization, 2012 to 2021	18
12. Canadian Western Amber Durum Wheat Utilization, 2012 to 2021	18
13. EU Common Wheat Utilization, 2012 to 2021.....	20
14. EU Durum Wheat Utilization, 2012 to 2021	20
15. Australian Common Wheat Utilization, 2012 to 2021	21
16. Argentine Common Wheat Utilization, 2012 to 2021	22
17. Common Wheat Imports by Major Asian Countries, 2012 to 2021	24
18. Common and Durum Wheat Imports by Major African Countries, 2012 to 2021	25
19. Common and Durum Wheat Imports by Latin American Countries, 2012 to 2021.....	25

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ABSTRACT

This report evaluates the U.S. and world wheat markets for the 2012-2021 time period using the Global Wheat Policy Simulation Model. This analysis is based on a series of assumptions about general economic conditions, agricultural policies, weather conditions, and technological change.

Both the U.S. and world wheat economies are predicted to remain relatively healthy for the next ten years. World demand for both common and durum wheat are expected to remain strong. The high price levels in 2010 and early 2011 will not be maintained because they are the result of a small wheat crop in 2010 in the Former Soviet Union (FSU). It is expected that wheat production in the FSU will return to normal in the future. World trade volumes of both durum and common wheat are expected to expand, but trade volume of common wheat may grow faster than that of durum wheat.

Keywords: common wheat, durum wheat, production, exports, consumption, ending stocks

HIGHLIGHTS

Total world wheat trade is projected to increase by 12.2% from 109.5 million metric tons in 2011 to 122.9 million metric tons in 2021. It is expected that the average price of wheat will return to \$7.70-\$8.30 range for HRS wheat. U.S. durum wheat prices are expected to decrease to about \$8.00 per bushel in 2015 before slowly increasing to about \$9.50 in 2021.

Production of HRW, SRW, White, and durum wheat in the United States is predicted to increase for the 2011-2021 period. The largest increase in production occurs for U.S. SRW wheat, followed by HRW wheat. U.S. exports of common wheat are predicted to increase for the 2011-2021 period. The United States is expected to decrease imports of durum wheat over the period.

Production of Canadian western amber durum (CWAD) wheat is predicted to increase for the 2011-2021 period. CWRS wheat exports are projected to decrease slightly, while durum wheat exports increase by 4.9%.

Common and durum wheat production in the European Union (EU) is predicted to increase by 4.8% and 3.8%, respectively, from the 2009-2011 average to 2021. The EU is expected to increase its common wheat exports but decrease its durum wheat exports.

Australia's wheat production is predicted to grow 14.1% over the 2011-2021 period. Wheat exports are expected to increase from 18.1 million metric tons in 2009-2011 to 22.1 million metric tons in 2021.

Argentine wheat production is projected to increase by 15.9% to about 16.5 million metric tons in 2021. Wheat exports are expected to increase from 8.5 million metric tons in 2011 to 9.9 million metric tons in 2021.

The FSU, China, and India have gone from major importing countries to exporting countries during the past 10 years. Wheat production in India has increased 40-50% since the 1980s. Most of the increase has been due to increases in yields. China's wheat production reached a recent record level in 2011 at 117 million metric tons. Production in the FSU remained below the 1980s until 2001 and 2002, when production increased 15% and 25%, respectively. Its production fell in 2003 to 85% of the 1980s level before recovering in 2004. In 2010 the FSU wheat crop fell 29% from the 2009 level, however in 2011 record wheat production in the FSU allowed for exports of 28.4 million metric tons.

Most importing countries are predicted to increase their imports for both common and durum wheat. Among those countries, import demand for common wheat in Morocco, Mexico, and Tunisia would grow faster than in other countries. Import demand for durum wheat in Algeria and Venezuela also are expected to be strong for the period. Asian imports, except for China, are expected to remain the same, although per capita consumption is falling. China and India are expected to export a small amount of wheat by 2021.

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INTRODUCTION

This report evaluates the U.S. and world wheat industries for the 2012-2021 period by using the Global Wheat Policy Simulation Model developed by Benirschka and Koo. The outlook projection is based on an assumption that current farm and trade policies adopted by wheat exporting and importing countries will remain unchanged. Assumptions associated with macroeconomic variables, such as GDP growth rates, interest rates, inflation rates, exchange rates, and consumer price indices in the United States and other countries, are based on projections prepared by Global Insight. Average weather conditions, historical rates of technological change, and current political policies are also assumed to prevail during the projection period.

Wheat is a differentiated product. Substitution among wheat classes is imperfect, and consumer preferences differ among countries, suggesting that characteristics of different wheat classes are an important determinant of trade flows of them. The Global Wheat Policy Simulation Model is a partial equilibrium model that distinguishes wheat into common and durum wheat. U.S. common wheat is further divided into four classes: hard red winter (HRW), hard red spring (HRS), soft red winter (SRW), and white wheat.

The model contains six exporting countries and regions [Argentina, Australia, Canada, the United States, the European Union (EU), the Former Soviet Union (FSU)] and 11 importing countries and regions [Algeria, Brazil, Egypt, Japan, Mexico, Morocco, South Korea, Taiwan, Tunisia, Venezuela, and a Rest of the World region]. India and China have been both exporters and importers in recent years. The model simulates production, consumption, stocks, and exports or imports for wheat classes over a ten-year period. The model is solved for a set of equilibrium wheat prices in which demand for each wheat class equals supply for every year. The model is linked to the Food and Agricultural Policy Research Institute (FAPRI) model and uses the predicted prices of all agricultural commodities, except wheat, from this model. The model uses 2011 as the base year of the simulation.

Wheat is produced across the world. Total world wheat production has increased from 521 million tons in 1986/87 to 694 million tons in 2011/2012. The EU (137 million tons) was the largest producer of wheat in 2011, followed by China (118 million tons) and the FSU (114 million tons). The FSU had a small wheat crop in 2010 but production returned to normal in 2011. The United States produced 54 million tons of wheat in 2011, a decrease from 60 million tons in 2010. Other major wheat-producing countries are Canada, Australia, India, and Argentina. These countries produce about 79% of the total wheat produced in the world. Because of the concentration of wheat production in a few countries, a large volume of wheat is traded in the world market. The total quantity of wheat traded in the world market was 129 million tons in 2011, which is about 18% of wheat produced in that year. Major exporting countries are the United States, Canada, Australia, the EU, the FSU, and Argentina.

The world wheat market has changed dramatically in the past decade. Farm support policies in exporting and importing countries have encouraged production. However, the overriding factor is the impacts of the bio-energy industry on all commodities. A significant increase in ethanol and bio-diesel production has resulted in increases in commodity prices. In addition, recent weather problems in various countries have resulted in decreases in production which has further impacted the wheat industry. As world trade decreased during the early 1980s due to a depressed world economy, major exporting countries expanded the use of export subsidies or export promotion programs to maintain their market shares.

The Uruguay Round of GATT negotiations, which became effective in 1995, have affected trade flows of wheat. The average export price of wheat at the Gulf ports decreased from \$5.02 per bushel in 1996/97 to \$3.30 per bushel in 2001/02; it increased to \$3.62 in 2003 due to weather conditions in the United States, Canada, and Australia, and then fell to \$3.24 in 2005. Prices increased during 2006 through 2008 for several reasons. First, world wheat production fell about 5% in 2006, and second, the increase in demand for corn in the United States pressured all commodity prices. Carryover stocks fell in 2007 to levels which have not occurred during the past 30 years. World stocks have fallen 46% since 2000 and 28% since 2004. However in 2008, world wheat production increased by 18% and carry-over stocks returned to normal levels. The price level in 2009 was similar to 2006 price levels. In 2010, the small wheat crop in the FSU decreased world supplies which was followed by price increases in 2010 to about \$6.85 per bushel. Even with a larger 2011 wheat crop, prices increased to \$6.92/ bushel.

WORLD WHEAT INDUSTRY

World wheat trade is dominated by a few exporting countries: United States, Canada, Australia, EU, FSU, and Argentina. Even though exporting countries compete with each other, the world wheat market is not perfectly competitive. In the past, some countries have used state trading agencies to market their grain, and many countries maintain trade agreements with importers. In addition, countries use credit guarantees and others use preferential trade policies to promote their exports.

Wheat Classes

Wheat varieties are highly differentiated in terms of their agronomic and end-use attributes. Based on criteria such as kernel hardness, color, growth habitat, and protein content, wheat is divided into several classes. Color and hardness refer to physical properties of the wheat kernel. Based on the color of the outer layer of the kernel, common wheat varieties are described as white, amber, red, or dark, while the hardness of the kernel is used to characterize them as hard or soft. Most wheat varieties grown today belong to the broad category of common or bread wheat, which accounts for approximately 95% of world wheat production. The remaining 5% of world wheat production is durum wheat used to produce pasta and couscous.

Growth habitat is an important agronomic feature of wheat varieties. Winter wheat is planted in late summer or fall and requires a period of cold winter temperatures for heading to occur. After using fall moisture for germination, the plants remain in a vegetative phase or dormancy during the winter and resume growth in early spring. In contrast to winter wheat, spring wheat changes from vegetative growth to reproductive growth without exposure to cold

temperatures. In temperate climates, spring wheat is sown in spring. Since yields tend to be higher for winter wheat than for spring wheat, spring wheat is produced primarily in regions where winter wheat production is infeasible, where frozen soil kills the wheat plants, or where winters are too warm. Countries with mild winters, such as Argentina and Brazil, produce spring wheat but plant in the fall rather than in the spring.

Wheat Production

Because of differences in soil types and climates, wheat produced in one country generally differs from that produced in other countries in terms of quality. The United States produces hard, soft, and durum wheat. Hard wheat produced in the United States is further divided into hard red winter (HRW) and hard red spring (HRS) wheat, and soft wheat is divided into soft red winter (SRW) and white wheat. SRW wheat is produced in the Corn Belt and Southern states. HRS and durum wheat are grown in the Northern Plains, mainly North Dakota, which produces about 80% of durum wheat and 50% of HRS wheat produced in the United States. HRW wheat is grown primarily in the Central Plains, mainly Kansas and Oklahoma. White wheat, a type of soft wheat, is grown in the Pacific Northwest, Michigan, and New York. Average U.S. wheat production for the 2007-2011 period was 59.7 million tons, with 25.6 million tons of HRW, 13.5 million tons of HRS, 11.2 million tons of SRW, 7.1 million tons of white wheat, and 2.3 million tons of durum wheat (Table 1).

Table 1. Wheat Production by Class, 2007 to 2011

Country/Class	2007	2008	2009	2010	2011	Average	Share
Argentina							
Common	18,621	10,500	12,000	16,100	14,500	14,344	2.2
Australia							
Common	13,584	21,377	21,793	27,836	28,341	22,586	3.4
Canada							
All	20,054	28,611	26,848	23,167	25,156	24,767	3.7
Common	16,373	23,883	22,343	18,484	20,474	20,311	3.1
Durum	3,681	4,728	4,505	4,683	4,682	4,456	0.7
EU							
All	119,821	151,122	138,816	136,674	137,486	136,584	20.5
Common	112,261	142,306	130,154	127,259	129,017	128,199	19.3
Durum	7,560	8,816	8,662	8,415	8,563	8,403	1.3
United States							
All	55,822	68,031	60,316	60,103	54,415	59,738	9.0
HRW	26,007	28,174	25,011	27,714	21,231	25,628	3.9
HRS	12,250	13,937	14,912	15,513	10,824	13,487	2.0
SRW	9,580	16,700	10,984	6,472	12,451	11,237	1.7
White	6,020	6,937	6,439	7,487	8,535	7,084	1.1
Durum	1,965	2,281	2,967	2,918	1,374	2,301	0.3
Other Producers							
All	384,088	403,174	425,814	388,633	434,126	407,167	61.2
Total World							
All	611,990	682,815	685,587	651,513	694,024	665,186	100.0

Source: USDA

The majority of Canadian wheat is produced in Saskatchewan, southwestern Manitoba, and southeastern Alberta. Canada primarily produces a hard red spring wheat (Canadian Western Red Spring (CWRS)) and durum wheat. Average Canadian wheat production for the 2007-2011 period included 20.3 million tons of CWRS and 4.5 million tons of durum wheat (Table 1).

The EU produced an annual average of 128 million tons of soft wheat and 8.4 million tons of durum wheat during the 2007-2011 time period. France accounted for 30% of soft wheat production in the EU in 2011. Germany and the United Kingdom are also major producers. The majority of durum is produced in Italy, Greece, and France. Italy accounted for nearly 58% of EU durum production in 2011, followed by Greece (21%) and France (12%).

Australia primarily produces a winter wheat which is similar to HRW wheat in terms of quality and characteristics. Australian average wheat production amounted to 22.6 million tons for the 2007-2011 period. Wheat production is concentrated in the eastern Australian states of New South Wales and Victoria. However, in 2006 Australia produced just 10.8 million tons of wheat and 13.5 million metric tons in 2007 before returning to near normal levels in 2008 through 2011.

Argentina produces wheat with characteristics of both soft and hard wheat. Argentina's average wheat production amounted to 14.3 million tons for the 2007-2011 period. Argentina has had two small wheat harvests. In 2008, yields fell by one half and in 2009 only 46% of the planted wheat was harvested. Production increased in 2010 and 2011 but only to 75% of a normal crop.

Table 2 shows the historical harvested area, yields, and production of the major wheat producing countries/regions in the world, by decades. Harvested wheat area in Australia has increased by 61% since the 1970s, followed by India (50%). The wheat area for the EU increased by 53%, but the majority of that was due to the addition of countries to the EU. Wheat area in the United States decreased by 22% and Canada by 7%, respectively, from the 1970s level. World wheat harvested area increased about 1%.

Yields increased by 214% in China since the 1970s and by 119% in India. The EU had yield increases of 66%. The U.S. yields increased by 39%, while Canadian yields increased by 64%. The world wheat yield increased by 86% during the five decades.

The total wheat production in 2011 increased by 226% in India and by 176% in China compared to wheat production in the 1970s. The EU production increased by 155%, but a large share of that was due to the addition of countries to the EU. Argentina increased production by 102%. The United States and Canada increased production by 10% and 52%, respectively. Figure 1 shows the changing levels of production using an index where average production over the 1960-1969 time period equals 1.00.

Table 2. Harvested Area, Yields, and Production for Major Wheat Producing Countries/Regions

	1970	1980	1990	2000	2010	2011	% Change
Harvested Area -----1,000 hectares-----							
Argentina	4,625	5,629	5,320	6,408	4,500	5,000	8.11
Australia	8,735	10,954	9,620	12,141	13,350	14,100	61.42
Canada	9,198	13,101	12,109	10,963	8,900	8,545	-7.10
China	27,358	29,037	29,858	26,650	24,300	24,200	-11.54
EU	16,790	17,269	17,293	23,479	25,423	25,761	53.43
FSU	61,465	52,005	45,595	42,973	52,150	50,696	-17.52
India	19,554	23,170	25,122	27,486	28,700	29,400	50.35
U.S.	23,643	26,493	24,829	21,474	19,040	18,496	-21.77
World	220,997	229,639	223,086	217,570	222,220	222,800	0.82
Yield -----metric tons/hectare-----							
Argentina	1.53	1.80	2.27	2.53	3.11	2.90	89.54
Australia	1.29	1.37	1.76	1.82	1.87	2.09	62.02
Canada	1.80	1.84	2.27	2.42	2.60	2.96	64.44
China	1.55	2.73	3.56	3.74	4.71	4.87	214.19
EU	3.22	4.44	5.43	5.29	5.37	5.34	65.84
FSU	1.43	1.51	1.59	1.47	1.56	2.25	57.34
India	1.35	1.85	2.43	2.78	2.81	2.95	118.52
U.S.	2.11	2.41	2.60	2.82	3.15	2.94	39.34
World	1.68	2.14	2.55	2.67	2.91	3.12	85.71
Production -----1,000 metric tons-----							
Argentina	7,150	10,181	12,152	16,230	13,995	14,500	102.80
Australia	11,386	14,970	17,206	22,108	24,965	29,500	159.09
Canada	16,626	24,073	27,415	26,519	23,167	25,260	51.93
China	42,718	79,238	106,119	99,640	117,393	117,920	176.04
EU	53,877	76,796	93,467	124,197	136,528	137,486	155.18
FSU	87,914	78,057	72,530	63,123	81,330	114,299	30.01
India	26,607	42,959	61,177	76,369	81,047	86,870	226.49
U.S.	49,642	63,731	64,443	60,641	60,058	54,413	9.61
World	371,075	489,177	568,001	581,500	645,823	694,024	87.03

Source: USDA

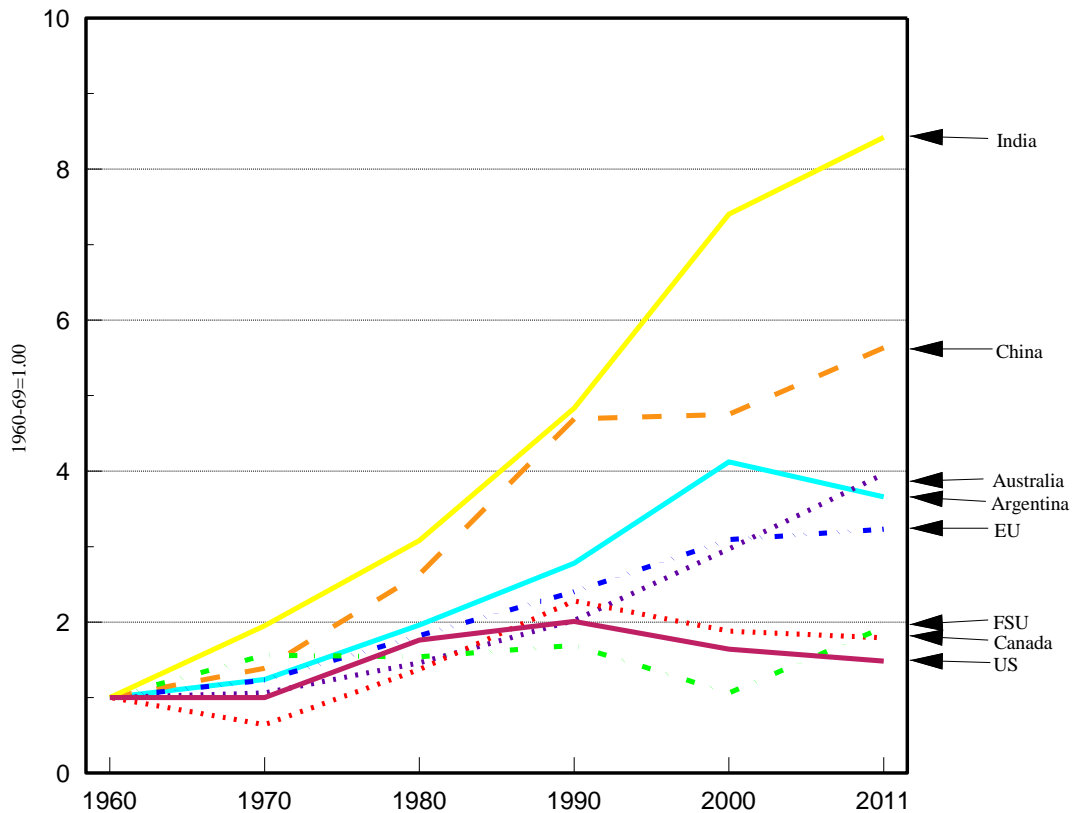


Figure 1. Changes in Wheat Production in Major Producing Countries/Regions

Different wheat classes have their preferred uses. Hard wheat flour has excellent bread baking properties; soft wheat flour is well-suited for cakes, cookies, and Asian noodles; and durum wheat is used for pasta products and couscous. However, since different types of wheat can be blended to produce flours with certain characteristics, some substitution among wheat classes is possible in flour milling.

Although wheat is used primarily for human consumption, it is also an excellent feed grain for poultry and livestock. Feed use of wheat tends to be highly variable and depends on the quality of the wheat crop and the price relationship between wheat and other feed grains. Generally, only lower quality wheat is used for feed, and different characteristics among wheat classes are not important for feeding purposes except for durum since durum wheat is not fed to livestock.

Major importing countries include Algeria, Brazil, Egypt, Japan, Mexico, Morocco, South Korea, Taiwan, Tunisia, and Venezuela (Table 3). Most of these importing countries use various types of barriers to restrict the inflow of wheat to their countries. Until 1995, China had been the largest importer of wheat, followed by Brazil and Japan. However, China's wheat imports have been highly volatile, depending upon its domestic wheat production and import policies. China has reduced wheat imports substantially, and changed from importing 12.0 million tons in 1995 to becoming a small net exporter of wheat.

The EU and United States are major exporters of wheat, but they also import considerable amounts of wheat. The United States imports wheat from Canada, while the EU imports wheat from the United States, Canada, Argentina, and Australia. The largest importer of wheat is Egypt, followed by Brazil, Algeria, and Japan (Table 3).

Table 3. Wheat Imports by Countries, 2007 to 2011

Country	2007	2008	2009	2010	2011	Average	Share
	-----1,000 metric tons-----						%
Algeria	5,888	6,339	5,167	6,436	6,100	5,986	4.6
Brazil	6,960	8,200	5,964	4,165	6,500	6,358	4.9
Egypt	7,675	9,890	10,116	10,413	10,400	9,699	7.4
Japan	5,363	4,884	5,206	5,577	5,800	5,448	4.2
Korea	3,000	3,277	4,365	4,636	4,600	3,976	3.0
Mexico	1,875	1,935	2,357	2,641	3,200	2,402	1.8
Morocco	4,076	3,659	2,184	3,778	2,850	3,309	2.5
United States	3,065	2,994	2,722	2,722	2,449	2,790	2.1
Other	75,489	95,181	85,697	89,704	96,113	88,437	67.8
Total World	113,391	136,359	133,576	130,072	138,012	130,400	100.0

Source: USDA

Wheat Exports

The six major wheat exporting countries (United States, Canada, EU, FSU, Australia, and Argentina) supply approximately 65% of the wheat traded in the world market. Historically the United States has been the largest exporter, followed by Canada and the EU (Table 4), however the FSU was the largest exporter in 2011. The United States leads in exports of HRW and SRW wheat; an average of 29.1 million metric tons of all wheat classes was exported annually from 2007 to 2011, of which 14.5 million metric tons were HRW and 9.3 million metric tons were HRS. The United States competes with the EU for market share of SRW wheat. Major U.S. and EU markets for SRW wheat include China, West Asia, and North Africa.

Canada is the leader in exports of hard spring wheat and durum wheat. The United States also exports HRS and durum wheat and competes with Canada. The EU competes with the United States and Canada for market share of durum wheat exports. Major U.S. markets for HRS wheat include Southeast Asia and East Asia, including Japan and South Korea. Major Canadian markets for HRS wheat include China and the East Asian markets. The United States, Canada, and the EU compete intensely for the North African durum markets.

Australia and Argentina compete with the United States in exporting HRW wheat. Major U.S. markets for HRW wheat include China and East Asia. Argentina exports HRW wheat mainly to South America and West Asia. Australia's major markets are the North African countries, China, and West Asia.

Table 4. Wheat Exports by Class, 2007 to 2011

Country	2007	2008	2009	2010	2011	Average	Share
	-----1,000 metric tons-----						%
Argentina/Common	11,170	5,975	5,096	9,495	8,495	8,046	6.0
Australia/Common	7,371	14,675	14,705	18,536	20,941	15,246	11.4
Canada							
All	20,050	18,434	18,639	16,146	17,600	19,935	14.8
Common	16,865	15,242	15,547	12,315	13,974	14,789	11.0
Durum	3,185	3,192	3,092	3,831	3,626	3,385	2.5
EU							
All	5,329	17,650	12,000	18,138	9,500	12,523	9.3
Common	5,129	17,000	11,500	17,636	9,010	12,055	9.0
Durum	200	650	500	500	400	450	0.3
United States							
All	33,247	27,433	23,378	34,945	26,726	29,146	21.7
HRW	14,588	12,165	10,070	16,765	27,706	14,459	10.8
HRS	8,274	5,715	5,824	9,226	17,609	9,330	6.9
SRW	5,661	5,416	2,967	2,967	9,172	5,237	3.9
White	4,599	4,436	3,892	4,953	7,539	5,084	3.8
Durum	125	(299)	544	136	(204)	60	0.0
Other Producers							
All	38,908	52,481	49,444	34,556	59,668	47,011	35.0
Total World							
All	117,249	143,520	135,799	131,816	142,930	134,263	100.0

Source: USDA

RECENT CHANGES IN THE WORLD WHEAT INDUSTRY

Figure 2 shows the recent price trend for U.S. wheat. The price levels have varied from a high of \$9.97 per bushel in 2009 for durum wheat to a low of \$2.20 per bushel in 1998 for SRW wheat. The prices for all of the wheat classes have recovered from the lows of 1998-1999 to the \$3.25 to \$4.20 range during the 2002 to 2005 time period, followed by a large price increase in 2006, 2007 and 2008. Prices respond to changes in supply and demand. Therefore, major changes or shocks must have taken place in the world wheat industry to affect prices to this extent.

Figure 3 shows the world wheat production for the last 16 years. An index was created on the basis of the average of 1985 through 1994 production levels. The index was set at 1.00 for those years. World wheat production grew during the mid-1990s, peaking in 1997 with an 18% increase over the 1984-94 basis. Wheat production then slowly fell until it was 6% above the 1985/94 levels in 2003. Prices responded to increased world production in 1996 and 1997. Then, with a small drop in production (from 1.09 mmt to 1.03 mmt) in 2002 and 2003, prices increased about 40% from the low levels in 1999. This indicated an unusual degree of price sensitivity. The large production increases in 2004 reduced prices again by about 12%. In 2005, world production remained near the 2004 level, but increased by about 7% from 2004 levels. World production fell in 2006, which resulted in an increase in wheat prices by about 13%. The price continually increased during the second half of 2007 and early 2008 to historical highs. This is mainly because of strong demand causing lower carryover stocks around the world during 2007. During the last half of 2008

and early 2009, wheat prices decreased substantially. Increased world production and the current recession have lowered all commodity prices. World wheat production dropped 5.4% in 2010 and wheat price increased except for durum wheat. In 2011 prices of wheat classes increased due to strong demand in spite of a large crop.

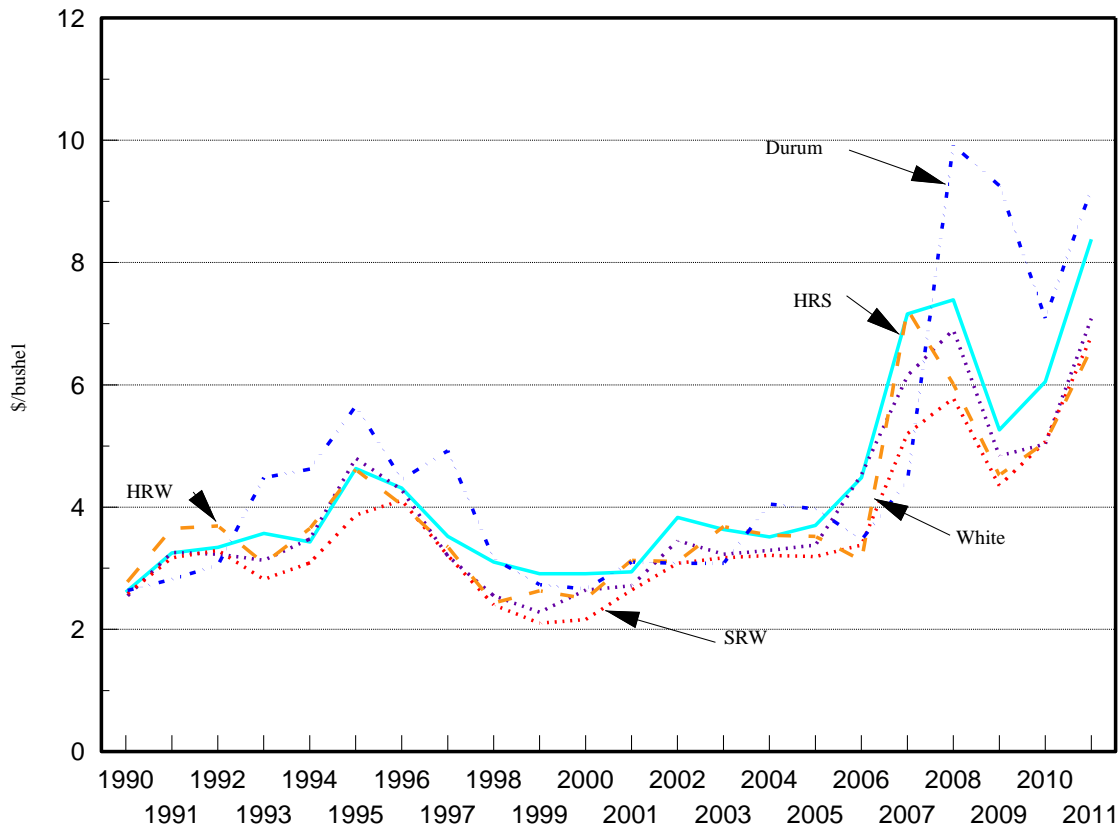


Figure 2. Historical Farm Price, by Class, 1990-2011

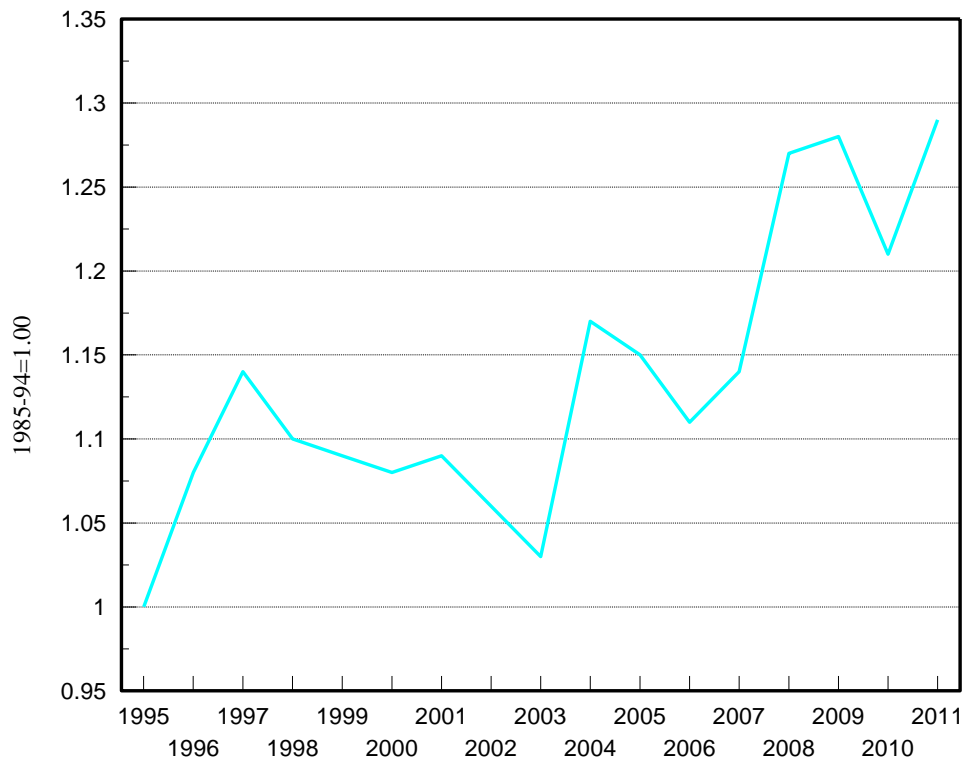


Figure 3. World Wheat Production, 1995-2011

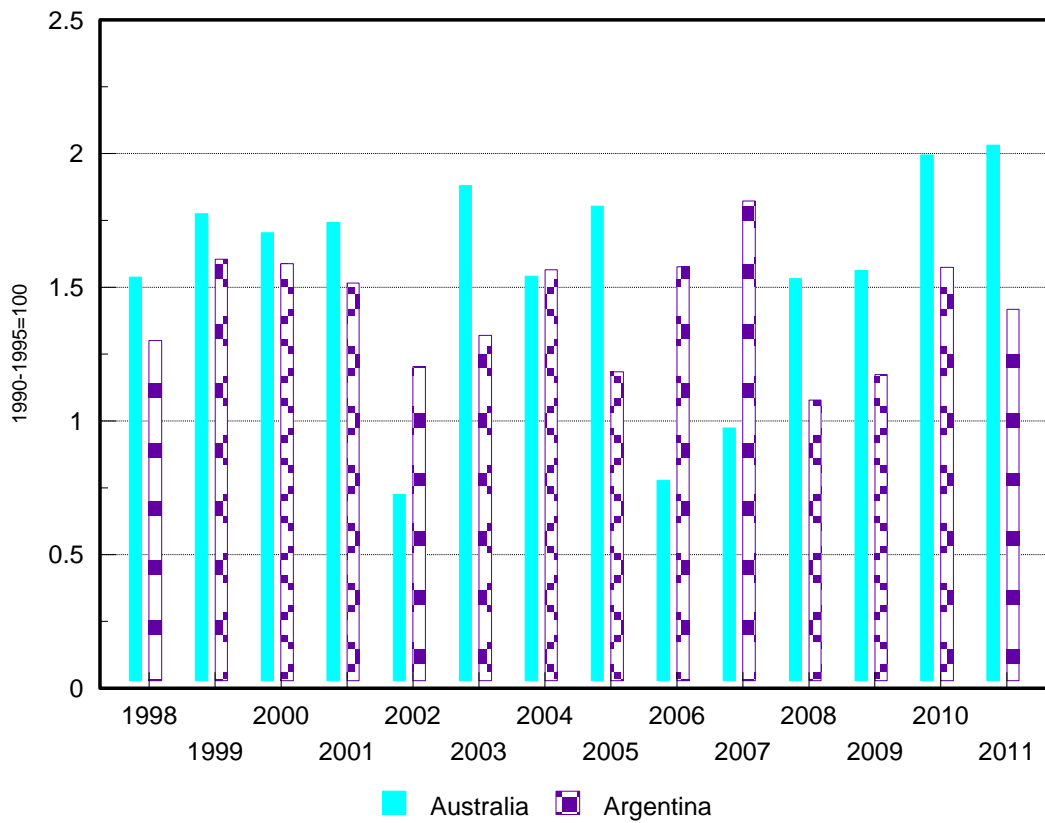


Figure 4. Wheat Production in Argentina and Australia

Figures 4 and 5 show the wheat production for the major exporting countries. Both Argentina and Australia had increased their production above the 1990-95 average by 70% to 80% by 1999. In 2002, Argentine production fell by 30% from 2001 and Australian production fell by 60%. Both countries' production increased in 2003, and Argentine production increased another 18% for 2004 but fell to 2002 levels in 2005, while Australian production fell 11% in 2004 but increased 16% for 2005. In 2010 and 2011, Australian production increased from the very low production levels in 2006 and 2007. Argentine wheat production dropped in 2008 and 2009 to about 115% of the 1990-95 average. In 2010, Argentine wheat production increased to about 150% of the 1990-95 average and in 2011 wheat production fell to about 140% of the 1990-95 average. The U.S. wheat production levels remained near the long-term average until 2001, whereas Canadian production ranged between 10% and 20% below the 1990-1995 average from 1997 through 2000. In 2001, Canadian and U.S. wheat production fell by 23% and 12%, respectively, from the long-term average. In 2002, Canadian wheat production was 40% less than the long-term average, and the U.S. wheat production was 28% less. U.S. production returned to the long-term average in 2003 but decreased in 2006 and 2007 before recovering in 2008. U.S. wheat production in 2010 was 7% less and 2011 was 13% less than in 2008.

Wheat exports followed the same trend as production in major exporting countries. Argentine and Australian exports increased by more than 50% from 1997 through 2001, while exports for Canada and the United States fell to about 80% of the 1985-94 average. In 2002, Australian exports were only 80% of the long-term trend, while exports for Canada, United States, and the EU were 45%, 66%, and 83%, respectively. During this time, world exports did not change substantially. World exports of wheat peaked in 2008 at 144 million tons before falling to 136 million tons in 2009 and 132 million tons in 2010.

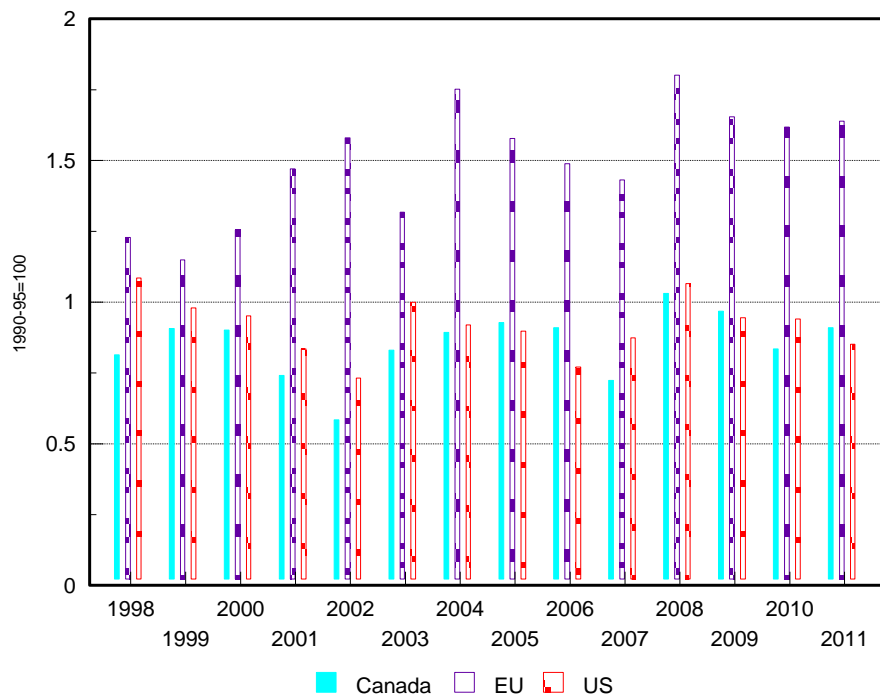


Figure 5. Wheat Production in Canada, the EU and the United States

Wheat exports from India and the FSU increased dramatically in 2001 through 2003, which made up for the shortfall from other countries. Figure 6 shows the wheat production in China, the FSU, and India for 1998 through 2011. Wheat production increased in China, the FSU and India during the time period relative to the long-term average.

China's production peaked in 2011 at 19% higher than the long-term average, and India's production peaked in 2011 at 30% more than the long-term average. The FSU production remained less than the long-term average until 2001, when it grew to 18% larger than the long-term average. In 2002, the FSU wheat production increased again to 22% over the long-term trend, however wheat production decreased 37% in 2003. Wheat production again increased during the years 2004-2009 before falling again in 2010. It increased to 146% of base levels in 2011. China's production fell between 1997 and 2003 before increasing during the past eight years.

World wheat exports did not vary much between 1995 and 2011. The large increases in exports by India and the FSU have been absorbed by the rest of the world, reflected in lower exports by Canada and the EU. Table 5 compares wheat exports by major exporting countries in 1990 and 2011. The United States has been the largest exporter of wheat for the 1990-2010 time period. However, the FSU exported 29.4 million metric tons in 2011. U.S. exports of wheat decreased 16.8% from 28.1 million metric tons to 23.4 million metric tons for the period. Australia was the third largest wheat exporter, followed by Canada and the FSU. In recent years the FSU exported between 21 and 30 million tons of wheat. India, traditionally an exporter, had a small crop in 2010 and 2011 which allowed for minimal exports.

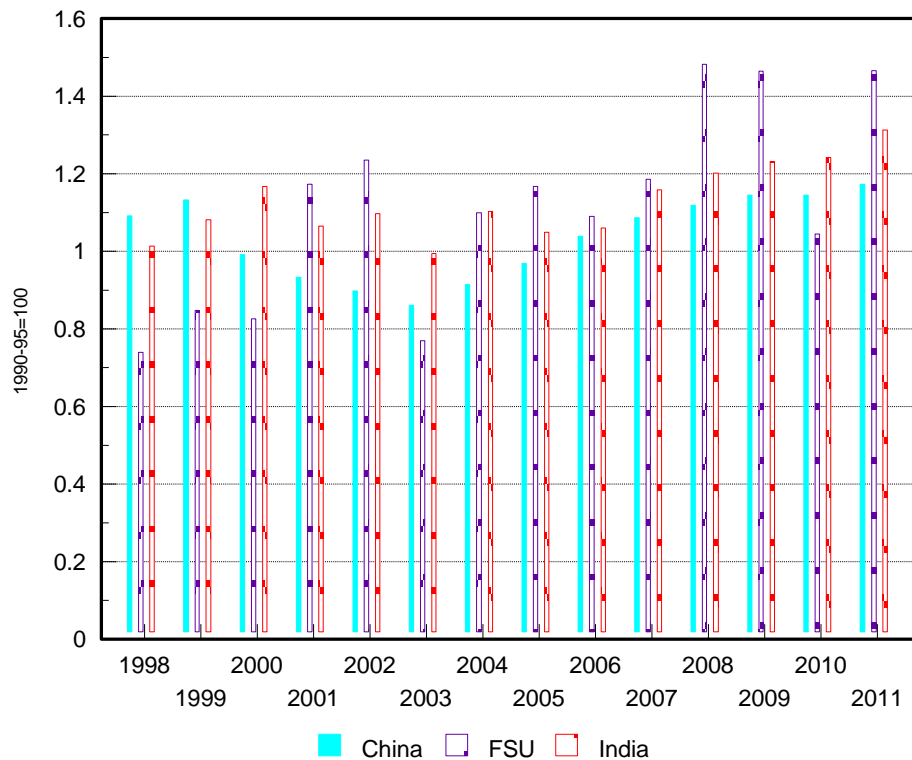


Figure 6. Wheat Production in China, the FSU, and India

Table 5. Wheat Exports by the Major Exporting Countries, 1990 and 2011

	1990	2011	Percentage Change
	---1,000 metric tons---		%
Argentina	5,592	8,495	51.8
Australia	11,790	20,941	77.6
Canada	22,130	17,600	-20.4
China	(9,406)	(500)	-94.7
EU	18,635	9,500	-49.0
FSU	(14,649)	29,377	NA
India	100	975	875
United States	28,117	23,406	-16.8
World	102,654	142,930	39.2

Sources: United Nations, International Wheat Council, Canada Wheat Board, FAS-PS&D

OUTLOOK FOR THE WORLD WHEAT INDUSTRY

Total world wheat trade for the six major exporters is projected to increase by 12.2% from 109.5 million metric tons in 2011 to 122.9 million metric tons in 2021. Trade of all wheat classes is expected to increase for the 2011-2021 period. Common wheat production is predicted to increase in the U.S. faster than in other countries, although most of the increase is due to a small crop in 2011.

Figure 7 shows the projected prices for the various classes of wheat. The prices of common wheat classes are expected to remain in the \$6.20 to \$8.00 range for most of the time period. The prices of HRS wheat are projected to increase to about \$8.30 per bushel by 2020. Durum wheat is expected to fall from the \$9.00 range in 2012 to \$8.00 in 2015-2017 before returning to the \$9.00 per bushel in 2020.

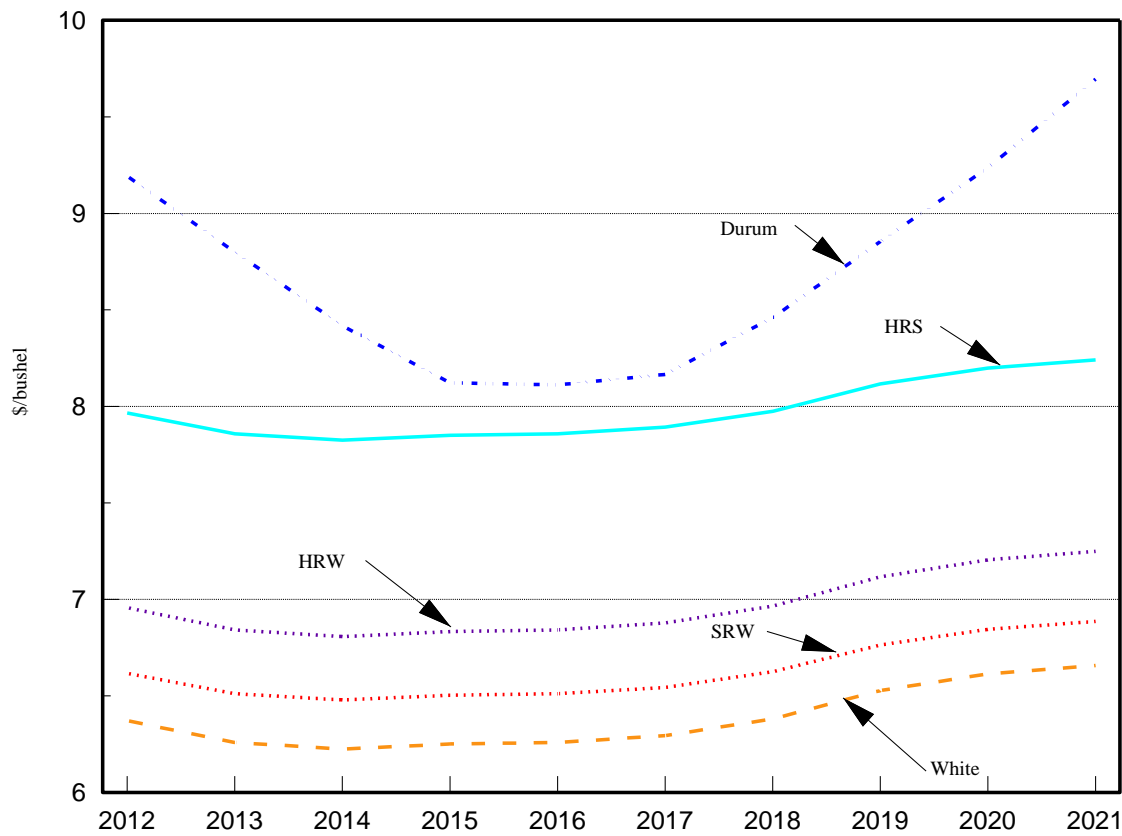


Figure 7. Projected U.S. Farm Wheat Price, by Class, 2012-2021

United States

Table 6 shows wheat production, consumption, exports, and ending stocks in the United States. By 2021, total U.S. wheat production is expected to grow by 10.0% above the 2009-2011 average, but is much lower than production during the late 1990s. The largest increases in production occur for SRW wheat (29.6%), followed by HRW wheat (10.3%) and White wheat (10.0%). The reason for the large increase in SRW wheat production is that farmers planted about one-half of the acres they normally planted in 2009 and 2010. The model expects the smaller plantings to continue because of increased corn and soybean acres. Production of HRS wheat is expected to decrease 4.7%. Changes in production of different classes of wheat over the 2012-2021 average are shown in Figure 8.

Table 6. Wheat Production, Consumption, Exports, and Carry-over Stocks in the United States

	Average (2009-2011)	2011	2021	% Change (2009-2011) to 2021
-----1,000 metric tons-----				
<u>Production</u>				
Common	55,873	53,041	61,448	10.0
HRW	24,652	21,231	27,178	10.3
HRS	13,749	10,824	13,110	-4.7
SRW	9,969	12,451	12,922	29.6
White	7,487	8,535	8,236	10.0
Durum	2,419	1,374	2,583	6.8
<u>Consumption</u>				
Common	28,708	29,379	31,579	10.0
Durum	2,390	2,245	2,490	4.2
<u>Exports</u>				
Common	25,497	23,610	29,940	17.4
Durum	159	(204)	112	-29.7
<u>Carry-over</u>				
Common	24,512	23,052	23,915	-2.4
Durum	962	626	969	0.8

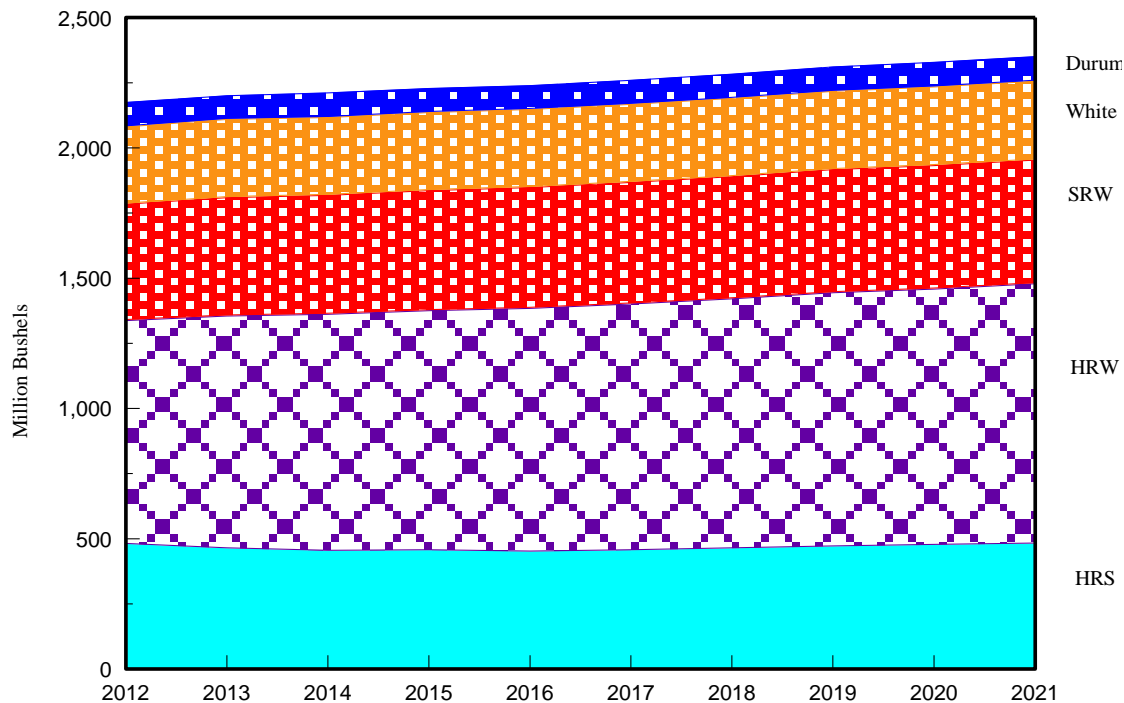


Figure 8. U.S. Wheat Production by Class, 2012-2021

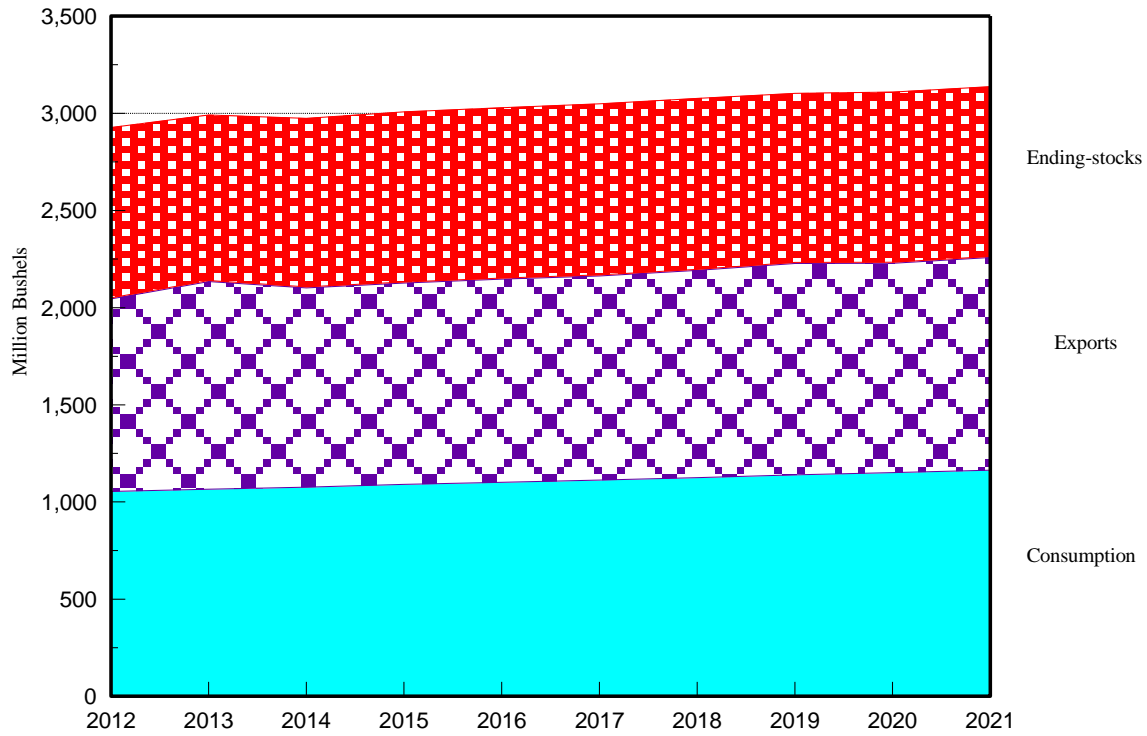


Figure 9. U.S. Common Wheat Utilization, 2012-2021

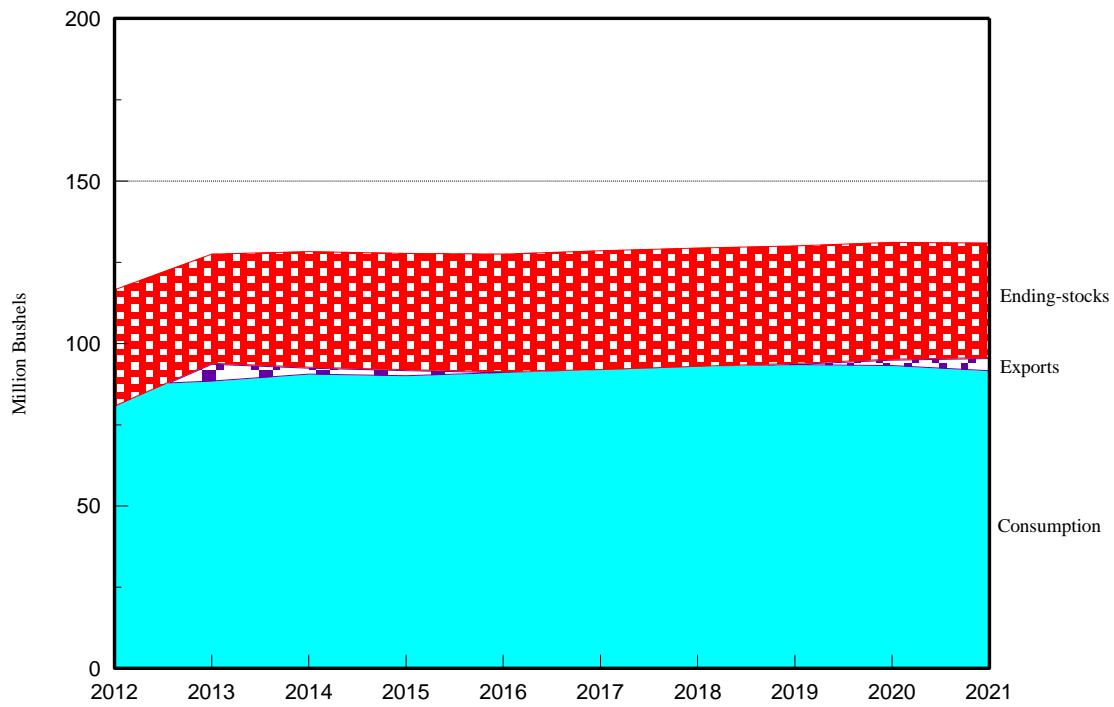


Figure 10. U.S. Durum Wheat Utilization, 2012-2021

Total wheat harvested area is expected to remain constant between 47.7 million acres for the 2009-2011 average and 47.8 million acres in 2021, and average yield is predicted to increase from 44.9 bushels per acre to 49.2 bushels per acre over the 2011-2021 period. U.S. durum area is expected to remain constant.

Common wheat consumption is expected to increase faster than durum wheat consumption. U.S. wheat consumption is projected to grow 10.0% for common wheat (Figure 9) and 4.7% for U.S. durum wheat for the 2011-2021 time period (Figure 10).

The United States is expected to decrease exports of durum wheat through 2021 (Table 6). Common wheat exports are predicted to increase from 25.5 million metric tons in 2009-2011 to 29.9 million metric tons in 2021. Ending stocks are expected to decrease by 2.4% for common wheat compared to the 2009-2011 average and 0.8% for durum wheat (Table 6).

Canada

The production and consumption of CWRS wheat in 2011 was similar to the three-year average (Table 7). By 2021, CWRS wheat production is predicted to decrease by 0.4% and increase by 4.1% for CWAD, from the 2009-2011 average. Total area for CWRS wheat is expected to decrease slightly between 2011 and 2021, while CWAD wheat area is increase from 1.9 million hectares in 2011 to 2.0 million hectares in 2021.

Domestic consumption of CWRS wheat is predicted to increase by 3.4%, while the consumption of durum wheat is expected to increase by 10.1% over the 2011-2021 time period. Canadian CWRS wheat exports are projected to decrease by 6.2% by 2021, and CWAD wheat exports are predicted to increase by 4.9% from 3.5 million metric tons to 3.7 million metric tons in 2021. Ending stocks are predicted to decrease by 6.9% for CWRS wheat and increase 19.9% for CWAD wheat over the 2011-2021 time period. During the preceding years, 2000-2005, ending stocks of CWAD in Canada were in the between 2.8 million tons and 1 million tons.

Table 7. Wheat Production, Consumption, Exports, and Carry-over Stocks in Canada

	Average (2009-2011)	2011	2021	% Change (2009-11) to 2021
<u>Production</u>	-----1,000 metric tons-----			
WRS	20,434	20,474	20,354	-0.4
WAD	4,623	4,682	4,813	4.1
<u>Consumption</u>				
WRS	6,980	7,180	7,216	3.4
WAD	1,003	1,005	1,105	10.1
<u>Exports</u>				
WRS	13,945	13,974	13,084	-6.2
WAD	3,516	3,626	3,690	4.9
<u>Carry-over</u>				
WRS	6,683	5,720	6,219	-6.9
WAD	339	329	407	19.9

Figure 11 shows changes in consumption, exports, and ending stocks of CWRS wheat in Canada from 2012 to 2021, and Figure 12 shows the utilization for CWAD wheat.

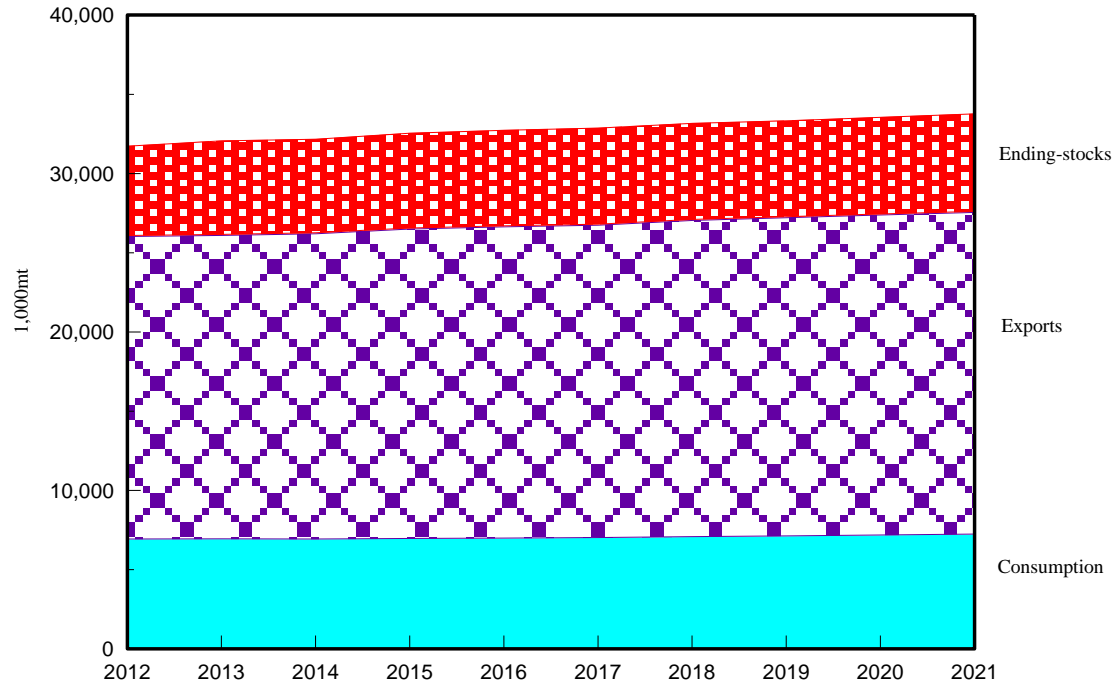


Figure 11. Canadian Western Red Spring Wheat Utilization, 2012-2021

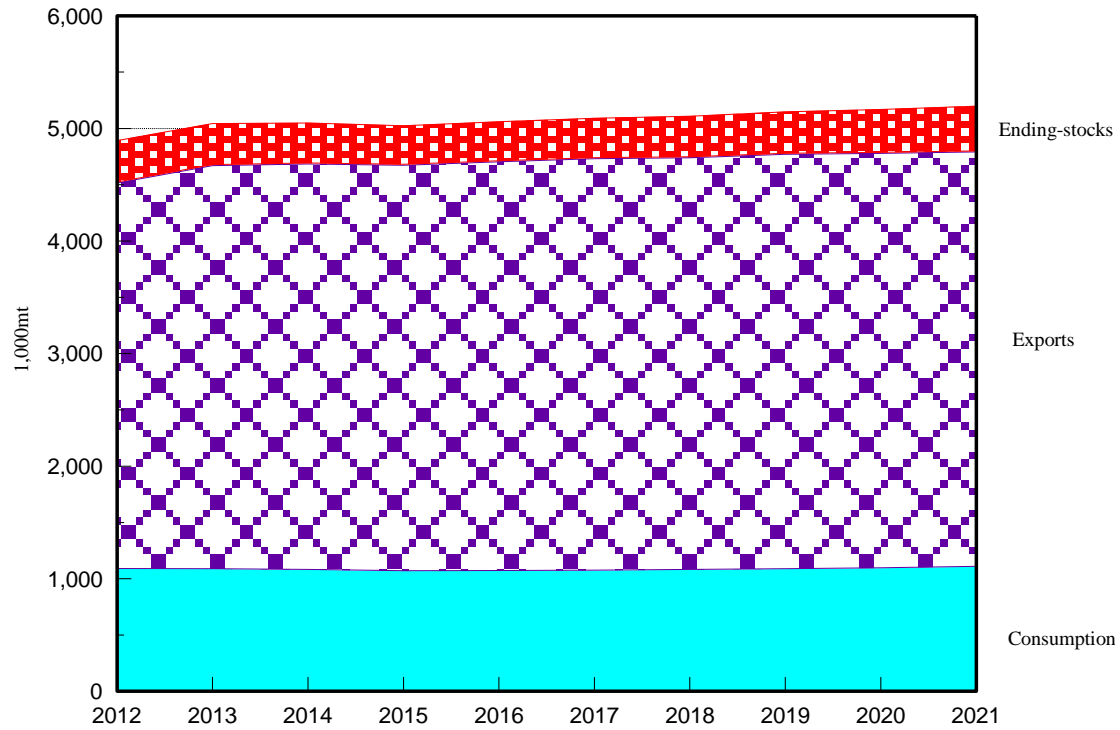


Figure 12. Canadian Western Amber Durum Wheat Utilization, 2012-2021

European Union

Table 8 presents production, consumption, exports, and ending stocks of common and durum wheat in the EU for the 2011-2021 period. Common wheat production in the EU is predicted to increase by 4.8% from the 2009-2011 average by 2021, while durum wheat production is expected to increase by 3.8% for the same time period.

Domestic consumption of common wheat is projected to increase by 2.8%, and consumption of durum wheat is predicted to increase by 2.3% for the 2011-2021 period. Exports of durum wheat in 2021 are predicted decrease from the 2009-2011 averages, but exports of common wheat are expected to increase from the 2009-2011 averages. Ending stocks are expected to decrease for common wheat and durum wheat.

Table 8. Wheat Production, Consumption, Exports, and Carry-over Stocks in the European Union

	Average (2009-2011)	2011	2021	% Change (2009-11) to 2021
<u>Production</u>				
-----1,000 metric tons-----				
Common	128,810	129,017	134,929	4.8
Durum	8,547	8,563	8,874	3.8
<u>Consumption</u>				
Common	116,284	118,762	119,590	2.8
Durum	8,216	8,238	8,407	2.3
<u>Exports</u>				
Common	14,248	9,010	15,337	7.6
Durum	497	490	470	-5.4
<u>Carry-over</u>				
Common	12,656	11,809	10,957	-13.4
Durum	853	870	829	-2.9

Figures 13 and 14 show changes in consumption, exports, and ending stocks of common and durum wheat for the 2012-2021 time period. For common wheat, production and consumption are expected to decrease slightly. However, production and consumption of durum wheat are predicted to increase for the period.

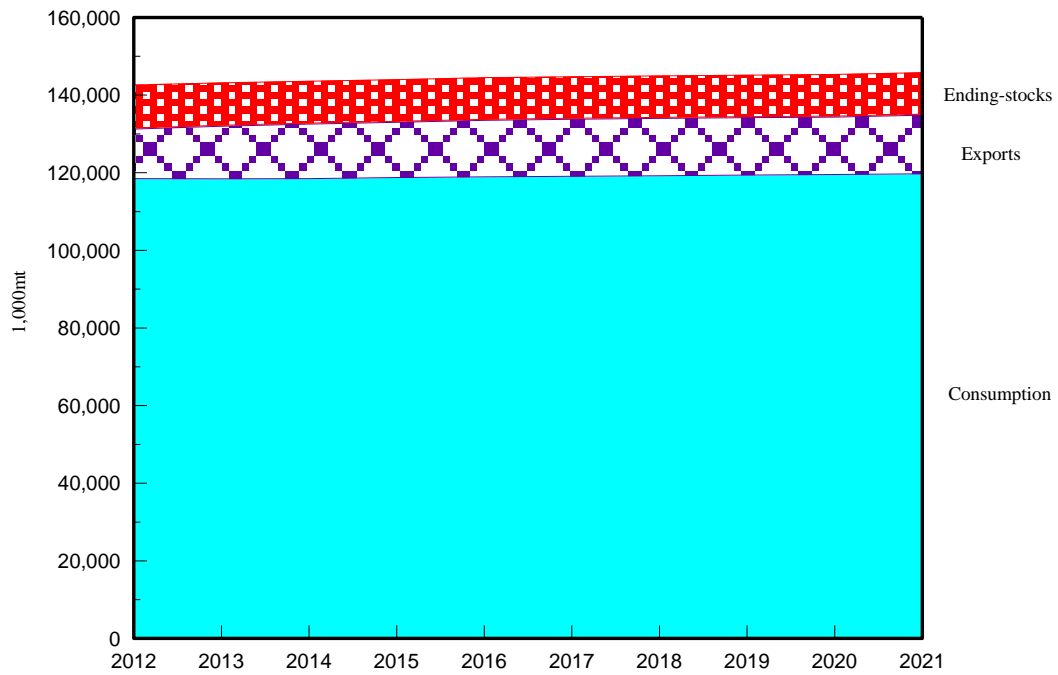


Figure 13. EU Common Wheat Utilization, 2012-2021

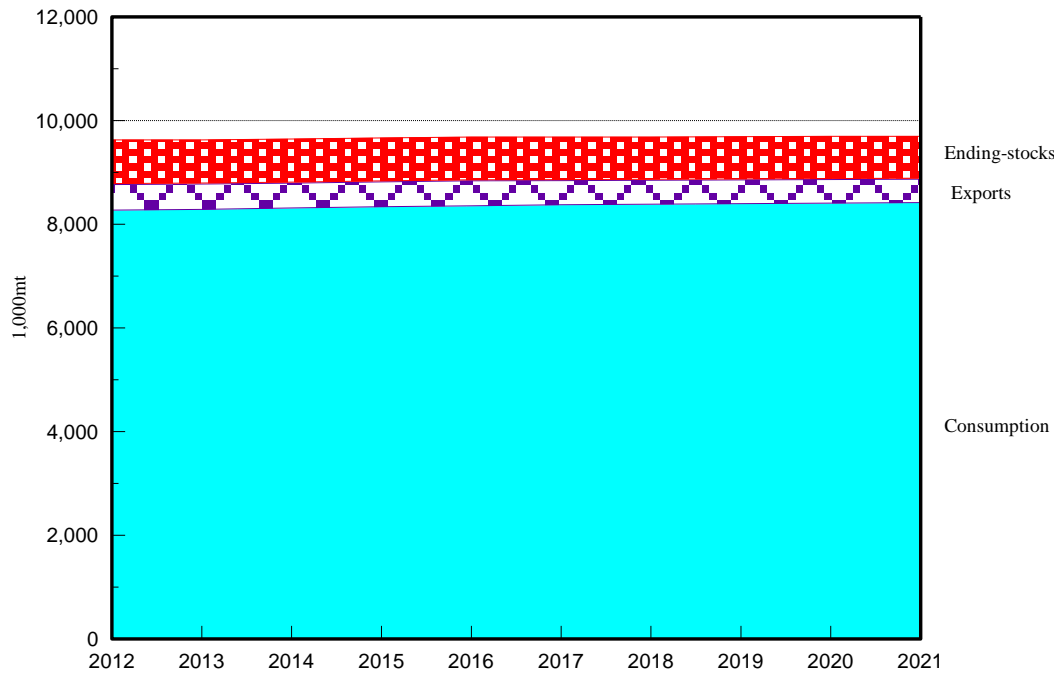


Figure 14. EU Durum Wheat Utilization, 2012-2021

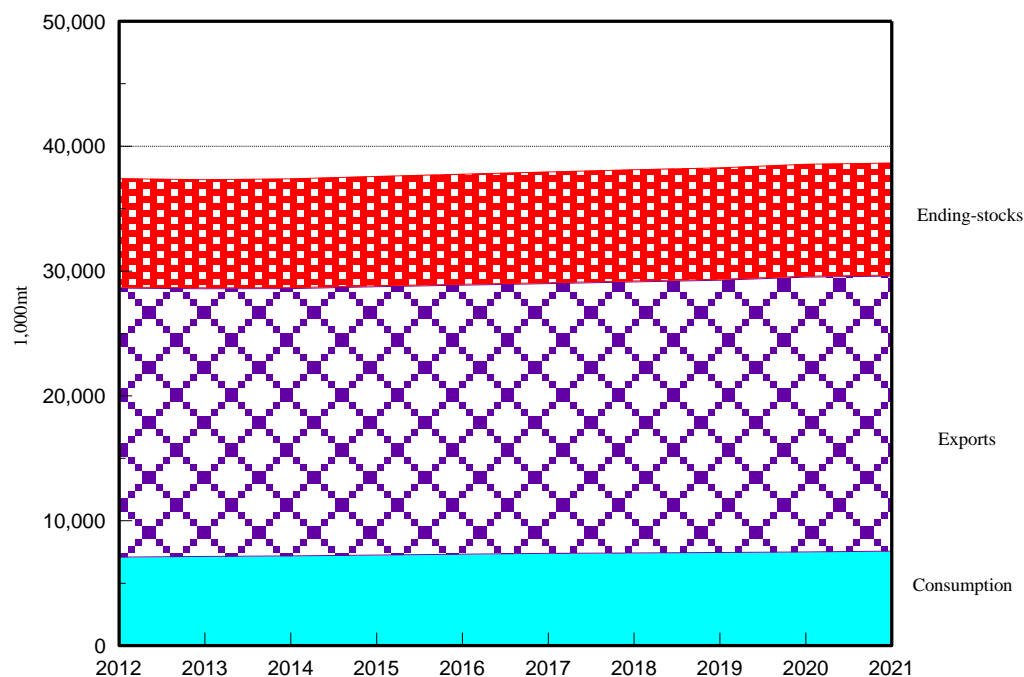


Figure 15. Australian Common Wheat Utilization, 2012-2021

Australia

Compared to the 2009-2011 average, Australian wheat production is projected to grow by 14.1% by 2021 (Table 9). Much of that increase is due to the small crops in 2008 and 2009 due mainly to weather. Yields are expected to increase gradually at the historical trend line, while wheat area is expected to increase slightly. Domestic wheat consumption is predicted to increase by 24.2% from the 2009-2011 average of 6.1 million metric tons to 7.5 million metric tons in 2021. Wheat consumption in Australia during the poor harvests in 2008 and 2009 decreased 24% compared to long term trends. Wheat exports also are predicted to increase from the 2009-2011 average of 18.1 million metric tons to 22.1 million metric tons in 2021. Figure 15 shows changes in consumption, exports, and ending stocks for the 2011-2021 period. The single desk exporting powers of the Australian Wheat Board were removed in July of 2008. The Wheat Exports Australia (WEA) has taken over the responsibility.

Table 9. Wheat Production, Consumption, Exports, and Carry-over Stocks in Australia, (1,000 metric tons)

	Average (2009-2011)	2011	2021	% Change (2009-11) to 2021
Production	25,990	28,341	29,665	14.1
Consumption	6,050	7,100	7,514	24.2
Exports	18,061	20,941	22,117	22.5
Carry-over	7,846	9,123	9,058	15.4

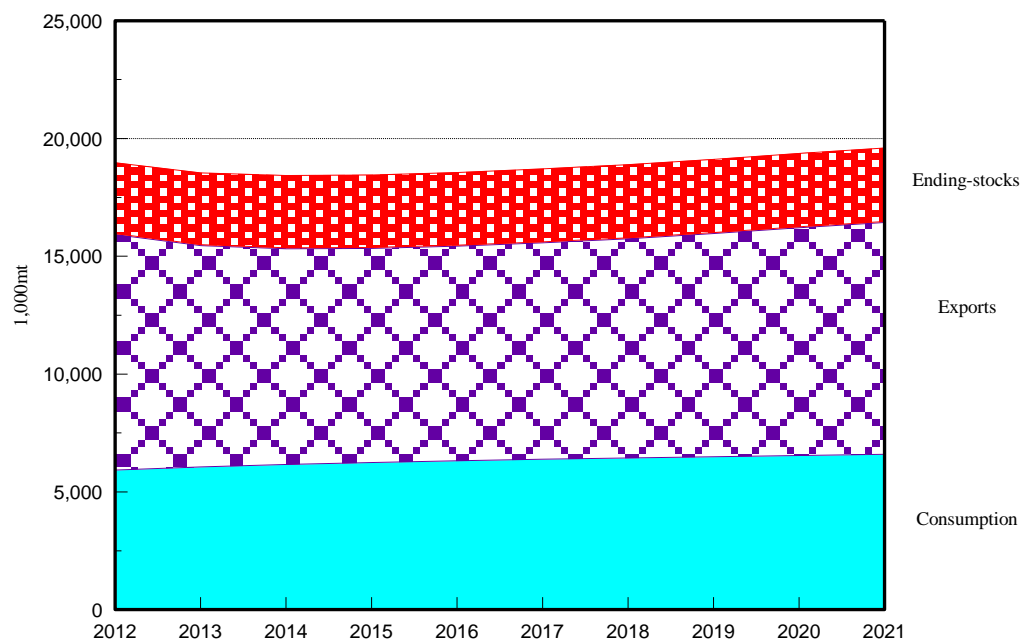


Figure 16. Argentine Common Wheat Utilization, 2012-2021

Argentina

Argentine wheat production is projected to increase by 15.9% from the 2009-2011 average of 14.2 million metric tons to 16.5 million metric tons by 2021 (Table 10). Domestic wheat consumption is expected to increase by 11.8% from 5.9 million metric tons to 6.6 million metric tons. Wheat exports are predicted to be 9.9 million metric tons in 2021, which is an 28.4% larger increase from the 2009-2011 average. Ending stocks are expected to increase by 9.8%. Figure 16 shows changes in consumption, exports, and ending stocks for the 2012-2021 period.

Table 10. Wheat Production, Consumption, Exports, and Carry-over Stocks in Argentina

	Average (2009-2011)	2011	2021	% Change (2009-11) to 2021
-----1,000 metric tons-----				
Production	14,200	14,500	16,460	15.9
Consumption	5,875	5,925	6,573	28.4
Exports	7,695	8,495	9,882	11.9
Carry-over	2,877	3,174	3,159	9.8

Former Soviet Union

The FSU became an exporter of wheat in 2001 and is projected to continue exporting wheat. The FSU exported 4.6 million metric tons of wheat in 2001 and 21 million metric tons in 2002 but imported a small amount of wheat in 2003. In 2009, the FSU exported 29.6 million metric tons of wheat. A very small wheat crop in 2010 limited wheat exports from the FSU to 8.7 million tons, however the FSU exported 29.4 million metric tons of common wheat in 2011. Exports of common wheat in the country are expected to be about 28.3 million tons by 2021. (Table 11). Per capita

consumption of wheat is expected to increase by 13.9% between 2011 and 2021.

Table 11. Wheat Production and Exports in the Former Soviet Union

	Average (2009-2011)	2011	2021	% Change (2009-11) to 2021
	-----1,000 metric tons-----			%
Production	103,197	114,176	128,705	24.7
Exports of Common	23,314	29,377	28,361	21.6
Exports of Durum	335	342	371	10.7

IMPORTING COUNTRIES

Importing countries are grouped into the Asian (China, Japan, Korea, and Taiwan), North Africa (Algeria, Egypt, Morocco, and Tunisia), and Latin American (Mexico, Brazil, and Venezuela) regions (Table 12).

Table 12. Imports of Common and Durum Wheat by Major Importing Countries

	Average (2009-2011)	2011	2021	% Change (2009- 11) to 2021
	-----1,000 metric tons-----			%
<u>Asia</u>				
China	329	500	(75)	NA
S. Korea	4,534	4,600	4,535	0.03
Japan	5,528	5,800	5,520	-0.1
Taiwan	1,233	1,225	1,278	3.6
<u>North Africa</u>				
Algeria				
Common	3,828	4,033	4,527	18.3
Durum	2,073	2,067	2,313	11.6
Morocco	2,937	2,850	3,309	12.7
Egypt	10,310	10,400	12,789	24.0
Tunisia				
Common	1,141	1,215	1,359	19.1
Durum	523	535	665	27.1
<u>Latin America</u>				
Brazil	5,543	6,500	6,446	16.3
Mexico	2,733	3,200	3,713	35.9
Venezuela				
Common	1,113	1,124	1,291	16.0
Durum	426	426	482	13.1

Asian Importers

Asian imports of wheat are projected to remain the about the same between the 2009-2011 average and 2021. Over the past 10 years, India has been either a net importer or net exporter of wheat, depending upon its production and carry-over stocks. From 1994 to 1996, India exported an

average of 692 thousand metric tons per year. For 1997 through 1999, India’s imports of wheat were 1.7 million metric tons per year. Imports by Japan and Korea are projected to decrease by 0.1% and increase slightly, respectively, over the 2011-2021 period (Figure 17). Japan’s population is stable and the per capita consumption of wheat is slowly decreasing, resulting in a slight reduction in the demand for wheat in Japan. China imported 329 thousand metric tons of wheat during 2009-2011. China is projected to export a small amount of wheat in 2021.

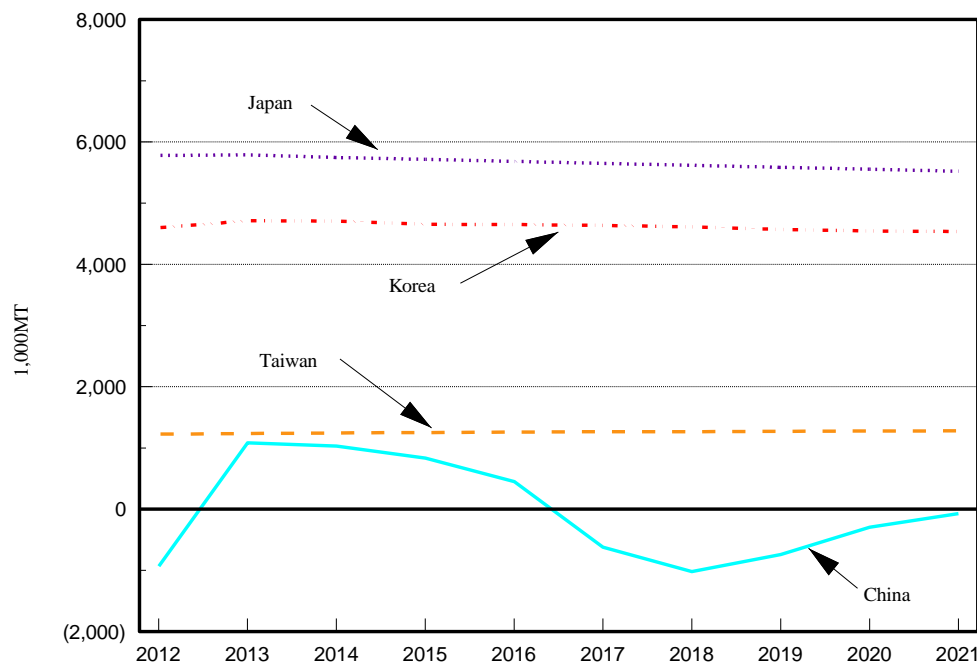


Figure 17. Common Wheat Imports by Major Asian Countries, 2012-2021

African Importers

North African imports of wheat are projected to increase by 19.9% from the 2009-2011 average to 2021. Egyptian imports of common wheat are projected to increase by 24.0%, from 10.3 million metric tons in 2009-2011 to 12.8 million metric tons in 2021. The increase in Egyptian imports is due the population growth in the country. Algeria is expected to import both common and durum wheat. Algerian imports of common wheat are projected to increase by 18.3% from the 2009-2011 average to 4.5 million metric tons in 2021, and durum wheat imports are projected to increase by 11.6%, from 2.1 million metric tons to 2.3 million metric tons. Morocco’s imports of common wheat are projected to increase by 12.7% between 2011 and 2021. Morocco’s imports are very erratic, depending on their unstable domestic production. Tunisian imports of common wheat are projected to increase by 19.1%, from 1.1 million metric tons to 1.4 million metric tons, from the 2009-2011 average to 2021. Its durum wheat imports are projected to increase by 27.1% from the 2009-2011 average to 2021 (Figure 18).

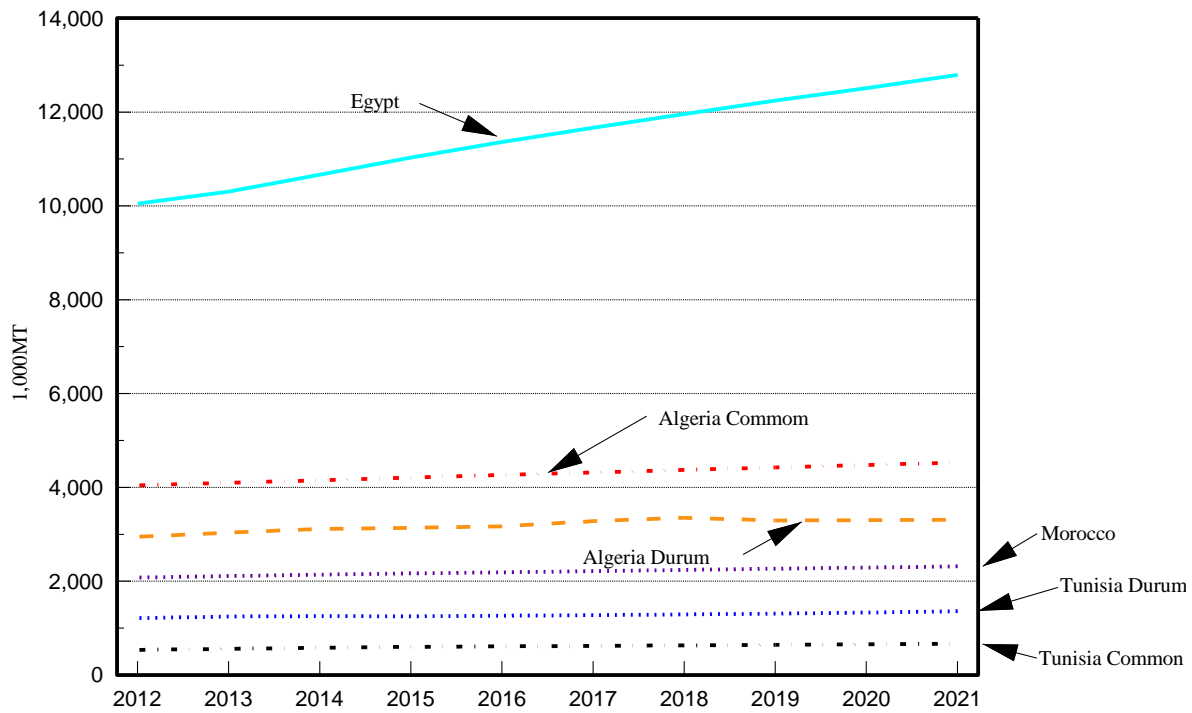


Figure 18. Common and Durum Wheat Imports by Major African Countries, 2012-2021

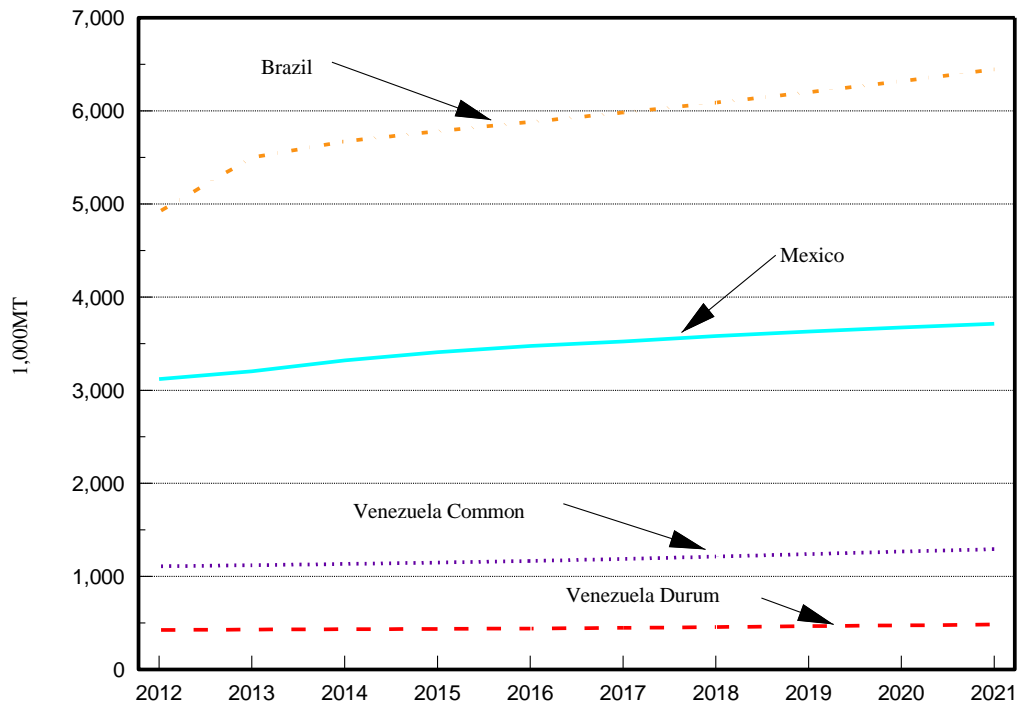


Figure 19. Common and Durum Wheat Imports by Latin American Countries, 2012-2021

Latin America Importers

Mexican imports are projected to increase by 35.9% from the 2009-2011 average of 2.7 million metric tons to 3.7 million metric tons by 2021. Venezuela is expected to import more common and durum wheat. Common wheat imports in Venezuela are projected to increase by 16.0% from 1.1 million metric tons for the 2009-2011 average to 1.3 million metric tons in 2021, and durum wheat imports are projected to increase by 13.1% (Figure 19). Brazilian imports are projected to increase to 6.4 million metric tons by 2021, which is a 16.3% increase from the 2009-2011 average. The Latin American wheat market will grow faster than the African market, however the African market is almost twice as large. Latin America will continue to be an important market for the U.S. wheat industry, but the U.S. must compete with Argentina to maintain or capture its market share in the region.

CONCLUDING REMARKS

This report evaluates the U.S. and world wheat industries for the 2011-2021 period using the Global Wheat Policy Simulation Model, which is operational at the Center for Agricultural Policy and Trade Studies, North Dakota State University. The projections are based on a series of assumptions about the general economy, agricultural policies, normal weather conditions, and technological changes. The projections, therefore, could change significantly, depending upon changes in assumptions.

Import demand for both common and durum wheat is largely based on optimistic income growth for the year 2012 (2.5% to 6% annually) in developing and developed countries (Global Insight). However, if the predicted income growth is not realized, import demand could grow slower than predicted and estimated prices could be lower.

Prices for common wheat in the near future are predicted to be lower than the 2011 levels. The weak dollar also has influenced wheat prices in the United States because of strong foreign import demand for U.S. wheat. It is expected that the average price of wheat could return to \$7.70-\$8.30 range for HRS wheat. U.S. durum wheat prices are expected to decrease to about \$8.00 per bushel by 2015 and slowly increase to about \$9.50 in 2021.

World wheat exports by the six major exporters are projected to increase by 12.2% from 109.5 million metric tons in 2011 to 122.9 million metric tons in 2021. Durum wheat trade is expected to grow slower than common wheat trade. North Africa continues to be the growth market for wheat exports. However the impacts of the recent unrest in North Africa are unknown and these impacts could be large. Per capita consumption of wheat has increased in most Asian countries, except for Japan, South Korea and China. Wheat imports could increase in Latin America, but most of those might be supplied by Argentina.

The U.S., Argentina, the EU, and Australia are predicted to increase their production of common wheat for the 2011-2021 period and exports of durum wheat for all exporters except for the EU are expected to increase. Consumption of common wheat is expected to increase slowly in most developed countries and will increase faster in North Africa and Latin America. Production and exports of common wheat in the EU are predicted to increase slowly during the projection period due to changes in the Common Agricultural Policy.

Common wheat demand in Southeast Asian countries is predicted to grow slowly for the 2011-2021 period. Over the past 10 years, India has been either a net importer or net exporter of wheat, depending on its production and carry-over stocks. India imported an average of 92 thousand metric tons of wheat during 2009-2011, however it exported a small amount of wheat in 2011. India could export about 0.3 million metric tons per year in the future.

Chinese wheat production is expected to be 61.7 million metric tons in 2021 which is about the same as it was in 2011. China's production peaked in 2009. In China, yields have been increasing, but area harvested is decreasing. China's long term supply and demand situation for wheat is uncertain. Rapid increases in incomes have reduced per capita consumption of cereal grains in favor of fruits, vegetables and meat. If the trend continues, China's wheat import could increase slower than the predicted.

Egypt, the largest importer of common wheat in the North Africa region, is predicted to increase its imports of common wheat. Import demand for both common and durum wheat in other countries in the region is also expected to increase.

Import demand for common wheat in Venezuela is expected to be strong for the 2011-2021 period. Import demand for common wheat in Mexico also is predicted to be strong for the projection period.

Import demand for wheat in Latin America could grow faster than that in Asia and North Africa for the next ten years. However, the competition among wheat exporting countries in the markets could remain strong: The United States could compete with Canada and the EU in the African market, with Canada and Argentina in the Latin American market, and with Canada and Australia in the Asian market.

There are a few variables, which might affect the U.S. and world wheat industries. First, a rise in protectionism stemming from high commodity prices in 2008 and 2010 in some developing countries will continue to affect the price of wheat and trade volume into the future. Second, capita consumption of wheat in some Asian countries, including China, South Korea, and Japan is in a decreasing trend. If this trend continues, total consumption of wheat may decrease in the countries and consequently their import demand will also decrease.

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