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2014 Outlook of the U.S. and World Wheat Industries, 2014-2023

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ABSTRACT

This report evaluates the U.S. and world wheat markets for the 2014-2023 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, 2011 and early 2012 will not be maintained because they are the result of a small wheat crop in 2010 and 2012 in the Former Soviet Union (FSU) and Argentina in 2012. 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 1.9% from 117.0 million metric tons in 2013 to 120.3 million metric tons in 2023. It is expected that the average price of HRS wheat will return to \$8.00-\$8.50 range and durum wheat prices are expected to increase slowly to about \$9.00 in 2023.

Production of HRW, HRS, SRW, and white wheat in the United States is predicted to increase for the 2013-2023 period. The largest increase in production occurs for U.S. HRS wheat, followed by HRW and durum wheat. The U.S. export of durum wheat is predicted to increase for the 2013-2023 period. The United States is expected to import durum wheat from Canada over the period.

Production of Canadian western red spring wheat (CWRS) is predicted to decline while the production of Canadian western amber durum (CWAD) wheat is predicted to increase for the 2013-2023 period. CWRS wheat exports are projected to decrease slightly, while durum wheat exports increase by 21.3%.

Common and durum wheat production in the European Union (EU) is predicted to increase by 4.4% and 11.5%, respectively, for the 2013-2023 period. The EU is expected to increase its common wheat exports and return to exporting a small amount of durum wheat.

Australia's wheat production is predicted to grow by 8.8% over the 2013-2023 period. Wheat exports are expected to increase from 20.8 million metric tons in 2011-2013 to 21.6 million metric tons in 2023.

Argentina wheat production is projected to increase by 5.8% to about 12.7 million metric tons in 2023. Wheat exports are expected to decrease from 7.0 million metric tons in 2011-2013 to 6.0 million metric tons in 2023.

The FSU, China, and India were importers of wheat but have exported wheat during the past 10 years. Wheat production in India has increased 120% since the 1980s. Most of the increase has been due to increases in yields. China's wheat production reached a recent record level in 2012 and 2013 at 121 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 before recovering in 2004. In 2010 the FSU wheat crop fell by 29% from the 2009 level, however in 2011 record wheat production in the FSU allowed for exports of 28.4 million metric tons. In 2012, the FSU had another small wheat crop which limited exports to 17.6 million metric tons. In 2013 the FSU exported 28.0 million metric ton of wheat. It is predicted that the FSU will continue to export about 20 million metric tons annually.

Most importing countries are predicted to increase their imports for both common and durum wheat. Among those countries, import demand for common wheat in Egypt, Brazil, and Algeria 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.

2014 Outlook of the U.S. and World Wheat Industries, 2014-2023

Richard D. Taylor

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INTRODUCTION

This report evaluates the U.S. and world wheat industries for the 2014-2023 period by using the Global Wheat Policy Simulation Model developed by Benirschka and Koo. The model is operational at the Center for Agricultural Policy and Trade Studies, NDSU.

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. 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.

Wheat is produced across the world. Total world wheat production has increased from 521 million tons in 1986/87 to 712 million tons in 2012/2013. The EU (143 million tons) was the largest producer of wheat in 2013, followed by China (122 million tons) and the FSU (104 million tons). The United States produced 58 million tons of wheat in 2013, an increase from 54 million tons in 2011. 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 156 million tons in 2013, which is about 20% 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 wheat crop in 2011, prices increased to \$6.92/ bushel. In late 2012 wheat prices increased to about \$9.20/bushel before falling about \$1.00/bushel in 2013.

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. 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 2009-2013 period was 58.9 million tons, with 24.2 million tons of HRW, 13.7 million tons of HRS, 11.3 million tons of SRW, 7.4 million tons of white wheat, and 2.2 million tons of durum wheat (Table 1).

Table 1. Wheat Production by Class, 2009 to 2013 (metric tons)							
Country/Class	2009	2010	2011	2012	2013	Average	Share
Argentina							
Common	12,000	17,200	15,500	9,500	11,000	13,040	1.9
Australia							
Common	21,834	27,410	29,905	22,461	26,500	25,622	3.8
Canada							
Total	26,950	23,300	25,288	27,205	37,500	27,048	4.1
Common	21,550	20,275	21,116	22,612	32,993	23,709	3.5
Durum	5,400	3,025	4,172	4,593	4,507	4,339	0.6
EU							
Total	139,720	136,667	137,182	136,596	143,118	138,313	20.3
Common	131,058	128,252	129,957	125,903	135,016	130,037	19.1
Durum	8,662	8,415	8,225	7,975	8,102	8,276	1.2
United States							
Total	60,366	60,063	54,415	61,673	57,962	58,896	8.6
HRW	25,036	27,714	21,231	27,216	20,249	24,289	3.6
HRS	14,912	15,513	10,824	13,730	13,347	13,665	2.0
SRW	10,995	6,461	12,451	11,425	15,374	11,341	1.7
White	6,456	7,487	8,535	7,049	7,307	7,367	1.1
Durum	2,967	2,888	1,374	2,253	1,685	2,233	0.3
Sub Total	426,136	387,726	433,927	401,621	435,805	417,043	61.2
Total World							
Total	687,005	652,366	697,217	656,339	711,885	680,962	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 2009-2013 period included 23.7 million tons of CWRS and 4.3 million tons of durum wheat (Table 1).

The EU produced an annual average of 130.0 million tons of soft wheat and 8.3 million tons of durum wheat during the 2009-2013 time period. France accounted for 30% of soft wheat production in the EU in 2013. 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 2012, 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 25.6 million tons for the 2009-2013 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 compared to 29.9 million metric tons in 2011 and 26.5 million metric tons in 2013.

Argentina produces wheat with characteristics of both soft and hard wheat. Argentina's average wheat production amounted to 13.0 million tons for the 2009-2013 period. Argentina has had three 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. In 2012 Argentine wheat production fell about 30% from the 2011 level.

Table 2 shows the historical harvested area, yields, and production of the major wheat producing countries/regions in the world, by decades. Harvested wheat areas in India and Australia have increased 120% and 148% respectively, since the 1970s. Wheat area in the United States decreased by 13% and increased in Canada by 5%, from the 1970s level. World wheat harvested area decreased about 9%.

Yields increased by 547% in China since the 1970s and by 308% in India. The EU had yield increases of 202%. The U.S. yields increased by 80%, while Canadian yields increased by 153%. The world wheat yield increased by 183% during the five decades.

The total wheat production in 2013 increased by 796% in India and by 482% in China compared to wheat production in the 1960s. The EU production increased by 230%, but a large share of that was due to the addition of countries to the EU. Argentina increased production by 164%. The United States and Canada increased production by 59% and 166%, respectively. Figure 1 shows the changing levels of production using an index where average production over the 1960-1969 time period equals 1.00.

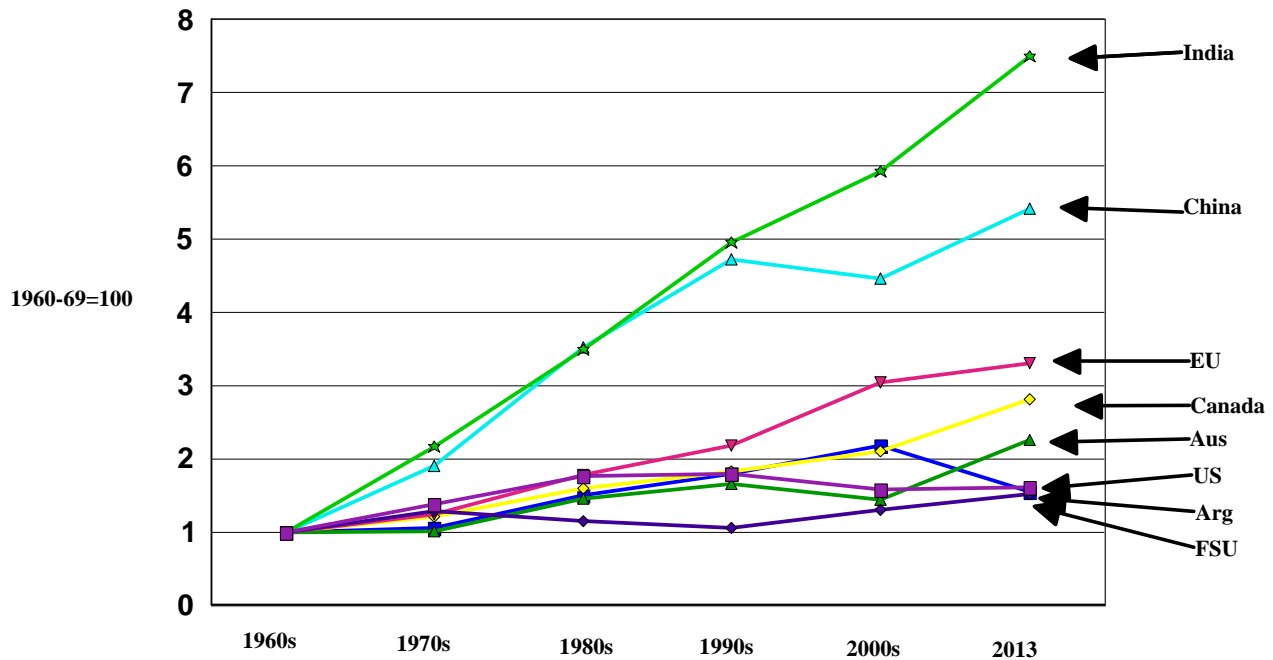


Figure 1. Changes in Wheat Production in Major Producing Countries/Regions

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

	1970	1980	1990	2000	2010	2013	% Change
Harvested Area -----1,000 hectares-----							
Argentina	3,701	5,023	5,798	6,540	4,845	3,500	-2.8
Australia	6,479	11,283	9,218	12,141	13,502	13,500	148.2
Canada	5,052	11,098	14,098	10,855	8,296	10,440	5.1
China	25,458	29,228	30,753	26,650	24,257	24,150	-9.9
EU	25,335	24,297	25,894	26,706	26,016	25,729	-2.2
FSU	65,230	61,475	46,963	40,713	45,780	47,510	-21.3
India	16,626	22,172	23,502	27,486	28,460	29,400	119.7
U.S.	17,651	28,773	27,965	21,474	19,271	18,274	-13.0
World	206,979	236,901	231,015	215,580	217,060	219,369	8.5
Yield -----metric tons/hectare-----							
Argentina	1.33	1.55	1.90	2.49	3.55	3.00	172.7
Australia	1.22	0.96	1.63	1.82	2.03	1.96	43.1
Canada	1.79	1.74	2.28	2.44	2.81	3.59	152.8
China	1.15	1.89	3.19	3.74	4.75	5.05	547.4
EU	2.47	3.84	4.83	4.97	5.25	5.55	201.6
FSU	1.42	1.49	2.14	1.55	1.77	2.19	123.5
India	1.21	1.44	2.12	2.78	2.84	3.14	307.8
U.S.	2.08	2.25	2.66	2.82	3.12	3.17	80.1
World	1.48	1.84	2.55	2.71	3.01	3.25	182.6
Production -----1,000 metric tons-----							
Argentina	4,920	7,780	10,992	16,300	17,200	10,500	165.2
Australia	7,890	10,856	15,066	22,108	27,410	26,500	255.7
Canada	9,024	19,291	32,098	26,536	23,300	37,500	165.8
China	29,185	55,210	98,229	99,640	115,180	122,000	482.1
EU	62,532	93,327	125,024	132,729	136,667	142,866	194.5
FSU	92,601	91,485	100,270	63,098	81,068	103,832	74.9
India	20,093	31,830	49,850	76,369	80,800	92,460	795.9
U.S.	36,795	64,798	74,292	60,641	60,062	57,961	57.2
World	306,531	435,867	588,801	583,210	652,366	711,885	204.9

Source: USDA

Wheat Consumption

Different wheat classes have been used for different purposes. 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 wheat which is not fed to livestock.

Wheat Trade

Major importing countries include China, Algeria, Brazil, Egypt, Japan, Mexico, Morocco, South Korea, Taiwan, and Tunisia (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 importing 7.5 million metric tons of wheat in 2013. Its average import was 2.4 million metric ton for the 2009-2013 period.

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 Algeria, Brazil, and Japan (Table 3).

Table 3. Wheat Imports by Countries, 2009 to 2013

Country	2009	2010	2011	2012	2013	Average	Share
	-----1,000 metric tons-----						%
Algeria	5,167	6,516	6,500	6,484	6,500	6,233	4.4
Brazil	5,995	4,159	5,302	5,774	7,200	5,686	4.0
China	502	-14	1,955	1,991	7,500	2,387	1.7
Egypt	10,325	10,375	9,318	8,110	9,800	9,586	6.7
Japan	4,827	5,301	5,612	5,743	5,257	5,348	3.7
Korea	4,365	4,636	5,057	5,295	4,375	4,746	3.3
Mexico	2,357	2,583	4,230	3,097	3,500	3,153	2.2
Morocco	2,218	3,847	3,543	3,597	1,800	3,001	2.1
Other	97,960	99,109	107,807	104,536	106,045	103,091	72.0
Total World	133,716	136,512	149,324	144,627	151,977	143,231	100.0

Source: USDA

The six major wheat exporting countries (United States, Canada, EU, FSU, Australia, and Argentina) supply approximately 61% 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 2008, 2009, 2011 and 2013. The United States leads in exports of HRW and SRW wheat; an average of 27.7 million metric tons of all wheat classes was exported annually from 2009 to 2013, of which 11.8 million metric tons were HRW and 6.7 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, 2009 to 2013

Country	2009	2010	2011	2012	2013	Average	Share
	-----1,000 metric tons-----						%
Argentina/Common	5,096	9,482	12,921	3,545	4,495	7,108	4.9
Australia/Common	14,706	18,479	24,483	18,522	19,380	19,114	13.2
Canada							
All	18,639	16,613	16,864	18,493	22,510	18,527	12.8
Common	14,821	12,865	13,298	14,508	18,625	14,823	10.3
Durum	3,818	3,266	3,566	3,985	3,885	3,704	2.6
EU							
All	16,921	18,463	9,323	14,718	17,054	15,296	10.6
Common	16,421	17,963	9,632	15,493	17,954	15,493	10.7
Durum	500	500	-309	-775	-900	-197	NA
United States							
All	22,950	34,163	27,604	26,434	27,618	27,753	19.2
HRW	10,070	16,792	10,805	10,342	10,975	11,797	8.2
HRS	5,824	9,253	6,613	6,314	5,715	6,744	4.7
SRW	2,967	2,967	4,491	5,253	7,165	4,568	3.2
White	3,892	4,953	5,960	4,736	4,082	4,725	3.3
Durum	197	197	-265	-211	-320	-80	NA
FSU							
All	31,853	8,386	32,428	19,162	28,326	24,031	16.7
Other Producers							
All	25,839	26,982	33,158	35,519	37,004	31,700	22.0
Total World							
All	137,004	133,086	157,781	137,393	156,386	144,330	100.0

Source: USDA

RECENT CHANGES IN U.S. WHEAT PRICES

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 2007 for durum wheat to a low of \$2.20 per bushel for SRW wheat in 2000. The prices for all of the wheat classes have recovered from the lows in 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 and 2011 and 2012 but falling in 2009 and 2013. Prices respond to changes in supply and demand; and/or major changes or shocks in the world wheat industry.

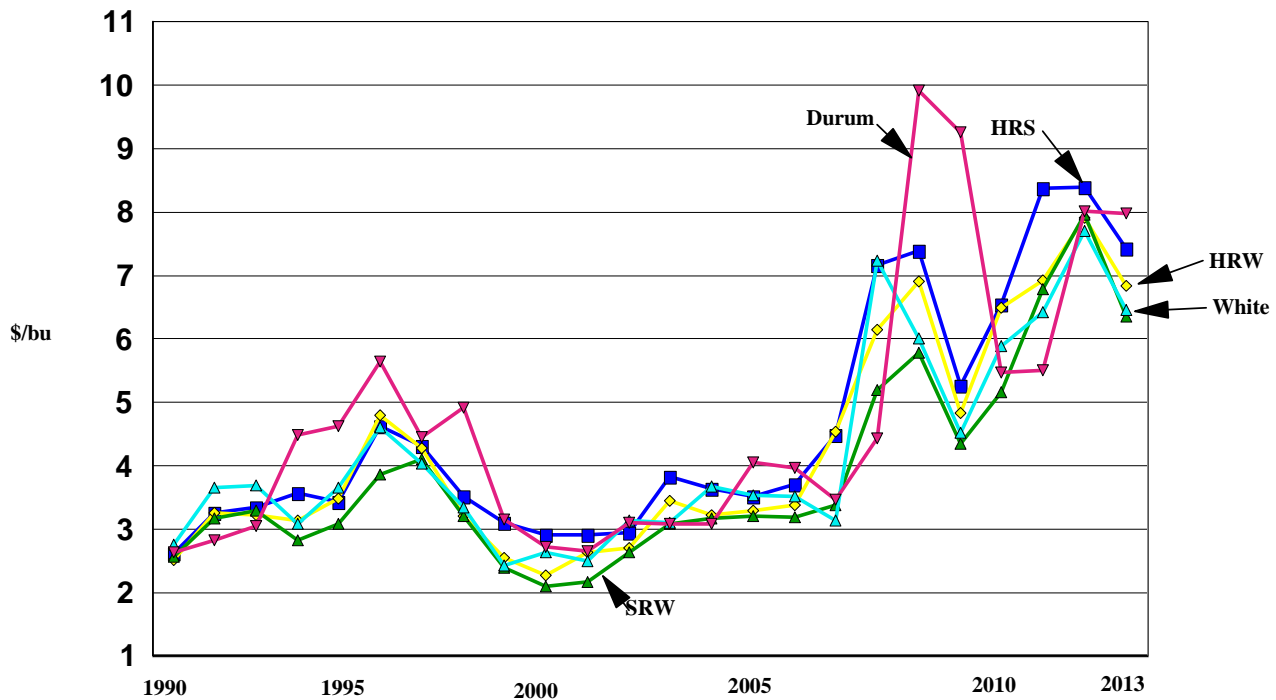


Figure 2. Historical Farm Price, by Class, 1990-2013

OUTLOOK FOR THE WORLD WHEAT INDUSTRY

The Global Wheat Policy Simulation Model is used to analyze the U.S. and World wheat industries for the 2014-2023 period. 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 policies are also assumed to prevail during the projection period.

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 forecast 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 used the predicted prices of all agricultural commodities, except wheat, from UDSA. The model uses 2013 as the base year of the simulation.

Total world wheat trade for the six major exporters is projected to increase by 3.0% from 109.1 million metric tons in 2013 to 112.3 million metric tons in 2023. Trade of all wheat classes is expected to increase for the 2013-2023 period. HRS wheat production is predicted to increase in the U.S. faster than in other wheat class as farmers respond to lower corn and soybean prices.

United States

Figure 3 shows the projected prices for the various classes of wheat. The prices of common wheat classes are expected to fall about \$1.00 below the 2012 level before increasing about \$2.00 by 2023. The prices of HRS wheat are projected to increase from \$6.55 in 2014 to about \$8.40 per bushel by 2023. Durum wheat is expected to fall from the \$7.15 range in 2014 before returning to \$9.00 per bushel in 2023.

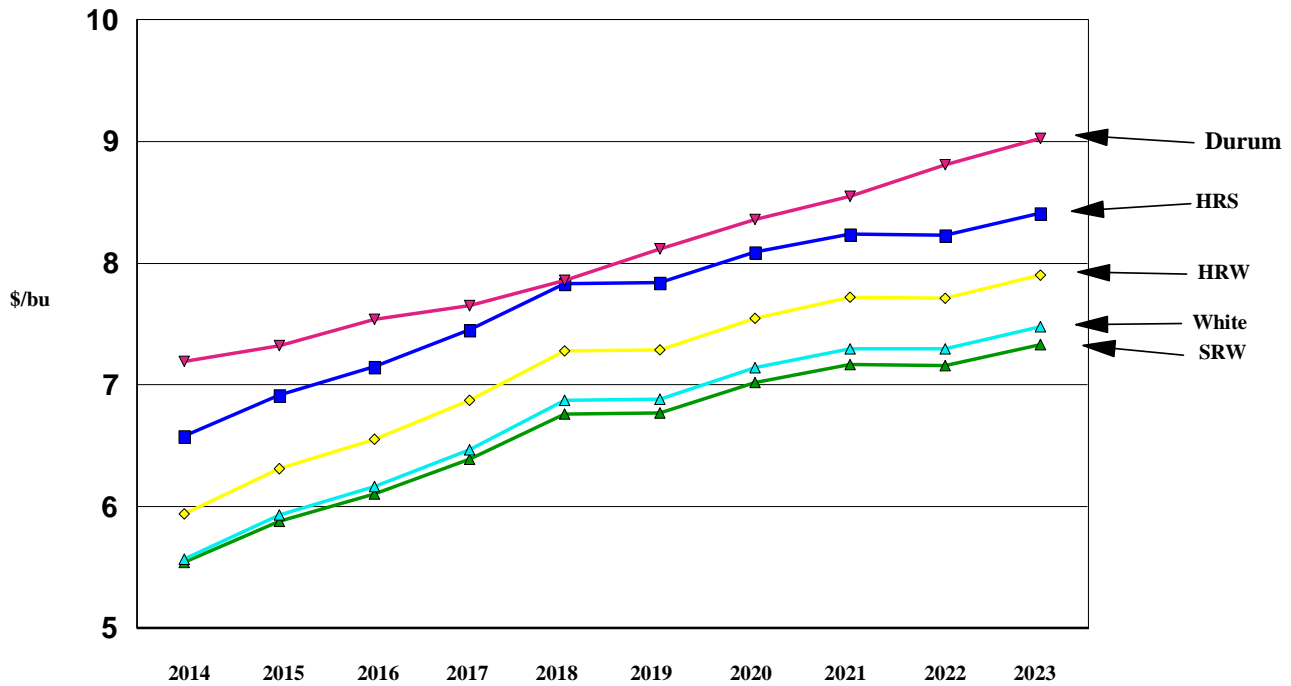


Figure 3. Projected U.S. Farm Wheat Price, by Class, 2014-2023

Table 5 shows wheat production, consumption, exports, and ending stocks in the United States. By 2023, total U.S. common wheat production is expected to grow by 20.5% above the 2011-2013 average, but is much lower than production during the late 1990s. The largest increases in production occur for HRS wheat (26.8%), followed by Durum wheat (23.7%) and HRW wheat (23.7%). The reason for the large increase in HRS wheat production is that farmers will plant more acres to spring and durum wheat and fewer acres to corn and soybeans. Production of SRW wheat is expected to increase by 18.4%. Changes in production of different classes of wheat over the 2014-2023 average are shown in Figure 4.

Table 5. Wheat Production, Consumption, Exports, and Carry-over Stocks in the United States

	Average (2011-2013)	2013	2023	% Change from the average to 2023
-----1,000 metric tons-----				
<u>Production</u>				
Common	56,246	56,277	67,762	20.5
HRW	22,898	20,249	28,326	23.7
HRS	12,634	13,347	16,019	26.8
SRW	13,084	15,374	15,494	18.4
White	7,630	7,307	7,923	3.8
Durum	1,771	1,685	2,191	23.7
<u>Consumption</u>				
Common	33,339	34,074	32,411	-2.8
Durum	2,214	2,204	2,624	18.5
<u>Exports</u>				
Common	29,969	26,318	34,518	23.4
Durum	(390)	(735)	(618)	NA
<u>Carry-over</u>				
Common	17,754	14,805	18,153	2.2
Durum	717	844	912	27.2

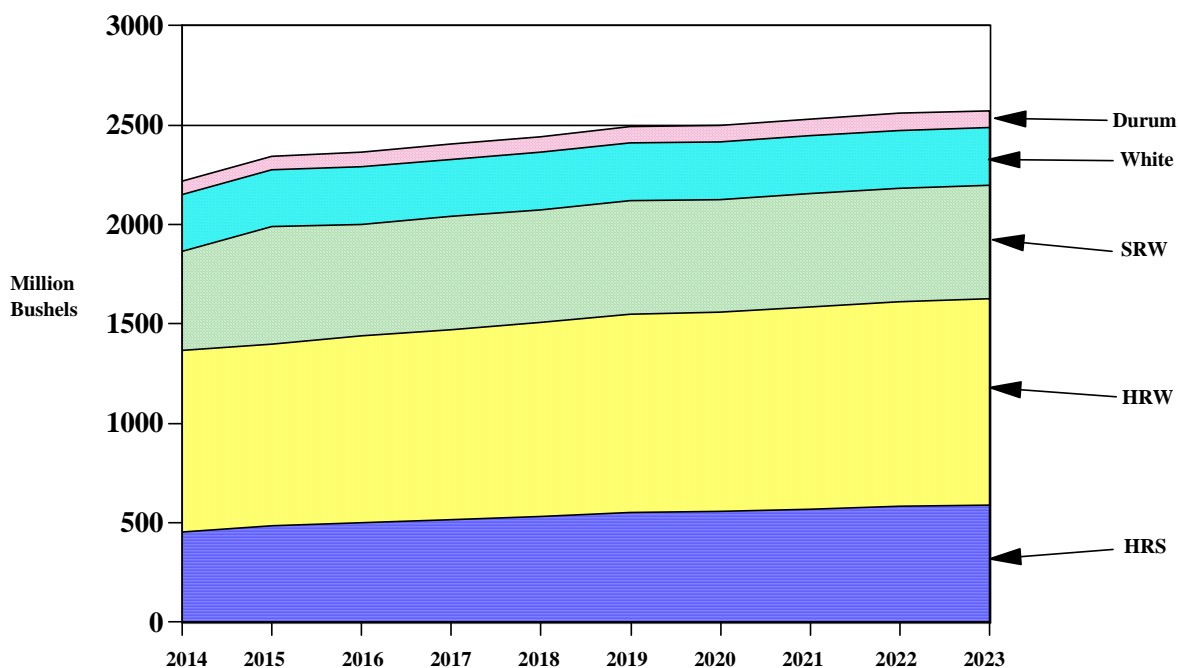


Figure 4. U.S. Wheat Production by Class, 2014-2023

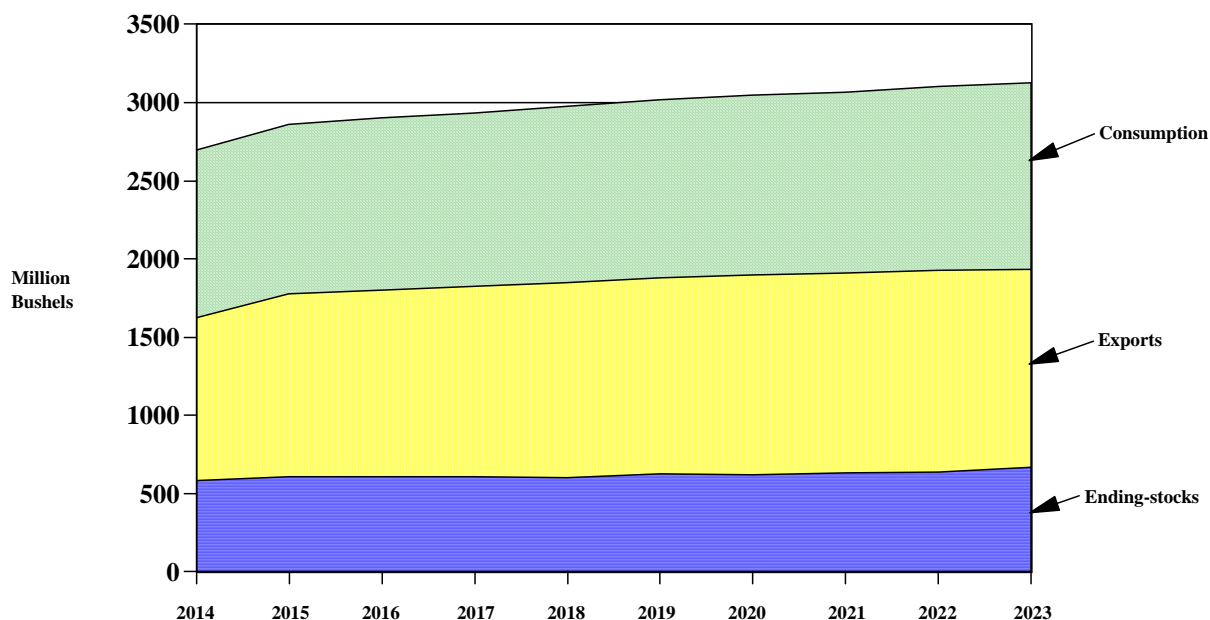


Figure 5. U.S. Common Wheat Utilization, 2014-2023

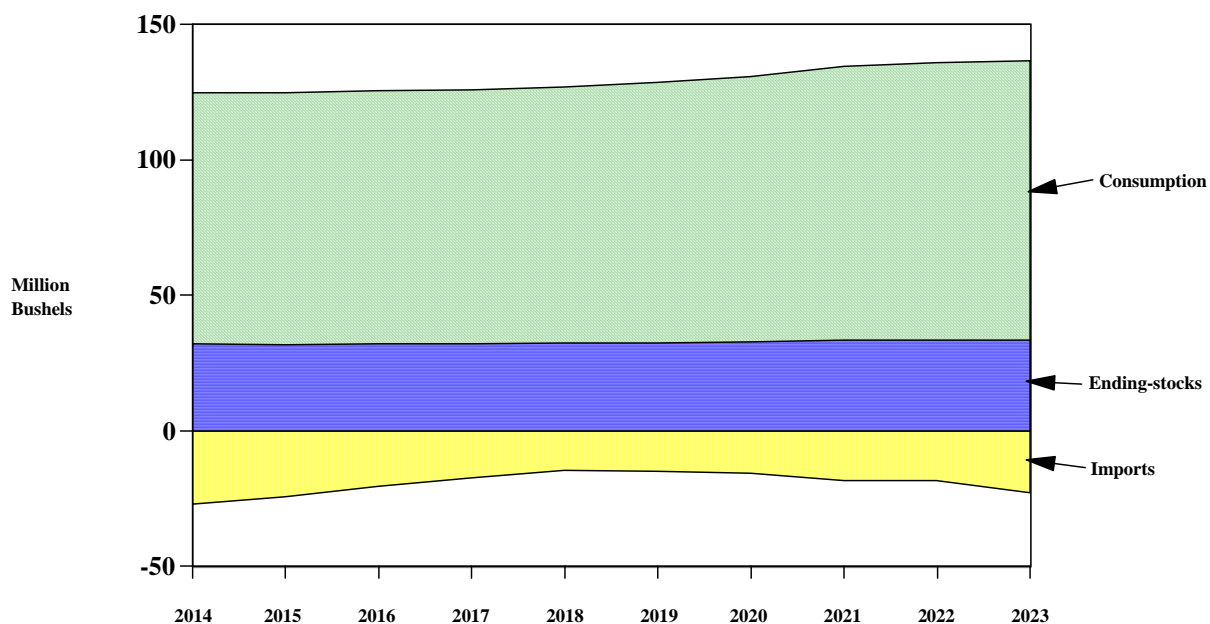


Figure 6. U.S. Durum Wheat Utilization, 2014-2023

The increased wheat production in the United States is due to increases in both harvested acres and yields. Total wheat harvested area is expected to increase slowly from 45.1 million acres for the 2011-2013 average and 51.7 million acres in 2023, and average yield is predicted to increase from 47.2 bushels per acre to 49.7 bushels per acre over the 2013-2023 period. U.S. durum area is expected to increase 26% for the same time period.

Common wheat consumption is expected to increase slower than durum wheat consumption. U.S. wheat consumption is projected to fall 2.8% for common wheat (Figure 4) and increase by 18.5% for U.S. durum wheat for the 2013-2023 time period (Figure 5).

The United States is expected to become a net importer of durum wheat through 2023 (Table 5). Common wheat exports are predicted to increase from 23.4 million metric tons in 2011-2013 to 34.5 million metric tons in 2023. Ending stocks are expected to increase by 2.2% for common wheat compared to the 2011-2013 average and 27.2% for durum wheat (Table 5).

Canada

The production and consumption of CWRS wheat in 2013 was nearly 29% larger than the three-year average (Table 6). By 2023, CWRS wheat production is predicted to decrease by 3.5% and increase by 22.8% for CWAD, from the 2011-2013 average. Total area for CWRS wheat is expected to decrease slightly between 2013 and 2023, while CWAD wheat area is expected to increase from 5.5 million acres in 2013 to 6.0 million acres in 2023.

Domestic consumption of CWRS wheat is predicted to increase by 4.4%, while the consumption of durum wheat is expected to increase by 5.0% over the 2013-2023 period. Canadian CWRS wheat exports are projected to decrease by 1.6% by 2023, and CWAD wheat exports are predicted to increase by 21.3% from 3.8 million metric tons to 4.6 million metric tons in 2023. Ending stocks are predicted to decrease by 6.8% for CWRS wheat and increase 15.7% for CWAD wheat over the 2013-2023 period. During the preceding years, 2000-2005, ending stocks of CWAD in Canada were between 1 million and 2.8 million metric tons.

Table 6. Wheat Production, Consumption, Exports, and Carry-over Stocks in Canada

	Average (2011-2013)	2013	2023	% Change (2011-13) to 2023
<u>Production</u>	-----1,000 metric tons-----			
WRS	25,574	32,993	24,689	-3.5
WAD	4,424	4,507	5,433	22.8
<u>Consumption</u>				
WRS	9,123	9,420	9,523	4.4
WAD	757	780	795	5.0
<u>Exports</u>				
WRS	15,477	18,625	15,232	-1.6
WAD	3,812	3,885	4,624	21.3
<u>Carry-over</u>				
WRS	5,643	8,716	5,259	-6.8
WAD	1,302	1,131	1,507	15.7

Figure 7 shows changes in consumption, exports, and ending stocks of CWRS wheat in Canada from 2014 to 2023, and Figure 8 shows the utilization for CWAD wheat.

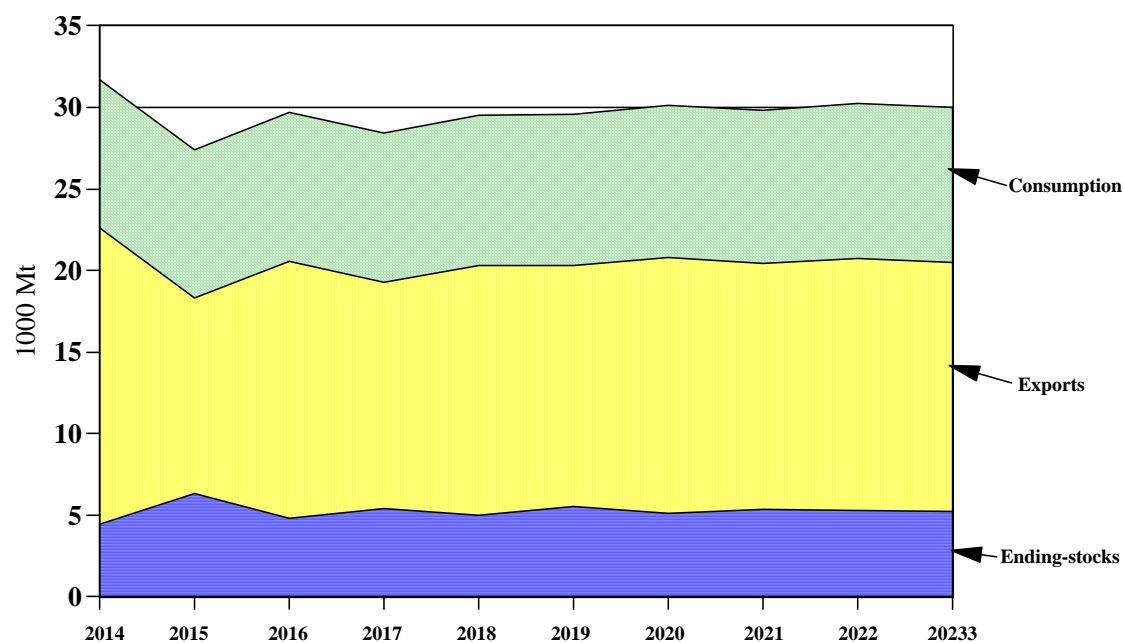


Figure 7. Canadian Western Red Spring Wheat Utilization, 2014-2023

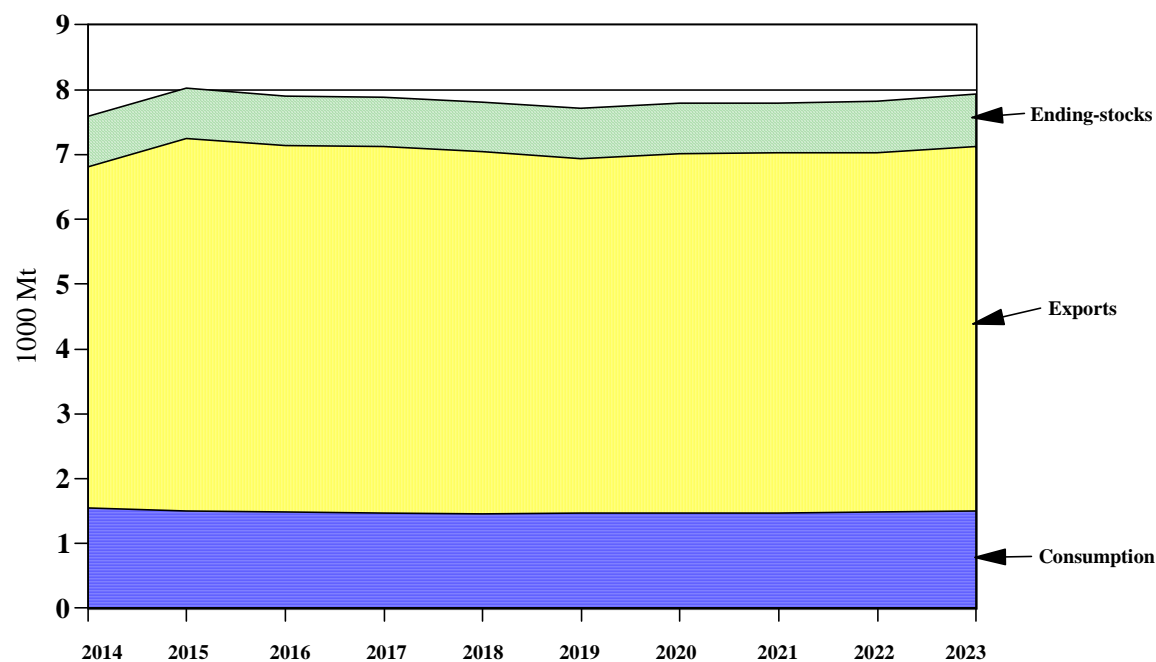


Figure 8. Canadian Western Amber Durum Wheat Utilization, 2014-2023

European Union

Table 7 presents production, consumption, exports, and ending stocks of common and durum wheat in the EU for the 2013-2023 period. Common wheat production in the EU is

predicted to increase by 4.4% from the 2011-2013 average by 2023, while durum wheat production is expected to increase by 11.5% for the same time period.

Domestic consumption of common wheat is projected to increase by 4.0%, and consumption of durum wheat is predicted to increase by 3.4% for the 2013-2023 period. Exports of common wheat in 2023 are predicted to increase from the 2011-2013 averages. Ending stocks are expected to decrease for common wheat and increase for durum wheat.

Table 7. Wheat Production, Consumption, Exports, and Carry-over Stocks in the European Union

	Average (2011-2013)	2013	2023	% Change (2011-13) to 2023
<u>Production</u>	-----1,000 metric tons-----			
Common	130,292	135,016	136,015	4.4
Durum	8,101	8,102	9,029	11.5
<u>Consumption</u>				
Common	114,046	111,950	118,575	4.0
Durum	8,615	8,800	8,912	3.4
<u>Exports</u>				
Common	14,360	17,954	17,340	20.8
Durum	-661	-900	161	NA
<u>Carry-over</u>				
Common	10,873	10,774	10,371	-4.6
Durum	989	1,173	1,090	10.2

Figures 9 and 10 show changes in consumption, exports, and ending stocks of common and durum wheat for the 2014-2023 period. For common and durum wheat, production and consumption are expected to increase slightly.

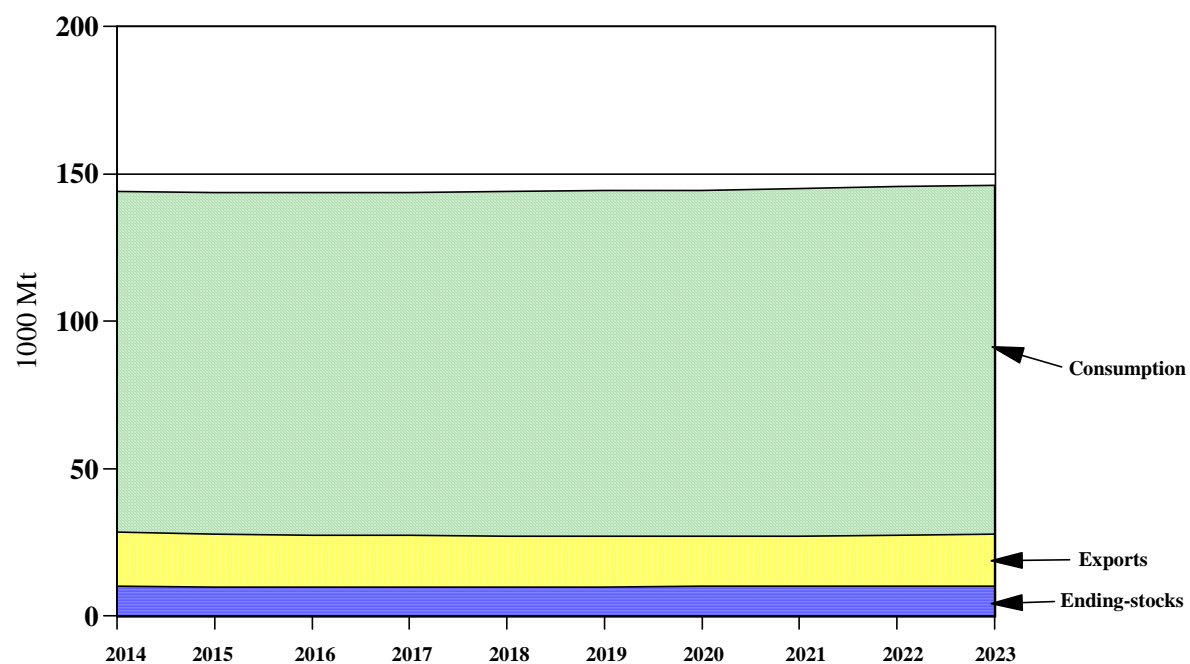


Figure 9. EU Common Wheat Utilization, 2014-2023

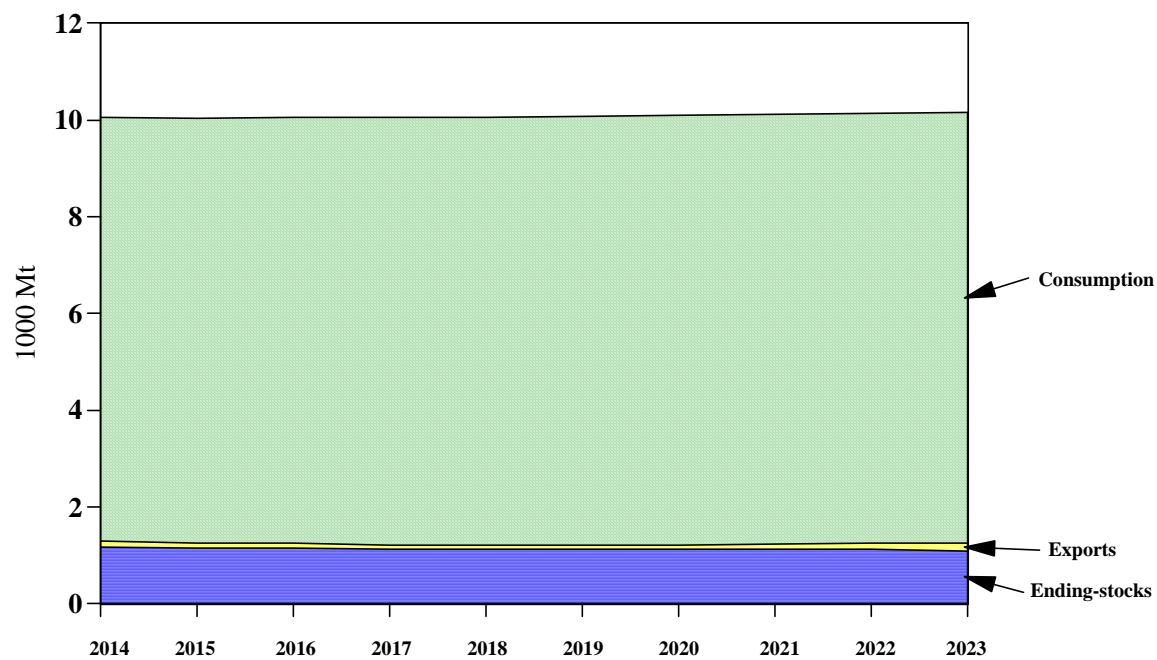


Figure 10. EU Durum Wheat Utilization, 2014-2023

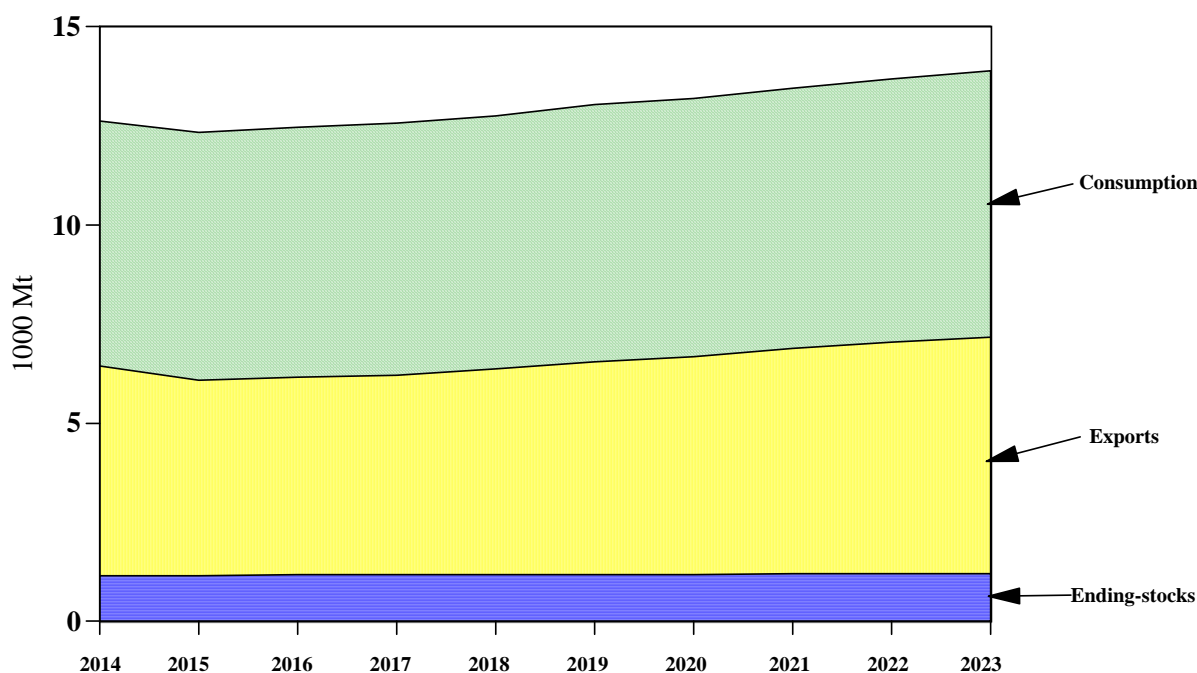


Figure 11. Australian Common Wheat Utilization, 2014-2023

Australia

Compared to the 2011-2013 average, Australian wheat production is projected to grow by 8.8% in 2023 (Table 8). Much of that increase is due to the small crop in 2012 due mainly to weather. Yields are expected to increase gradually at the historical trend line, while wheat area also is expected to increase slightly. Domestic wheat consumption is predicted to increase by 6.1% from the 2011-2013 average of 6.6 million metric tons to 7.0 million metric tons in 2023. Wheat consumption in Australia during the poor harvests in 2010 and 2012 decreased 24% compared to the long term average. Wheat exports also are predicted to increase from the 2011-2013 average of 20.8 million metric tons to 21.6 million metric tons in 2023. Figure 11 shows changes in consumption, exports, and ending stocks for the 2014-2023 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 8. Wheat Production, Consumption, Exports, and Carry-over Stocks in Australia, (1,000 metric tons)

	Average (2011-2013)	2013	2023	% Change (2011-13) to 2023
Production	26,289	26,500	28,602	8.8
Consumption	6,598	6,550	6,998	6.1
Exports	20,795	19,380	21,589	3.8
Carry-over	5,368	4,814	4,899	-8.7

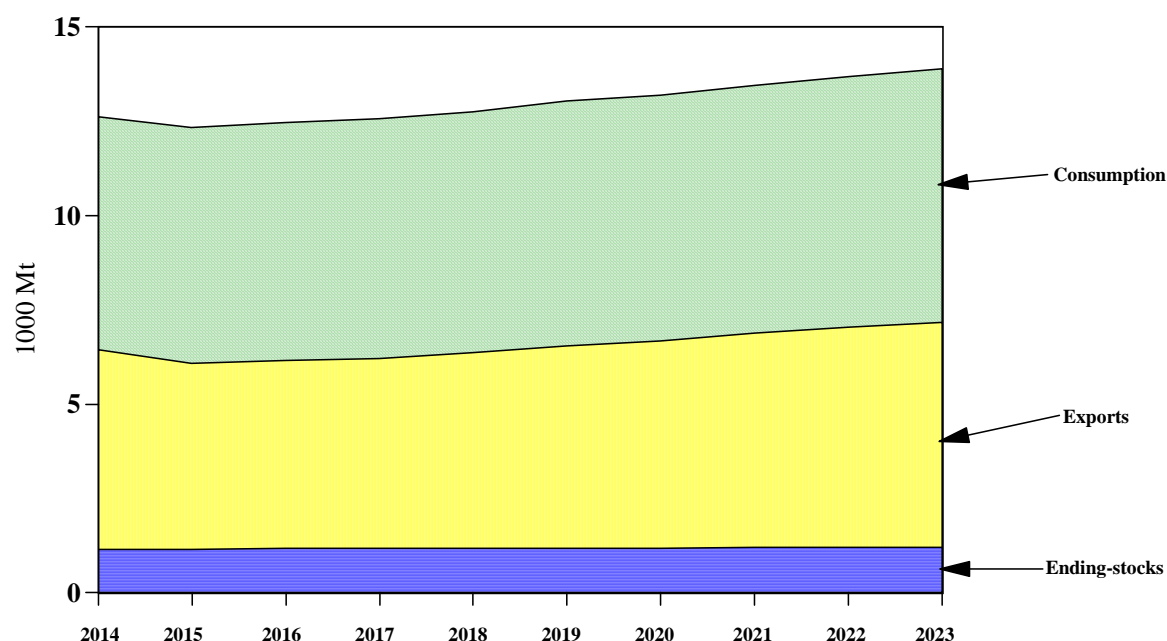


Figure 12. Argentine Common Wheat Utilization, 2014-2023

Argentina

Argentine wheat production is projected to increase by 5.8% from the 2011-2013 average of 12.0 million metric tons to 12.7 million metric tons in 2023 (Table 9). Domestic wheat consumption is expected to increase by 11.3% from 6.0 million metric tons to 6.7 million metric tons. Wheat exports are predicted to be 6.0 million metric tons in 2023, which is a 14.5% decrease from the 2011-2013 average. Ending stocks are expected to increase by 46.5%. Figure 12 shows changes in consumption, exports, and ending stocks for the 2014-2023 period.

Table 9. Wheat Production, Consumption, Exports, and Carry-over Stocks in Argentina

	Average (2011-2013)	2013	2023	% Change (2011-13) to 2023
-----1,000 metric tons-----				
Production	12,000	11,000	12,690	5.8
Consumption	6,033	6,050	6,714	11.3
Exports	6,987	4,495	5,974	-14.5
Carry-over	823	1,145	1,206	46.5

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 to 8.7 million tons, however the FSU

exported 29.4 million metric tons of common wheat in 2011 and 17.6 million metric tons in 2012. The FSU exported 28.3 million metric tons of wheat in 2013. Exports of common wheat are expected to be about 20.5 million tons by 2023. (Table 10). Per capita consumption of wheat is expected to increase by 21.0% between 2011-2013 and 2023.

Table 10. Wheat Production and Exports in the Former Soviet Union

	Average (2011-2013)	2013	2023	% Change (2011-13) to 2023
	-----1,000 metric tons-----			%
Production	98,768	104,060	117,105	18.6
Exports of Common	26,296	27,983	20,353	-22.6
Exports of Durum	342	343	352	2.8

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 11).

Table 11. Imports of Common and Durum Wheat by Major Importing Countries

	Average (2011-2013)	2013	2023	% Change (2011- 13) to 2023
	-----1,000 metric tons-----			%
<u>Asia</u>				
China	3,815	7,500	1,212	-68.2
S. Korea	4,909	4,375	5,581	13.7
Japan	5,537	5,257	5,167	-6.7
Taiwan	1,497	1,700	1,333	-10.9
<u>North Africa</u>				
Algeria				
Common	3,927	4,300	5,059	28.8
Durum	1,997	2,200	2,566	28.5
Morocco	2,980	1,800	1,711	-42.6
Egypt	9,076	9,800	12,889	42.0
Tunisia				
Common	962	1,165	1,038	7.9
Durum	535	535	562	5.0
<u>Latin America</u>				
Brazil	6,092	7,200	7,950	30.5
Mexico	3,609	3,500	3,783	4.8
Venezuela				
Common	1,207	1,196	1,346	11.5
Durum	435	429	501	15.1

Asian Importers

Imports by Japan are projected to decrease by 6.7% over the 2013-2023 period (Figure 13), while Korean imports are projected to increase by 13.7%. 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 3.8 million metric tons of wheat annually during 2011-2013. China is projected to continue to import wheat in 2023. As China's income continues to increase, per capita consumption of wheat is expected to decrease for the time period. In the past, China has imported between 3% and 5% of its domestic demand. In the future the model expects that China will import between 2% and 3% of its domestic demand. The model projects that harvested area remains relatively constant when combined with yield increases, increases production. Chinese per capita wheat consumption is falling slowly, due to higher incomes, which when combined with slow population growth limits total wheat consumption. China over time slowly moves towards self-sufficiency for wheat. Taiwan is expected to decrease wheat imports by 10.9% by 2023.

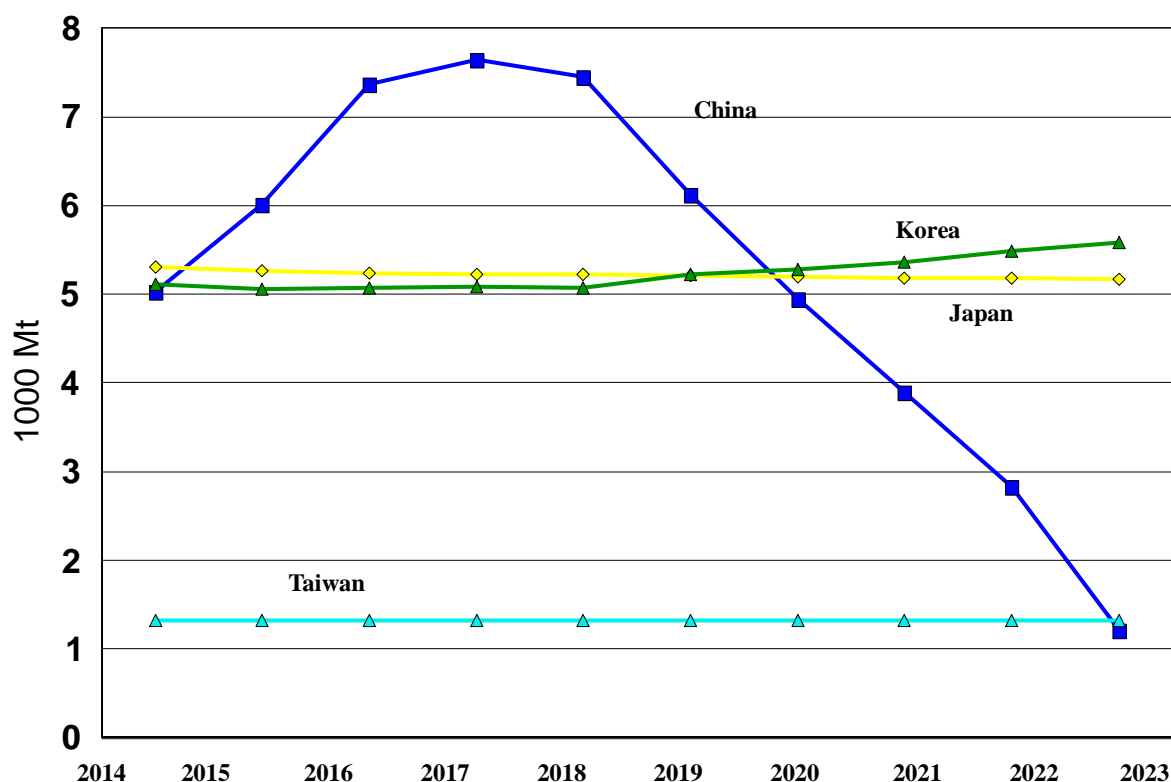


Figure 13. Common Wheat Imports by Major Asian Countries, 2014-2023

African Importers

North African imports of wheat are projected to increase by 22.3% from the 2011-2013 average to 2023. Egyptian imports of common wheat are projected to increase by 42.0%, from 9.1 million metric tons in 2011-2013 to 12.9 million metric tons in 2023. The increase in Egyptian imports is due the population growth in the country and small imports in 2012. Algeria is expected

to import both common and durum wheat. Algerian imports of common wheat are projected to increase by 28.8% from the 2011-2013 average to 5.1 million metric tons in 2023, and durum wheat imports are projected to increase by 28.5%, from 2.0 million metric tons to 2.6 million metric tons. Morocco's imports of common wheat are projected to decrease by 42.6% for the 2013 and 2023 period. Morocco's imports are very erratic, depending on its unstable domestic production. Tunisian imports of common wheat are projected to increase by 7.9%, from the 2011-2013 average of 1.0 million metric tons to 1.0 million metric tons in 2023. Its durum wheat imports are projected to increase by 5.0% from the 2011-2013 average to 2023 (Figure 18).

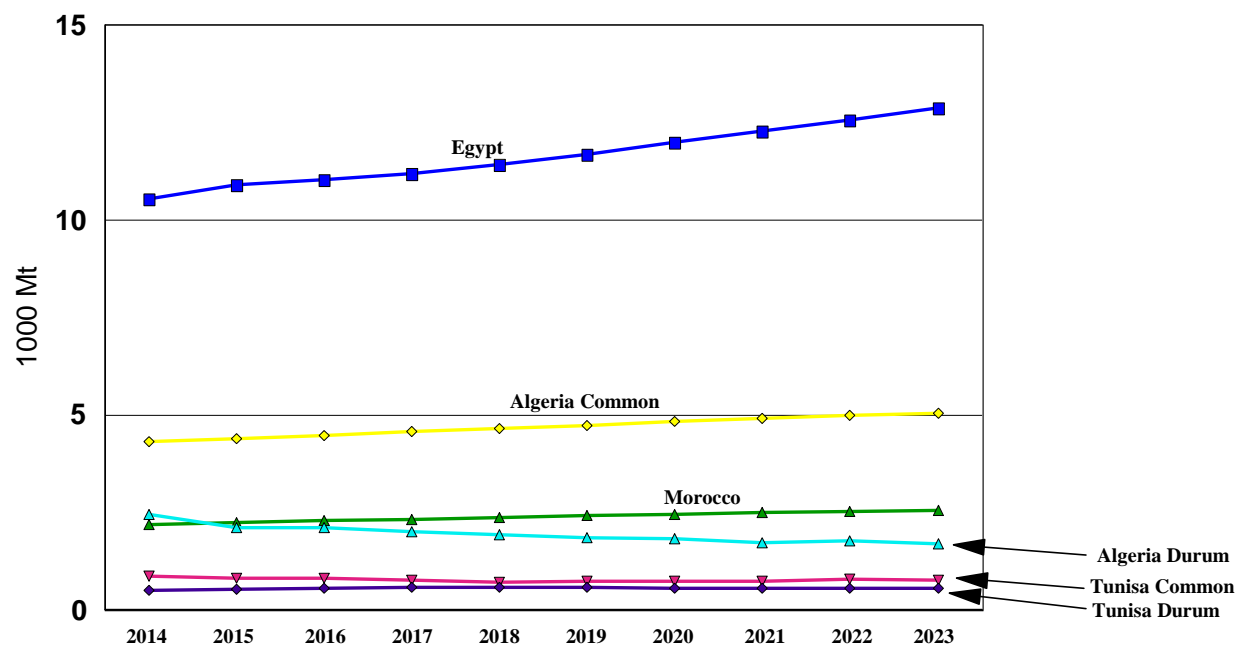


Figure 14. Common and Durum Imports by Major African Countries, 2014-2023

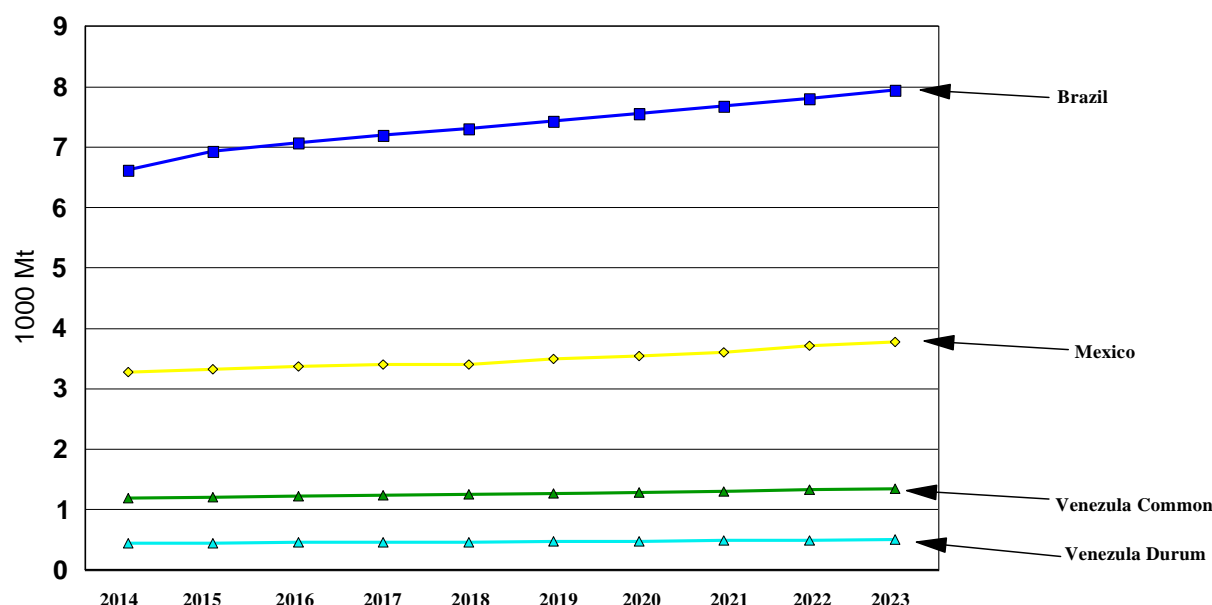


Figure 15. Common and Durum Wheat Imports by Latin American Countries, 2014-2023

Latin America Importers

Mexican imports are projected to increase by 4.8% from the 2011-2013 average of 3.6 million metric tons to 3.8 million metric tons by 2023. Venezuela is expected to import more common and durum wheat. Common wheat imports in Venezuela are projected to increase by 11.5% from 1.2 million metric tons for the 2011-2013 average to 1.3 million metric tons in 2023, and durum wheat imports are projected to increase by 15.1% (Figure 19). Brazilian imports are projected to increase to 8.0 million metric tons by 2023, which is a 30.5% increase from the 2011-2013 average. The Latin American wheat market will grow slower than the African market, and 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 2013-2023 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 2014-2023 (2.5% to 6% annually) in developing and developed countries. 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 2013 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 \$8.10-\$8.40 range for HRS wheat. U.S. durum wheat prices are expected to increase to about \$9.00 per bushel by 2023.

World wheat exports by the six major exporters are projected to increase by 1.9% from 117.0 million metric tons in 2013 to 120.3 million metric tons in 2023. 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 may be negative to United States wheat exports. 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., the EU, and Australia are predicted to increase their production of common wheat for the 2013-2023 period. Exports of durum wheat are expected to increase for all exporters except for the United States. 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 2013-2023 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 exported an average of 4.7 million metric tons of wheat during 2011-2013. India could export about 6.0 million metric tons per year in the future.

Chinese wheat production is expected to be 128.2 million metric tons in 2023 which is about 5.9% larger than in 2013. 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. This may reduce Chinese wheat imports.

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 2013-2023 period. Import demand for common wheat in Mexico also is predicted to be strong for the projection period.

Import demand for wheat in North Africa could grow faster than that in Asia and Latin America 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, the FSU, 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. Secondly, per capita consumption of wheat in some Asian countries, including China, South Korea, and Japan is expected to decrease. If this trend continues, total consumption of wheat may decrease in the countries and consequently their imports will also decrease.

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