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| **United States Department of Agriculture**Office of the Chief EconomistWorld Agricultural Outlook BoardLong-term Projections ReportOCE-2014-1February 2014 | USDA Agricultural Projections to 2023**Interagency Agricultural Projections Committee**World Agricultural Outlook Board, ChairEconomic Research ServiceFarm Service AgencyForeign Agricultural ServiceAgricultural Marketing ServiceOffice of the Chief EconomistOffice of Budget and Program AnalysisRisk Management AgencyNatural Resources Conservation ServiceNational Institute of Food and Agriculture |

*USDA Long-term Projections*

**Long-term Projections on the Internet**

***USDA Agricultural Projections to 2023*** is available in both pdf and Microsoft Word formats at:

www.usda.gov/oce/commodity/projections/

and also at:

www.ers.usda.gov/publications/oce-usda-agricultural-projections/oce141.aspx

Data from the new USDA long-term projections are available electronically at:

[usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1192](http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1192)

Information on USDA’s long-term projections process may be found at:

www.ers.usda.gov/topics/farm-economy/agricultural-baseline-projections/usdas-long-term-projections-process.aspx

**USDA Agricultural Projections to 2023.** Office of the Chief Economist, World Agricultural Outlook Board, U.S. Department of Agriculture. Prepared by the Interagency Agricultural Projections Committee. Long-term Projections Report OCE-2014-1, 97 pp.

**Abstract**

This report provides projections for the agricultural sector to 2023. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income. The projections are based on specific assumptions about macroeconomic conditions, policy, weather, and international developments, with no domestic or external shocks to global agricultural markets. The 2008 Farm Act was assumed to be extended and remain in effect through the projection period. The projections are one representative scenario for the agricultural sector for the next decade and reflect a composite of model results and judgment-based analyses. The projections in this report were prepared during October through December 2013 and, thus, do not reflect the subsequently enacted Agricultural Act of 2014.

In the near term, the agricultural sector continues to respond to high prices for many farm commodities in recent years. Global agricultural production of most major crops remains high, for example, and prices initially fall. Following those near-term adjustments, longrun developments for global agriculture reflect steady world economic growth and continued global demand for biofuels. Those factors combine to support longer run increases in consumption, trade, and prices of agricultural products. Thus, following reductions from 2013 levels through 2016, farm cash receipts and the value of U.S. agricultural exports grow beyond 2016. Although farm production expenses also increase beyond 2015, net farm income remains historically high.

**Keywords**: Projections, crops, livestock, biofuel, ethanol, biodiesel, trade, farm income, U.S. Department of Agriculture, USDA

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| **USDA Long-term Projections: Background** USDA’s long-term agricultural projections presented in this report are a departmental consensus on a longrun scenario for the agricultural sector. These projections provide a starting point for discussion of alternative outcomes for the sector. The projections in this report were prepared during October through December 2013, with the 2008 Farm Act assumed to be extended and remain in effect through the projection period. Therefore, the projections do not reflect the subsequently enacted Agricultural Act of 2014. As such, the scenario presented in this report is not a USDA forecast about the future. Instead, it is a conditional, longrun scenario about what would be expected to happen under a continuation of 2008 farm legislation and other specific assumptions. Critical long term assumptions are made for U.S. and international macroeconomic conditions, U.S. and foreign agricultural and trade policies, and growth rates of agricultural productivity in the United States and abroad. The report assumes that there are no domestic or external shocks that would affect global agricultural supply and demand. Normal weather is assumed. Changes in any of these assumptions can significantly affect the projections, and actual conditions that emerge will alter the outcomes.The report uses as a starting point the short-term projections from the November 2013 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2013. The projections analysis was conducted by interagency committees in USDA and reflects a composite of model results and judgment-based analyses. The Economic Research Service had the lead role in preparing the departmental report. The projections and the report were reviewed and cleared by the Interagency Agricultural Projections Committee, chaired by the World Agricultural Outlook Board. USDA participants in the projections analysis and review include the World Agricultural Outlook Board; the Economic Research Service; the Farm Service Agency; the Foreign Agricultural Service; the Agricultural Marketing Service; the Office of the Chief Economist; the Office of Budget and Program Analysis; the Risk Management Agency; the Natural Resources Conservation Service; and the National Institute of Food and Agriculture. |

**USDA Contacts for Long-term Projections**

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**USDA Agricultural Projections to 2023**

Interagency Agricultural Projections Committee

**Introduction and Projections Overview**

This report provides longrun projections for the agricultural sector to 2023. Major forces and uncertainties affecting future agricultural markets are discussed, such as prospects for long‑term global economic growth and population trends. Projections cover production and consumption for agricultural commodities, global agricultural trade and U.S. exports, commodity prices, and aggregate indicators of the sector, such as farm income.

The projections are a conditional scenario based on specific assumptions about the macroeconomy, agricultural and trade policies, the weather, and international developments. The report assumes that there are no domestic or external shocks that would affect global agricultural markets. Normal weather with trend crop production yields is generally assumed. Provisions of the Food, Conservation, and Energy Act of 2008 (the 2008 Farm Act), the Energy Independence and Security Act of 2007, and the Energy Improvement and Extension Act of 2008 are assumed to be extended and remain in effect through the projection period (see box below for further discussion of U.S. agricultural policy assumptions). Thus, the projections are not intended to be a forecast of what the future will be, but instead are a description of what would be expected to happen under these very specific circumstances and assumptions. As such, the projections provide a neutral reference scenario that can serve as a point of departure for discussion of alternative farm‑sector outcomes that could result under different domestic or international assumptions.

The projections in this report were prepared during October through December 2013 and reflect a composite of model results and judgment-based analyses. Short-term projections used as a starting point in this report are from the November 2013 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2013.

In the near term, the agricultural sector continues to respond to high prices for many farm commodities in recent years. Global agricultural production of most major crops remains high, for example, and prices initially fall. Following those near-term adjustments, longrun developments for global agriculture reflect steady world economic growth and continued global demand for biofuels. Those factors combine to support longer run increases in consumption, trade, and prices of agricultural products. Thus, following reductions from 2013 levels through 2016, farm cash receipts and the value of U.S. agricultural exports grow beyond 2016. Although farm production expenses also increase beyond 2015, net farm income remains historically high.

**U.S. Policy Assumptions**

USDA’s long-term projections in this report reflect analysis conducted during October through December 2013. Therefore, the projections do not reflect the subsequently enacted Agricultural Act of 2014. Instead, the 2008 Farm Act was assumed to be extended and remain in effect through the projection period.

# Key Assumptions and Implications

**Major assumptions underlying the projections and selected implications include:**

***Economic Growth***

* Global economic growth is assumed to average 3.2 percent annually over the next decade. Relatively weak economic growth is assumed for developed countries, but stronger growth is assumed in developing countries. As a result, developing countries become a larger part of the world economy. Relatively high growth rates in China, India, and other areas of developing Asia, Africa, and Latin America underpin the anticipated macroeconomic gains for developing countries.
* Among developed countries, Japan’s economic growth continues to face constraints from long-term structural rigidities, a political process that makes economic reform difficult, and an aging population. Growth in the European Union (EU) will be limited by continuing Eurozone financial difficulties.
* The U.S. economy is projected to grow at an average rate of about 2.6 percent over the next decade. The U.S. share of global gross domestic product (GDP) falls from about 26 percent currently to less than 25 percent at the end of the projection period.
* Steady global economic growth supports longer term gains in world food demand, global agricultural trade, and U.S. agricultural exports. Economic growth in developing countries is especially important because food consumption and feed use are particularly responsive to income growth in those countries, with movement away from traditional staple foods and increased diversification of diets.

 ***Population***

* Stronger global economic growth over the next decade contributes to the continued slowing of population gains around the world as birth rates decline. Growth in global population is projected to average about 1.0 percent per year compared with an average annual rate of 1.2 percent in the last decade.
* Population growth rates in most developing countries are projected to slow, although they remain above those in the rest of the world. As a consequence, the share of world population accounted for by developing countries continues to rise, accounting for 82 percent in 2023.
* Population gains in developing countries, along with increased urbanization and expansion of the middle class, are particularly important for the projected growth in global food demand. Populations in developing countries, in contrast to those in more-developed countries, tend to be both younger and undergoing more rapid urbanization, factors that generally lead to the expansion and diversification of food consumption.

***Value of the U.S. Dollar***

* Following a 10-year depreciation of the U.S. dollar from 2002 to 2011, a moderate appreciation has recently occurred, with further appreciation projected for the next decade. Nonetheless, the dollar remains relatively weak compared to the past two decades.
* The low-valued dollar will continue as a facilitating factor for gains in U.S. agricultural exports. Although trade competition will continue to be strong, the United States will remain competitive in global agricultural markets, with export gains contributing to longrun increases in cash receipts for U.S. farmers.

***Oil Prices***

* After declining in 2014, both nominal and real crude oil prices are assumed to increase over the next decade as global economic activity improves. By the end of the projection period, the nominal refiner acquisition cost for crude oil imports is projected to be near $150 per barrel, compared with about $101 projected for 2014.
* Increases in crude oil prices raise production costs in the agricultural sector.

***U.S. Agricultural Policy***

* The 2008 Farm Act is assumed to be extended through the projection period. The analysis was completed before the subsequent enactment of the Agricultural Act of 2014.
* Acreage enrolled in the Conservation Reserve Program (CRP) is projected to decline to about 26 million acres in 2014 before rising back to close to its legislated maximum under the 2008 Farm Act of 32 million acres toward the end of the projections.
* Lower crop prices projected over the next several years lead to sharply higher direct Government payments to farmers in 2015 through 2017, mostly reflecting large payments under the Average Crop Revenue Election (ACRE) program of the 2008 Farm Act. Beyond 2017, direct Government payments are lower and below the average of 2001-10. Consequently, the sector relies more on the market for its income. The CRP and fixed direct payments are the largest Government payments to the U.S. agricultural sector after 2017.

***U.S. Biofuels***

* Limited additional growth is projected for ethanol production, with increases much smaller than occurred in 2000-2010. Nonetheless, high levels of domestic corn-based ethanol production continue over the next decade, with about 35 percent of total corn use projected to go to ethanol production,
* The 10-percent ethanol “blend wall” and projected declines in overall gasoline consumption in the United States are assumed to significantly slow any expected expansion in ethanol production over the next decade. Most gasoline in the United States continues to be a 10‑percent ethanol blend (E10). Infrastructural and other constraints severely limit growth in the E15 (15-percent ethanol blend) market. The E85 (85‑percent ethanol blend) market, while growing, remains very small.
* The $1-per-gallon tax credit for blending biodiesel expired at the end of 2013 and is assumed to be unavailable in the projections.
* The biomass-based diesel use mandate, as administered by the U.S. Environmental Protection Agency (EPA), rose to 1.28 billion gallons for 2013 and is assumed to remain at that level throughout the projection period.
* As suggested in EPA’s final rule for the Renewable Fuel Standard (RFS) for 2013 (and subsequently supported by the proposed 2014 RFS rule), the projections assume that EPA will adjust the advanced biofuel and total renewable fuel mandates to reflect market conditions. As a consequence, the projections assume the nonspecific advanced biofuel mandate remains low. Thus, while some biodiesel production above its own mandate is assumed to meet a portion of the nonspecific advanced biofuel mandate, that additional volume of biodiesel is small.
* Soybean oil, other first-use vegetable oils, corn oil extracted from distillers grains, animal fats, and recycled vegetable oil are used as feedstocks to produce biodiesel in the projections, with soybean oil assumed to account for about half of total biodiesel production.

***International Policy***

* Trade projections assume that countries comply with existing bilateral and multilateral agreements affecting agriculture and agricultural trade. The report incorporates effects of trade agreements, sanitary and phytosanitary restrictions, and domestic policies in place in November 2013.
* Domestic agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current paths, based on the consensus judgment of USDA’s regional and commodity analysts. In particular, long-term economic and trade reforms in many developing countries are assumed to continue.
* The projections assume that Russia will continue to use policies to stimulate its domestic pork and poultry production and to limit its reliance on imports.

***International Biofuels***

* Global expansion of biofuel production is projected to continue during the next decade, although at a slower pace than over the last half decade.  As a result, demand for biofuel feedstocks also grows at a slower pace.
* The largest biofuel producers include the United States, Brazil, the EU, and Argentina. The EU remains the world’s largest importer of biofuels throughout the projection period.  Argentina and Brazil continue to be the world’s dominant biofuel exporters—Argentina mostly in soybean oil‑based biodiesel and Brazil in sugarcane-based ethanol.

***Prices***

* Prices for many major crops are projected to decline in the near term as global production responds to high prices of recent years. Nonetheless, after these initial price declines, long-term growth in global demand for agricultural products, a low-valued dollar, and continued biofuel demand, particularly in the United States, the EU, Brazil, and Argentina, hold prices for corn, oilseeds, and many other crops above pre-2007 levels.
* Prices in the livestock sector initially reflect responses to reduced feed costs as improved livestock-sector net returns provide economic incentives for expansion. Prices for hog and broilers generally decline in the first half of the projection period as production levels for those meats rise. In contrast, beef cattle prices rise as beef production continues to decline for several years. Increases in beef cattle, hog, and broiler prices are generally less than the general inflation rate in the later years of the projections. After declining in 2014‑16, nominal farm-level milk prices are projected to gradually rise over the rest of the projection period, with increases less than the overall rate of inflation largely reflecting efficiency gains in production.
* High commodity prices led to record values of U.S. agricultural exports and U.S. net farm income in 2013. Projected reductions in prices for most major crops over the next several years result in declines in export values and farm cash receipts through 2016. Export values and cash receipts then grow over the rest of the projection period as prices increase. Although farm production expenses also increase beyond 2015, net farm income remains historically high.

**Macroeconomic Assumptions**

Macroeconomic assumptions underlying USDA’s long-term projections include relatively strong, above-average growth in developing countries. As a result, developing countries become a larger part of the world economy. In contrast, relatively weak longrun growth is assumed in developed countries (especially Japan and the European Union (EU)). The macroeconomic assumptions were completed in October 2013.

Global gross domestic product (GDP) is projected to increase at an average annual rate of around 3.2 percent over the next decade. The strongest growth is anticipated in developing countries. China and India are expected to remain among the world’s fastest growing economies, although they will experience a slowing from the high rates of the past decades. Robust economic growth is also anticipated across developing regions, including Latin America, the Middle East, and Africa, the countries of the former Soviet Union, and other countries in East and Southeast Asia. The developed countries’ share of global real GDP is projected to be 58 percent in 2023, the end of the projection period, down from 65 percent in 2013.

Following the 2007-09 recession, U.S. economic growth averaged 2.2 percent during 2010-13. Stronger growth for the U.S. economy of near 3 percent is assumed for the next several years, before moving to longer term growth of 2.6 percent. With U.S. growth slower than the rest of the world throughout the projection period, the U.S. share of world GDP falls from slightly more than 26 percent in 2013 to less than 25 percent by 2023.

The slow recovery in the United States and other developed economies has several important implications.  Inflation is likely to remain subdued for some years to come as excess capacity remains in the economies.  Interest rates are also likely to remain at relatively low rates, before moving back toward historical averages. Following a long-term depreciation from 2002 to 2011, the U.S. dollar is expected to appreciate moderately over the next decade, although remaining at a low level compared with the past two decades.





**Agricultural Implications**

World economic growth is concentrated in developing countries, with growth in those countries projected at more than twice the rate of developed countries in 2013‑23. High income-related propensities for consumption of food and agricultural products in developing countries combine with population gains to boost global food and feed demand over the projection period. Also, continued biofuel demand will remain an important factor shaping the projections for global use, world trade, and agricultural commodity prices. Supporting the outlook for U.S. agricultural exports is the cumulative effect of the weaker U.S. dollar since 2002 and the dollar’s continued relatively low level through the projection period.

* Developing countries will have a growing role in the global economy and food demand, and will continue to account for most of the growth in U.S. agricultural exports. High income growth, along with associated gains in consumption and imports of food and feed, drives this result. As incomes rise in developing countries and more consumers enter the middle class, diets tend to be diversified, with increased relative consumption of meat, dairy products, and processed foods (including vegetable oils). These consumption changes move import demand toward feedstuffs and high-value food products.
* Although small appreciation is assumed for the U.S. dollar over the projection period, the overall depreciation of the dollar during the past decade has made U.S. agricultural exports more competitive in international markets. Among agricultural products, U.S. exports of bulk commodities and horticultural products tend to be the most sensitive to the value of the U.S. dollar because they face more global trade competition.



Economic growth in developing countries is projected to average 5.3 percent annually during 2013‑23. Among developing countries and countries of the former Soviet Union (FSU), Asian countries are projected to grow the fastest, African countries the next fastest, and Latin American and FSU countries the slowest. However, all developing regions are projected to grow faster than any developed country. Average annual growth is projected to be 7.2 percent in China and 7.0 percent in India, while the rest of the developing economies average 4.1 percent annual growth over the projection period.

* Continued strong growth in China, India, and the rest of Asia make this region an increasingly important part of the global economy, with developing Asia’s share of world GDP rising to 24 percent by the end of the projection period. Even so, relatively high oil prices by historical standards modestly constrain economic growth in developing Asia. The manufacturing sector in Asian countries is far more dependent on energy for GDP growth than are the more developed economies.
* China’s economic growth has been consistently the strongest in Asia, averaging over 10 percent between 2001 and 2010. Although China’s economic growth is expected to slow over the next decade, the country is expected to account for about 13 percent of the world economy in 2023, up from about 9 percent currently.
* India’s projected average economic growth of 7.0 percent per year puts it in the top tier of high‑growth countries. Nonetheless, India remains a low-income country.
* Economic growth in Africa, the poorest region in the world, is projected to average 4.7 percent a year over the projection period, with broad‑based growth across a wide spectrum of countries and sub-regions. This high growth rate (by historical standards) is likely to improve standards of living and limit the growth of poverty.
* Latin America sustains projected growth of almost 4 percent a year. An overall improvement in macroeconomic policies has attracted foreign capital inflows (particularly foreign direct investment to Chile, Colombia, and Brazil) and sustained growth in the region. Growth in Mexico is projected to average 4 percent per year.
* The countries of the FSU are projected to have sustainable economic growth averaging 3.8 percent annually for the next decade. Continuing relatively high oil prices benefit Russia and other energy-rich FSU countries.



Developed economies are projected to grow about 2 percent annually, on average, from 2013 to 2023. Prospects are for both the EU and Japan to grow at lower rates than the United States in coming years. Canada’s growth is projected to be similar to that of the United States.

* Economic growth for the EU is projected at about 1.6 percent per year in the next decade. Continuing difficulties in overcoming Eurozone financial problems remain a constraint on EU growth prospects. Additionally, structural rigidities, particularly inflexible labor laws and an expensive social security system, constrain the outlook for EU economic growth. Although unemployment is expected to decline from double-digit rates during the projection period, benefits of economic integration are limited by continued restrictions on labor mobility among EU countries.
* The projections assume economic growth in Japan averages 1.1 percent per year, a continuation of the slow growth and deflationary environment that Japan has experienced since the 1990s. Results from economic initiatives to boost growth and overcome deflation have been limited to date. Reforms needed to overcome long-term structural rigidities have not yet been implemented. Monetary easing as a means for ending deflation has had only limited success. Japan continues to be faced with a declining working-age population. Increasing integration with the other economies of Asia, especially China, will mitigate some of the growth constraints in the Japanese economy. Nonetheless, Japan is a heavily trade-dependent country and its trade-dependent sectors have declined significantly over the past 20 years. A doubling of the consumption tax, which is scheduled to be phased in during 2014-16, could be a further negative fiscal shock to the economy. Slow growth prospects in Japan relative to high growth for the other major Asian countries suggest that Japan’s importance in the global economy will diminish throughout the projection period.



World population growth is projected to continue slowing over the next decade, rising about 1.0 percent per year for the projection period compared to an annual rate of 1.2 percent in 2001-10.

* Developed countries have very low projected rates of population growth, at 0.4 percent over 2013‑23. The projected annual average population growth rate for the United States of about 0.8 percent is the highest among developed countries, in part reflecting immigration.
* Population growth rates in developing economies are projected to be sharply lower than rates in 1990-2010, but remain above those in the rest of the world. As a result, the share of global population accounted for by developing countries increases to 82 percent by 2023, compared to 79 percent in 2000.
* China and India together accounted for 36 percent of the world’s population in 2013. China’s population growth rate slows from 1.0 percent per year in 1991-2000 to less than 0.4 percent in 2013‑23, with its share of global population falling. The population growth rate in India is projected to decline from 1.8 percent to 1.2 percent per year over the same period, increasing its share of world population.
* Brazil’s population growth rate falls from 1.6 percent per year in 1991-2000 to 1.0 percent annually in 2013-23. The population growth rate in Indonesia is projected to decline from 1.7 percent to 0.9 percent per year over the same period. Although Sub-Saharan Africa’s population growth rate declines from 2.6 percent to 2.4 percent per year between the same periods, this region continues to have the highest population growth rate of any region in the world and its population decline is modest relative to other regions of the world.
* Countries with declining populations include Greece, Germany, most central European countries, Russia, Ukraine, and Japan.



The U.S. dollar is projected to maintain a low value through the projection period compared to 1990-2010.

* The U.S. trade-weighted dollar depreciated between 2002 and 2011. In 2012 and 2013 the dollar appreciated, mostly due to the weakness of the euro. A slow appreciation is of the dollar is projected over the next decade. Strong GDP growth in the United States relative to the EU and Japan will tend to mitigate any tendencies toward appreciation of the euro and yen relative to the U.S. dollar. The euro could weaken more if Eurozone financial problems continue, pushing the dollar toward further appreciation. The yen is projected to depreciate relative to the U.S. dollar over the projection period as the Bank of Japan continues to fight deflation.
* In June 2010, the Chinese Central Bank announced that it would allow increased flexibility in the exchange rate of the yuan relative to the U.S. dollar. From July 2010 to July 2013, there was a 13.5-percent real appreciation of the yuan. The projections assume that China allows its real exchange rate to continue to appreciate at a measured pace. The yuan will likely also play a larger role in trade finance in Asia, but implications for its exchange value relative to the dollar are unclear.



Prices for crude oil are assumed to remain historically high over the next decade. Recently, oil prices have been constrained by high oil production in countries that are not part of the Organization of the Petroleum Exporting Countries (OPEC), relatively slow growth in energy demand due to conservation in developed countries, and slowing economic growth in developing economies. Another restraining factor on oil prices recently has been reduced oil imports in the United States because of increased domestic oil and natural-gas production using horizontal drilling and hydraulic fracturing (fracking) technology. Crude oil prices are projected to rise somewhat faster than the general inflation rate beyond 2014, reflecting sustained global economic growth and a slowdown in production gains from new technology.







**Agricultural Trade**

Global demand for agricultural products is projected to continue rising during the 2014-2023 projection period. At the same time, world production of agricultural products is projected to increase more rapidly than world population, enabling a small increase in average world per capita use of most agricultural products. During this period, world trade in agricultural products is projected to continue rising rapidly.

While most agricultural prices have fallen from recent high levels and are projected to fall further during the initial years of the projections, prices remain above pre-2007 levels during the coming decade. The main contributing factors are rising per capita incomes and increasing populations in low- and middle-income developing countries that stimulates world demand for grains, oilseeds, cotton, and livestock products.

World agricultural production is projected to continue rising in the coming decade as technological enhancements and area expansion more than offset the effects of lower prices. However, a number of factors are expected to slow the rate of production growth. Many countries have a limited ability to expand planted area, and the expansion that does occur takes place on land with lower productive capacity. The growth rate for world-average crop yields has been slowing for nearly 2 decades, and is projected to slow further in the next 10 years. Reduced public funding for research and development over last 25 years contributed to this slowdown. Also, water constraints in some countries are impeding the expansion of irrigation. Where irrigation water is pumped from deep wells, the energy cost of pumping is projected to continue to increase due to falling water tables. Costs of other production inputs such as fertilizers and chemicals are also likely to remain high.

**General International Assumptions**

Trade projections to 2023 are founded on assumptions concerning trends in foreign area, yields, and use as well as the assumption that countries comply with existing bilateral and multilateral agreements affecting agriculture and agricultural trade. The projections incorporate the effects of trade agreements, sanitary and phytosanitary restrictions, and domestic policies in place or authorized by November 2013. International macroeconomic assumptions were completed in October 2013.

Domestic agricultural and trade policies in individual foreign countries are assumed to evolve along their current paths, based on the consensus judgment of USDA analysts. In particular, long-term economic and trade reforms in many developing countries are assumed to continue. Similarly, the development and use of technology and changes in consumer preferences are assumed to continue evolving based on past performance and analysts’ judgments regarding future developments.

During the past year, world production of most crops has recovered from weather-induced production shortfalls experienced in recent years. As a result, world stocks of many commodities have begun to rise from low levels, and prices have reversed their upward trends. For some commodities in some countries, stocks have become quite large. Policies in China have led to the accumulation of large cotton stocks there. Similarly, Thailand and India currently hold unusually large rice stocks. How these countries draw down stocks to more normal levels will have implications for world cotton and rice markets.

Low- and middle-income countries are projected to account for a large majority of the increase in world agricultural consumption and imports over the next decade. In the projections, about 80 percent of the increase in global consumption of meat, 83 percent for grains and oilseeds, and most of the growth in cotton use comes from developing countries. Furthermore, demand for agricultural products in these countries increases faster than production. As a result, they account for about 90 percent of the total increase in world imports of meat, and over 95 percent of the increase in grains and oilseeds. The main factors that contribute to the rapid increase in developing countries’ demand are their high population and income growth rates, accompanied by increased urbanization and expansion of the middle class.

The combined region of Africa and the Middle East is projected to have some of the strongest growth in food demand and agricultural trade over the coming decade. With rapid increases in population and per capita incomes, the region is projected to account for most of the increase in world poultry imports and over one-fifth of the growth in beef imports. Strong policy support for domestically produced meat also motivates growth in feed grain and protein meal imports, especially by countries where land constraints or agroclimatic conditions limit an expansion of domestic crop production. As a result, the region’s share of the increase in world imports is projected to be about 17 percent for coarse grains, 50 percent for wheat, and 64 percent for rice.

Mexico is projected to be another large growth market for imports of meat, grains, and oilseeds. A sustained increase in Mexico’s per capita meat demand over the next decade provides incentives to expand livestock production in that country as well as to import more meat and animal feed. Imports of beef are projected to more than double, while pork and poultry imports rise by 35 and 65 percent. Mexico accounts for about one-fourth of the growth in world pork and poultry imports. For corn, Mexico is second only to China in projected import growth over the next 10 years.

Since 2008/09, China has become a sustained net importer of pork, corn, rice, wheat, beef, pork, rapeseed meal, and rapeseed oil. In the projections, net imports are expected to continue rising for all but rice and wheat. China has also emerged as an importer of sorghum in the last 2 years and is projected to remain a sorghum importer in the next decade. For another group of commodities, China has been a net importer for at least the last decade. These commodities include cotton, soybeans, rapeseed, barley, soybean oil, and palm oil. Net imports of all these products are projected to continue rising. China’s aggregate net imports of grains, oilseeds, and cotton are projected to rise 61 percent (58 million tons) by 2023. For meats, net imports are expected to rise 73 percent (6.4 million tons).

Countries that have traditionally exported a large quantity and a wide range of agricultural products, such as Argentina, Australia, Brazil, Canada, the European Union (EU), and the United States, are expected to remain important exporters during the coming decade. But countries that have made significant investments in their agricultural sectors and are pursuing policies intended to encourage agricultural production, including Russia, Ukraine, and Kazakhstan, are expected to have an increasing presence in export markets for agricultural commodities.

Global expansion of biofuel production is projected to continue during the next decade, although at a slower pace than over the last half decade. As a result, demand for biofuel feedstocks also continues to grow. The largest biofuels producers include the United States, Brazil, the EU, and Argentina. The growth rates for their production of ethanol and of biodiesel each drop to less than 3 percent per year. For ethanol this is less than half the rate of the last 5 years; for biodiesel it is only about 10 percent of the growth over the past half-decade.

The EU remains the world’s largest importer of biofuels throughout the projection period. Biodiesel imports, especially from Argentina, account for a majority of total EU biofuels imports. Brazil supplies much of the EU’s ethanol imports. The EU is also projected to import oilseeds and vegetable oils for biodiesel feedstock use, mainly from Ukraine, Russia, and Indonesia.

Argentina and Brazil continue to be the world’s dominant biofuel exporters, with Argentina specializing in soybean oil-based biodiesel and Brazil in sugarcane-based ethanol. Exports from these countries grow steadily in the projections but are constrained as both countries increase their domestic use of biofuels.



Global trade in soybeans and soybean products has risen rapidly since the early 1990s, and has surpassed global trade in wheat and total coarse grains (corn, barley, sorghum, rye, oats, millet, and mixed grains). Continued strong growth in global demand for vegetable oil and protein meal, particularly in China and other Asian countries, is expected to maintain soybean and soybean-products trade well above either wheat or coarse grain trade throughout the next decade.

* Globally, the total area planted to grains, oilseeds, and cotton is projected to expand an average of 0.5 percent per year. Area expands more rapidly in countries with a reserve of available land and policies that allow farmers to respond to prices. Such countries include Russia, Ukraine, Brazil, Argentina, some other countries in South America, and some countries in Sub-Saharan Africa. On the other hand, in many countries area expansion is less than half that rate, and cropped area even contracts in some countries. Over half of the projected growth in global production of grains, oilseeds, and cotton is derived from rising yields, even though growth in crop yields is projected to continue slowing.
* The market impact of slower yield growth is partially offset by slower growth in world population. Nonetheless, population growth is a significant factor driving overall growth in demand for agricultural products. Additionally, rising per capita income in most countries supplements population gains in the demand for vegetable oils, meats, horticulture, dairy products, and grains. World per capita use of vegetable oils is projected to rise 6.5 percent over the next 10 years, compared with 15 percent for meats and 7 percent for total coarse grains. In contrast, per capita wheat use does not rise, and per capita rice consumption drops 1 percent.
* Increasing demand for grains, oilseeds, and other crops provide incentives to expand the global area under cultivation and the intensity of cropping the land. The largest projected increases in the area planted to field crops are in the former Soviet Union (FSU) and Sub-Saharan Africa. Large expansions are also projected for Brazil, Indonesia, and Argentina, including some uncultivated land brought into soybean and palm oil production in response to increased world demand for vegetable oils.



World coarse grain trade is projected to increase by 36 million tons (25 percent) from 2014/15 to 2023/24. Corn is expected to gain an increasing share of world coarse grain trade. The expansion of livestock production in feed-deficit countries continues to be the principal driver of growth in coarse grain imports. Key growth markets include China, Mexico, and Africa and the Middle East.

* China’s corn imports are projected to rise steadily and reach 22 million tons by 2023/24. China’s strengthening domestic demand for corn is driven by structural change and growth in its livestock sectors, as well as by rising industrial use. The increase in China’s imports accounts for nearly half of the projected growth in world corn trade. China’s sorghum imports have increased sharply over the last two years, and moderate growth is projected from 2014/15’s level of 1.5 million tons.
* Imports by Africa and the Middle East account for about 17 percent of the growth in world coarse grain trade through 2023/24, as rising populations and increasing incomes sustain strong demand growth for livestock products.
* Mexico’s corn imports are projected to rise from 11.0 million tons in 2014/15 to 15.5 million in 2023/24. During the same period, Mexico’s sorghum imports remain at about 2 million tons. Altogether, the growth in Mexico’s coarse grain imports represents more than one-eighth of the increase in global coarse grain trade during the coming decade. This reflects increased meat consumption, which stimulates an expansion in domestic meat production as well as increased coarse grain imports.
* Southeast Asian corn imports rise 37 percent to 12 million tons by 2023/24 in response to increased demand from livestock producers. The region accounts for 10 percent of the growth in world corn imports.
* In East Asia, environmental constraints on expanding livestock production and increasing imports of selected cuts of meat greatly limit the growth in coarse grain imports. The region currently accounts for nearly one-fourth of world coarse grain imports, but the import share is projected to fall.



U.S. corn exports are expected to rebound from the weather-induced production shortfalls and reduced exports of the past several years. U.S. corn exports are expected to increase to 57 million tons by 2023/24. However, the U.S. share of world corn exports only rises to 40 percent, well below the 52 percent average share during the previous 10 years.

* FSU corn exports, mostly from Ukraine, rise 7 million tons (38 percent) to nearly 26 million tons by 2023/24. Favorable resource endowments, increasing economic openness, wider use of hybrid seed, and greater investment in agriculture all stimulate corn production in this region. Although FSU feed use of corn rises rapidly in the projections, the region’s corn exports increase twice as much as those from any exporting country or region other than the United States. The FSU becomes the world’s second-largest corn exporter, surpassing shipments from Argentina and Brazil.
* Argentina’s corn sector is projected to stagnate in the early years of the projections due to the continuation of quantitative export controls.
* Brazil’s corn exports during the last several years have been double the pre-2011/12 levels. Production of second-crop corn following soybeans, a large share of which is produced in Mato Grosso, has risen in response to high prices. This corn is not in a good location to meet domestic demand, and tends to be exported when port capacity is not occupied with soybeans. However, Brazil’s corn exports are constrained by high transport costs. During the latter part of the projection period, corn exports are projected to increase in response to improved export infrastructure and increasing world prices.
* In the EU, corn used for ethanol production is projected to increase during the coming decade, but at a much slower pace. In the projections the EU becomes a larger net importer of corn. However, it maintains exports of about 3 million tons as it takes advantage of its lower transportation costs to parts of North Africa and the Middle East.
* Corn exports from the Other Europe (OE) region, mostly from Serbia to the EU, continue to rise.



Global barley trade is projected to expand by 2.9 million tons (14 percent) during the projection period and reaches 23.3 million tons by 2023/24. Rising demand for both malting and feed barley underpins this trade increase.

* Feed barley imports by North African and Middle Eastern countries are expected to grow steadily over the next decade. This region accounts for nearly two-thirds of the projected growth in world total barley imports, and by 2023/24, these countries account for about two-thirds of world barley imports.
* Saudi Arabia remains by far the world’s leading importer of barley, accounting for about 40 percent of world imports in 2023/24. Saudi Arabia’s barley imports are used primarily as feed for sheep, goats, and camels. Among other countries in the Middle East, Iran is projected to experience the fastest growth in barley imports over the next decade.
* Total imports by other countries in North Africa and the Middle East are projected to grow more slowly, but still account for about a fifth of the increase in world barley trade.
* International demand for malting barley is boosted by strong growth in beer demand in some developing countries, most notably China—the world’s largest malting-barley importer. China’s domestic malting-barley production is increasing, but imports also rise during the projection period. Australia and Canada are China’s main sources of malting barley imports.



The EU, Australia, Argentina, Russia, and Ukraine are expected to be the major barley exporters during the coming decade.

* The EU’s barley exports have risen in recent years and are projected to remain above 5 million tons during the coming decade.
* Australia’s barley exports are expected to partially recover in 2013/14 from a drought-reduced harvest in 2012 and to rise slowly during the coming decade. Australia is projected to remain the world’s second-largest barley exporter, following the EU.
* Argentina’s barley exports have risen sharply in recent years and are projected to remain large in the coming decade. Export restrictions for wheat have caused a shift in winter grains production from wheat to barley. Expansion in barley area has occurred in the southern part of the country, and barley has been used for double-cropping with soybeans in the central region. Other South American countries and Saudi Arabia are the main buyers of Argentina’s feed barley. Argentine malting barley is mostly exported to Brazil.
* Barley exports by the FSU are projected to reach 7.4 million tons by 2023/24, with Russia accounting for 3.4 million tons and Ukraine accounting for 3.1 million tons. Kazakhstan is expected to increase exports, especially to Iran. Growth in barley exports by the FSU countries are projected to account for 74 percent of the increase in world exports over the projection period.
* Malting barley commands a substantial price premium over feed barley. Malting barley’s price premium is expected to influence planting decisions in Canada and Australia where malting barley’s share of total barley area is expected to rise during the next 10 years. However, Canada’s total area planted to all barley continues to decline as demand for canola increases and canola remains more profitable.



World sorghum trade is expected to remain nearly flat during the coming decade. Exporter’s supplies are constrained by sorghum’s low profitability compared to alternative crops. World sorghum imports are projected to trend slowly upward from around 7.4 million tons in 2014/15 to 7.9 million tons in 2023/24. U.S. exports to Mexico, Japan, and China account for the bulk of world sorghum trade. However, Argentine exports have risen in recent years, and that country is projected to maintain its increased share of world exports.

* Mexico’s sorghum imports are projected to remain near 2 million tons during the coming decade. Many Mexican livestock producers have a slight preference for feeding sorghum, while U.S. livestock feeders mostly use corn, thus facilitating U.S. sorghum shipments to Mexico. Historically, Mexico has often accounted for 30-40 percent of world sorghum imports, but its share is projected to be slightly less than 30 percent in the next 10 years.
* Sorghum imports by Japan—currently the world’s second-largest importer—are projected to remain stable over the next decade.
* China’s sorghum imports jumped in the past 2 years and are projected to grow slowly, surpassing Japan to become the second-largest importer.
* U.S. sorghum exports rebounded in 2013/14 from low levels during the preceding 2 years and are projected to remain close to 4 million tons during the next 10 years. Although exports remain well below historical highs, the United States continues to be the leading sorghum exporter.
* Argentina is expected to continue to be the world’s second-largest sorghum exporter during the coming decade. Argentina’s exports are projected to rise very slowly to 2.5 million tons. Production of new sorghum varieties with lower tannin content enables Argentina to gain a slightly larger share of the international market. The primary markets for Argentine sorghum are Japan, Chile, Europe, and other countries in South America.
* Australia’s exports are projected to remain slightly less than 1 million tons as the country remains the world’s third-largest sorghum exporter.



World wheat trade (which includes flour) is projected to expand by nearly 28 million tons (19 percent) between 2014/15 and 2023/24, rising to 177.5 million tons. Growth in wheat imports is concentrated in those developing countries where income and population gains drive increases in demand. The largest growth markets include the 15 countries of the Economic Community of West African States, other Sub-Saharan Africa countries, Egypt, other countries in the North Africa and the Middle East region, Indonesia, and Pakistan.

* In many developing countries, almost no change in per capita wheat consumption is expected, but imports are projected to expand modestly because of population growth and limited potential to expand wheat production. As incomes rise in Indonesia, Vietnam, and some other Asian countries, consumers shift marginally from rice to wheat.
* Egypt remains the world’s largest wheat-importing country, with imports climbing to 12 million tons by 2023/24. Imports by Indonesia grow rapidly to nearly 10 million tons and it replaces Brazil as the second-largest wheat importing country.
* Imports by Vietnam and Bangladesh are both projected to rise rapidly, increasing by a total of 1.5 million tons. Partially offsetting this increase are lower projected imports by Japan and South Korea.
* Imports by countries in Africa and the Middle East rise 14 million tons and account for half of the total increase in world wheat trade. Saudi Arabia has adopted a policy to phase out wheat production by 2016 because of water scarcity concerns, so its imports are projected to rise to 3.8 million tons by 2023/24.
* Historically, India has been a large wheat importer in some years and a large exporter in others. In the past 2 years, India has exported significant amounts of wheat, partially as a result of high price-support policies and excess government stocks. These policies are expected to continue in some form, although exports are projected to decline during the coming decade.



The five largest traditional wheat exporters (United States, Australia, EU, Argentina, and Canada) are projected to account for more than 60 percent of world trade in 2023/24, compared with nearly 70 percent during the last decade. This decrease in share is mostly due to increased exports from the FSU.

* U.S. wheat exports are projected to generally be in a 28- to 30-million-ton range during the coming decade. However, the U.S. share of world exports declines over the projection period.
* Canada’s wheat area continues to decline slowly in response to more favorable returns for canola. As a result, little change is projected for Canadian wheat exports. Eliminating the Canadian Wheat Board’s state trading monopoly is assumed to result in redirection of some of Canada’s wheat exports to the United States due to transportation and market considerations.
* In Argentina, some area traditionally planted to wheat shifts to barley in response to government policies and increased double-cropping of barley. Exports rebound in 2013/14 and 2014/15 after production shortfalls the previous 2 years, but then remain flat during the rest of the projection period.
* The EU is the only traditional exporter whose market share is projected to increase. EU wheat exports are projected to trend upward and surpass 30 million tons by 2023/24, as less wheat is fed to livestock due to relatively low feed grain prices.
* The upward trend in wheat exports from Russia, Ukraine, and Kazakhstan was interrupted by droughts in 2010 and 2012. However, exports from those countries are expected to recover and rise more than 50 percent, climbing to 52 million tons by 2023/24 and accounting for two-thirds of the projected increase in world wheat trade. Rising domestic feed use prevents even more rapid export growth. Although not explicitly reflected in the projections, continued year-to-year volatility in wheat production and trade is likely because of the region’s highly variable weather and yields.



Global rice trade is projected to grow 1.5 percent per year from 2014/15 to 2023/24. In 2023/24, this trade reaches 47 million tons, 35 percent above the average of the last half decade. The main factors driving this expansion in trade are a steady growth in demand—largely due to population and income growth in developing countries—and the inability of several key importers to significantly boost production. Since the mid-1990s, world trade as a share of world consumption has risen above its 4-percent-average over the previous half century, to nearly 8 percent currently, and this upward trend is expected to continue.

* In Africa and the Middle East, strong demand growth is driven by rapidly expanding population and income, while production growth is limited. In North Africa and the Middle East, production is primarily limited by climate. In Sub-Saharan Africa, expanding production is constrained by infrastructure deficiencies and resource limitations. Altogether, the entire region accounts for two-thirds of the increase in world rice trade during the projections.
* China became the world’s largest rice importer in 2012/13. In the projections, China’s imports trend slowly downward, but remain historically large as China imports lower-priced rice, primarily from Vietnam. However, by the end of the projections, Indonesia’s rice imports surpass China’s and Indonesia becomes the largest rice-importing country.
* Bangladesh’s imports rise rapidly from low levels in the past several years to 1.6 million tons by 2023/24.
* Other major importing countries—Iran, Iraq, Philippines, and Saudi Arabia—each take more than 1.5 million tons. These 4 countries have limited ability to expand rice production and are expected to account for more than 16 percent of the projected increase in global rice imports.
* In Canada and the United States, immigration continues to support slightly higher per capita consumption and modest import growth.
* Imports by the FSU are projected to remain in the 400- to 500-thousand-ton range as a result of strong production growth and a declining population that more than offset slowly rising per capita consumption.



Asia continues to supply most of the world’s rice exports throughout the projection period.

* Thailand and Vietnam, typically the world’s largest rice-exporting countries, account for more than 47 percent of world rice exports and for more 87 percent of the growth in world exports in the coming decade. In Thailand, increasing production combined with a drawdown in large stocks enable Thailand’s exports to rise 4.4 million tons, to 13.9 million by 2023/24. Vietnam’s export expansion is smaller, rising from 7.5 to 8.2 million tons. In both countries, per capita consumption declines as incomes rise and strong yield growth each contribute to increasing exports.
* India typically has been the third- or fourth-largest rice exporter since the mid-1990s, but its exports have been volatile, primarily due to government policies and fluctuating stock levels. In September 2011, the Indian Government eased an export ban on non-basmati rice, and exports jumped from less than 3 million tons to 11 million tons, making India the leading rice exporter in crop years 2011/12 to 2013/14. Although projected exports retreat from the peak as stocks are slowly drawn down, they remain historically large for the next decade.
* Pakistan and the United States have each been exporting between 3 and 4 million tons in recent years. Pakistan’s continued yield growth and declining per capita consumption enable it to achieve a minor increase in rice exports during the coming decade. However, it loses market share and drops to be the world’s fifth-largest exporter.
* Modest expansion in U.S. rice exports through the projection period is attributable to increasing yields and slow growth in domestic use.  The U.S. export share is projected at about 8 percent during the coming decade.
* Rice exports from China have declined in recent years but are projected to increase from 0.31 to 0.44 million tons by 2023. Little change in production is expected. Declining area is expected to be offset by higher yields as China allows the use of genetically modified rice. Reductions in per capita consumption, a result of continued diet diversification resulting from higher incomes, are expected to offset population growth. China’s rice stocks are projected to remain large during the projection period.
* Australia’s exports have recovered from the extremely low, drought-reduced levels shipped during much of the past decade. Exports are projected to stabilize at about 0.5 million tons.



Economic and population growth in developing countries are projected to boost demand for vegetable oils for food consumption and for protein meals used in livestock production. Global vegetable oil used for biodiesel production also is projected to increase, although at a slower pace than in recent years.

* Many countries with limited opportunities to expand oilseed production, such as some countries in North Africa, the Middle East, and South Asia, have invested heavily in crushing capacity. As a result, their import demand for oilseeds has grown rapidly, and this growth is projected to continue. During the next decade, global soybean trade is projected to increase by 36 percent, soybean oil by 17 percent, and soybean meal by 14 percent.
* China’s robust demand for both vegetable oil and oilseed meals will maintain its pattern of importing soybeans to be crushed domestically. China also imports large volumes of oils.
* Argentina, Brazil, and the United States currently account for nearly 85 percent of the world’s aggregate exports of soybeans, soybean meal, and soybean oil. This share climbs to 87 percent by 2023/24. Brazil’s share of world exports of soybeans and soybean products (mostly soybeans) climbs to more than 36 percent, as area expansion and yield growth boost soybean production faster than in other exporting countries. In Argentina, uncertainties about grain policies cause farmers to keep more land in soybean production. Argentina’s share of world exports of soybeans and soybean products (mostly products) climbs slightly to 25 percent.
* The U.S. share of global exports of soybeans and soybean products declines from 29 percent to 25 percent by 2023/24.
* The EU continues expanding biodiesel production, but at a slower pace than in recent years. Production of rapeseed oil, the EU’s primary biodiesel feedstock, increases but imports of rapeseed and rapeseed oil also rise. Small increases in EU soybean meal and soybean oil imports are projected.



World soybean trade is projected to rise rapidly during the next 10 years, climbing 40 million tons (36 percent), to 152 million tons.

* China’s soybean imports have risen sharply and now account for more than half of world trade. The projections assume that Chinese policies will emphasize production of grains over soybeans, allowing increases in soybean imports to fill the shortfall in domestic soybean production. China continues to add oilseed crushing capacity that will contribute to strong gains in soybean imports. Some surplus soybean meal will be exported to other Asian countries.
* EU soybean imports declined over the past decade due to decreases in internal grain prices and increases in grain and rapeseed meal feeding. These trends are projected to continue, although at a slower pace, with soybean imports declining slightly.
* Imports of soybeans and soybean meal by East Asia (Japan, South Korea, and Taiwan) are influenced by a continuing shift from importing feedstuffs for domestic meat production to importing meat and other livestock products. As a result, this region’s projected small expansion in soybean and soymeal imports reflects slowly rising livestock production.
* Egypt is projected to slowly increase soybean imports in an effort to improve feed efficiency and to meet increased per capita demand for vegetable oils. Many other countries in the North Africa and Middle East region also have a limited ability to expand soybean production, and so they increase imports to fill their growing feed and food needs.
* Mexico’s soybean imports are projected to increase 9 percent to 4 million tons. These imports will support the production of soybean meal for the Mexican poultry and pork industries, and of soybean oil for domestic food consumption.



The three leading soybean exporters—the United States, Brazil, and Argentina—accounted for slightly more than 90 percent of world trade prior to 2010/11. In recent years, exports from Uruguay, Paraguay, Bolivia, Ukraine, and a few other countries have increased. However, their growth is projected to slow, and the trade share held by the traditional exporters is projected to remain around 87 percent.

* Brazilian soybean exports are projected to rise 24.2 million tons (57 percent) to 66.5 million tons during the 2014/15 to 2023/24 projection period, enabling the country to strengthen its position as the world’s leading exporter of soybeans. Soybeans remain more profitable to produce than other crops in most areas of Brazil. With increasing soybean plantings in the Cerrado region and expansion extending into the “Amazon Legal” region, the increase in area planted to soybeans is projected to average about 1.8 percent per year during the coming decade.
* Argentina’s export tax rates are higher for soybeans than for soybean products, a policy that favors domestic crushing of soybeans and exporting of the resulting products. However, in response to increasing world demand for soybeans for crushing, Argentina’s soybean exports have risen sharply and are projected to continue doing so, rising about 57 percent to more than 16 million tons by 2023/24. Most of Argentina’s soybean exports go to China.
* Other South American countries, principally Uruguay, Paraguay, and Bolivia, also expand area planted to soybeans. Exports by these countries increase 47 percent, to 12.5 million tons.
* Although Ukraine’s soybean exports are small, the country is expected to respond to international prices for oilseeds by increasing production of rapeseed and soybeans. Ukraine soybean exports are projected to rise nearly 80 percent to 3 million tons.



World soybean meal trade is projected to climb by more than 9 million tons (14 percent), to 74 million tons by 2023/24. In a number of countries, soybean meal use is boosted by continued growth in the demand for livestock products, limited capability to increase domestic oilseed production, and low world prices for protein meals relative to feed grains.

* The EU remains the world’s largest soybean meal importer throughout the projections, despite increased domestic feeding of grains and rapeseed meal. Although abundant supplies of low-cost rapeseed meal are expected to be available as a result of EU biodiesel production, nutritional considerations limit the inclusion of rapeseed meal in livestock rations. As a result, the EU is expected to continue large imports of soybean meal.
* The regions of Southeast Asia, Latin America, North Africa, and the Middle East become larger importers of soybean meal due to increasing demand for livestock feed. Imports by Southeast Asia, especially Vietnam, climb rapidly and account for 38 percent of the projected increase in world soybean meal trade. Imports by countries in North Africa and the Middle East are projected to rise 2 million tons, and account for 22 percent of the increase in world trade. Soybean meal imports by Latin American countries other than Argentina and Brazil increase by 1.7 million tons, with much of that trade being between countries within the region.
* Strong growth in soybean meal imports is also projected for many other countries. Mexico’s growing demand for protein feed is expected to boost imports. Russia’s rising soybean meal imports are linked to livestock production at larger, more modern facilities.



Argentina, Brazil, and the United States remain the three largest exporters of soybean meal. Together, their share of world exports rises slightly to 89 percent over the next 10 years. Argentina, the world’s largest soybean meal exporter, increases its share of the world market from around 45 percent in recent years to 51 percent in 2023/24.

* Argentina imposes higher export taxes on soybeans than on soybean products. That policy has provided an incentive for the country to develop a large oilseed-crushing capacity. With Argentina’s low soybean production costs and its export incentives for soybean products, soybean meal exports are projected to continue their robust growth.
* In Brazil, strong growth in soybean meal consumption due to the rapid expansion of poultry and pork production limits increases in soybean meal exports. Also, Brazil’s soybean-crushing capacity is not expected to grow as quickly as in the past due to strong trade competition from Argentina. Brazil’s share of world soybean meal exports remains in the 23-25 percent range.
* U.S. soybean meal exports trend slowly upward beyond 2017/18 to nearly 10 million tons. Meanwhile, the U.S. share of world soybean meal exports declines slightly to about 13 percent.
* India’s soybean meal exports decline as domestic use strengthens and export competition from South America intensifies. Exports fall from around 4 million tons in most recent years, to 1.4 million in 2023/24, as rapidly increasing poultry, egg, and milk production use more of India’s domestic soybean meal production.
* The EU continues to be a small but steady exporter of soybean meal to Russia and other Eastern European countries, where livestock production is expected to increase significantly.

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World soybean oil imports climb 1.6 million tons (17 percent) to 11.2 million tons over the 2014/15 to 2023/24 projection period, bolstered by rising food and industrial use. Growth in world soybean oil trade will be constrained by competition with palm oil, which is the leading vegetable oil traded internationally.

* India is projected to replace China as the world’s largest soybean oil importing country. In the projections, India’s soybean oil imports climb 42 percent to 1.6 million tons in 2023/24. Factors contributing to the continued growth of India’s soybean oil imports include burgeoning demand for vegetable oils and limited area for expanding oilseed production. Low yields, associated with excessive monsoon rainfall and low input use, also inhibit growth of oilseed production.
* In 2008, in response to high domestic food price inflation and high world prices, India reduced import tariffs to zero on crude edible oils, which had been 40 percent for soybean oil and 75-85 percent for other oils. For the projections, it is assumed that India’s tariffs on crude soybean oil and other vegetable oils will rise moderately, but remain well below pre-2008 levels.
* With a rapid increase in China’s soybean imports for crushing in recent years, the country’s soybean oil imports have declined to about 1.5 million tons per year. Imports are projected to remain in the 1.4 to 1.8 million ton range in the coming decade.
* Income and population growth in North Africa, the Middle East, and Latin America contribute to gains in soybean oil demand and imports. The North Africa and Middle East region is projected to remain the largest importing region, followed by Latin America.



Argentina and Brazil are by far the world’s largest soybean oil exporters, and their combined shipments are projected to account for about two-thirds of world soybean oil exports during the coming decade.

* Soybean oil exports from Argentina—the world’s largest exporter—are projected to climb modestly to 5.2 million tons by 2023/24. Argentina’s strength as a soybean oil exporter reflects the country’s large crushing capacity, its small domestic market for soybean oil, and an export tax structure that favors exports of soybean products rather than soybeans. Gains in Argentine soybean production due to extensive double cropping, further adjustments in crop-pasture rotations, and the expansion onto marginal lands in the northwest part of the country, also have contributed to increased soybean production and crushing. Argentina’s soybean oil exports declined during the last half decade due to weather-related production shortfalls and increased biodiesel production. Although soybean oil exports have begun to rise again, slow growth is projected as more soybean oil will be used to produce biodiesel.
* Brazil’s projected increase in soybean oil exports accounts for much of the rest of the global increase in soybean oil trade. Brazil also is projected to use more soybean oil for biodiesel production, but the expansion of soybean production into new areas of cultivation is expected to enable the country to increase soybean oil exports as well.
* U.S. soybean oil exports in 2013/14 were the lowest in a decade, mostly due to the 2012 drought. Exports rise steadily in the projections and reach 1.4 million tons by 2023/24, approaching the 2009/10 record. The United States is expected to remain the world’s third-largest soybean oil exporter. U.S. imports of canola oil from Canada and palm oil from Southeast Asia are projected to continue to grow strongly, augmenting the U.S. edible oil supply.



World cotton trade is projected to trend upward at a rapid 3.8-percent growth rate between 2014/15 and 2023/24. Contraction is expected in the short run, however, as China—the largest importer—halts and then reverses its accumulation of stocks. But, by 2017/18 world trade growth resumes, and by 2020/21 the 2012/13 record-high in world cotton trade is expected to be surpassed.

* China’s cotton imports are expected to decline during the early portion of the projection period, falling to less than 40 percent of its peak levels. In 2013, China signaled its intentions to reform its cotton price supports, likely reversing its accumulation of stocks. Imports are expected to resume growth in 2017, driving world trade higher.
* China’s reforms are expected to allow it to recover part of the share of world cotton consumption lost between 2009 and 2013, when some of China’s textile production and cotton imports shifted to other countries. Bangladesh, Turkey, Vietnam, and Pakistan have been major beneficiaries of this shift. Bangladesh has vied with Turkey to be become the world’s second-largest cotton importer in recent years and is projected to attain this position after 2015 as its textile industry continues growing rapidly.
* Turkey and Vietnam are expected to be the third- and fourth-largest importers by 2023. Turkey’s share of world consumption has strengthened recently, but is expected to again slowly erode in coming years. In contrast, Vietnam quadrupled its share of world consumption between 2003 and 2013. Vietnam’s textile sector and cotton imports are expected to grow, albeit more slowly, in the coming years, and by 2023 Vietnam’s imports are expected to surpass Turkey’s for the first time.
* Pakistan has become a major cotton importer in recent years. Cotton imports are projected to remain high even though new *Bacillus thuringiensis* (*Bt*) cotton varieties specific to Pakistan’s cotton-growing conditions stimulate additional production. Pakistan’s imports exceed Vietnam’s through 2018, but begin declining in later years, while Vietnam’s continue to expand.



Globalization is expected to continue to move raw cotton production to countries with favorable resource endowments and technology. Expansion is projected for traditional producers with large land bases suitable for cotton production, including the United States, Brazil, and Sub-Saharan Africa, as well as for the traditional low-cost producing countries of India and Pakistan.

* The U.S. share of world cotton production has fallen sharply with the spread of new technology around the world in recent years, and its share is expected to continue falling in the long run, although far more slowly. Nonetheless, the United States is the world’s leading cotton exporter throughout the projections. However, the U.S. share of world trade continues its recent decline, and by 2023 the U.S. share of 23 percent is nearly half of its 2008 share. U.S. exports rise slightly to 11.7 million bales by 2023/24, growing only 0.8 percent annually.
* Improved cotton yields in India, in part due to the adoption of *Bt* cotton, have raised India’s production and exports. Yield growth is projected to continue as the gains from *Bt* cotton are further enhanced by improved cultivation practices. The increase in output is expected to enable India to continue as the world’s second-largest cotton exporter.
* Brazil’s cotton exports are projected to increase the fastest among the major exporters between 2014 and 2023 as the area planted to cotton continues a long-term upward trend. Within a few years, Brazil overtakes Central Asia as the third-largest source of cotton exports.
* Exports from the 15 countries of the Economic Community of West African States are projected to experience sustained growth during the coming decade. Improvements in technical and financial infrastructure, and the adoption of *Bt* cotton will help boost production and exports. Exports from the other countries in Sub-Saharan Africa also are projected to increase. In total, Sub-Saharan Africa is expected to account for about 14 percent of world trade, compared with about 10 percent during 2009-2013.
* Government policies in the Central Asian countries of the FSU promoting investment in textile industries have contributed to more exports of textile products rather than to exports of raw cotton. As a result, the region’s cotton exports change very little. The expected sustained reduction in grain prices will permit the region to shift some area back to cotton, maintaining its share of world cotton trade at about 11 percent, slightly below its 2009-2013 level.



Global meat consumption continues to increase with poultry consumption rising faster than pork or beef consumption. World meat consumption is projected to increase about 1.9 percent per year during 2014-2023 and meat shipments from major exporters rise 2.2 percent per year. The projected growth rates of exports from major exporters of beef, pork, and poultry meat are 2.8, 1.6, and 2.0 percent per year, respectively. During this period, exports rise 2.2 million tons for beef, 1.0 million for pork, and 2.0 million for poultry.

World meat trade increases nearly 22 percent in the projections, driven primarily by rising incomes and population in developing countries. However, Russia’s aggregate meat imports decline, reflecting policies that stimulate domestic meat production and curb imports.

* Beef exports from Asian countries, mostly India, increased sharply after 2009. Developing countries’ demand for India’s lower priced beef is projected to continue rising rapidly. India’s rising exports account for 36 percent of the increase in world beef exports.
* Australia has generally been the world’s second-largest beef exporter, after Brazil. Australia’s beef herd is in a rebuilding phase and exports are projected to stagnate during the coming decade. In the projections, Australia’s exports are surpassed by those from India and the United States, and Australia drops to become the fourth-largest exporter.
* Canada’s cow herd contracted significantly in recent years but given strong expected returns, producers are projected to rebuild herds. As a result, Canada’s net beef exports are projected to rise steadily, although not surpassing levels of the previous decade.
* Argentina’s beef herd is recovering after a sharp contraction following 2005 export restrictions, and exports are expected to rise slowly in the projection period.
* The projections assume no changes in Brazil’s foot-and-mouth-disease (FMD) status. However, Brazil’s pork exports are expected to be competitive in price-sensitive markets such as Russia, China, and Hong Kong. Brazil is projected to remain the largest exporter of poultry products due to competitive production costs and it accounts for 46 percent of the increase in world poultry exports.



Between 2014 and 2023, imports by major beef importing countries are projected to increase nearly 2.3 million tons (34 percent) and reach 9.1 million tons. Exports of lower priced beef from India and Brazil to a number of low- and middle-income countries account for nearly two-thirds of the projected increase in world beef trade.

* During the next 10 years, Russian beef imports are projected to fluctuate around 1.2 million tons, as rising consumer demand is mostly offset by expanding Russian beef production. Russia remains a market for EU and South American beef exports.
* Beef imports by China and Hong Kong are projected to increase 55 percent in the coming decade, as increasing incomes and rising demand for beef outpace growth in production.
* Imports of grain-fed beef by higher income countries are projected to rise steadily. U.S. beef exports to these countries increase after 2014.
* U.S. beef imports, primarily of grass-fed, lean beef for use in ground beef and processed products, rise slowly during the projection period. The United States is projected to be the world’s largest beef importer and accounts for 13 percent of the increase in world imports.
* The Middle East, with a relatively fast-growing population, and Asia, with rapid income growth, are projected to be growing markets for beef. Together, the two regions account for nearly two-thirds of the increase in world beef imports through 2023.
* Strong growth in Mexican beef imports is projected to resume over the next several years. Much of Mexico’s imports consist of higher valued, grain-fed beef from the United States.



World pork imports are projected to continue to rise, increasing by 1.05 million tons (19 percent) from 2014 to 2023.

* Japan is projected to remain the world’s largest pork importer during the coming decade, although growth is small due to Japan’s aging and declining population.
* Russia’s pork imports are projected to decline steadily during the next 10 years, reflecting the country’s policies to stimulate domestic meat production and reduce reliance on imports. By 2023, Russian pork imports are projected to decline more than 10 percent to about 0.8 million tons.
* In the projections, pork imports by China and Mexico each surpass those of Russia. Since 2009, China’s pork imports have risen sharply and are projected to continue rising steadily. China’s pork imports are projected to rise about 50 percent to 1.2 million tons by 2023, and account for two-fifths of the increase in world imports.
* Mexican pork imports also rise rapidly, increasing 0.3 million tons (35 percent) between 2014 and 2023. Increases in income and population are the primary drivers of Mexico’s increasing demand for pork. Mexico accounts for nearly one-fifth of the growth in global pork imports during the coming decade.
* Some higher income countries in East Asia increase pork imports to satisfy demand for selected cuts of pork. Combined, Hong Kong, Japan, and South Korea account for one-fourth of the increase in world pork imports during the projection period.
* Pork imports by the Central America and Caribbean region grow more rapidly on a percentage basis than imports by any other country or region, although from a small base. Income growth and an expanding population boost demand, while growth in pork production is limited by the region’s need to import most feedstuffs.



Poultry meat imports by major importers are projected to increase by 2.2 million tons (30 percent) during the projection period, reaching nearly 10 million tons by 2023. Strong import growth is projected for much of the world except, most notably, Russia (where policies constrain imports) and Japan.

* Poultry imports by Africa and the Middle East currently account for 47 percent of imports by the major importers. Gains in income and population boost demand in the projections. In addition, ongoing animal-disease concerns in a number of countries are expected to slow growth in production and to increase demand for imports. As a result, growth in the region’s imports account for nearly 80 percent of the increase in world imports between 2014 and 2023, and for 57 percent of the global total in 2023.
* Rising consumer incomes increase poultry demand and imports in Mexico and in the Central America and Caribbean region. Poultry products remain less expensive than beef or pork, further stimulating demand. Mexico’s domestic poultry production continues to increase during the projection period, but rises at a slower rate than consumption, with the result that imports rise by more than a half million tons (65 percent).
* Russia’s poultry imports are projected to decline steadily. The projections assume that Russian policies will limit poultry imports to stimulate domestic production. High poultry prices and slower income growth inhibit growth in per capita poultry consumption.
* China’s rising consumption of poultry meat is met by expanding domestic production. The country’s increase in poultry exports slightly exceeds the increase in imports.
* Fully cooked products are projected to account for most poultry exports from China and Thailand. With higher unit costs, most of these products are marketed to higher income countries in Asia, Europe, and the Middle East. In addition, Thailand’s exports to the EU are expected to rise because trade to that market in uncooked chicken has been reopened.



























**U.S. Crops**

Planted area for major field crops has been relatively high in recent years in response to high prices. As U.S. and global supplies rebound and prices decline for most crops, U.S. planted acreage for these crops is projected to fall over the next several years in response to lower producer returns.

Over the longer run, steady global economic growth provides a foundation for continuing strong crop demand. Although corn‑based ethanol production in the United States has rebounded from 2012’s decline, the pace of further expansion slows. Nonetheless, the combination of world economic growth, a continued low-valued dollar, and some further expansion of global biofuels production supports longer run gains in world consumption and trade of crops. Prices are projected to fall from recent record highs but remain above pre-2007 levels for many crops.

Agricultural programs of The Food, Conservation, and Energy Act of 2008 (the 2008 Farm Act) are assumed to be extended through the projection period. Acreage enrolled in the Conservation Reserve Program (CRP) is projected to decline to 26 million acres in 2014 before rising back to close to 32 million acres by the end of the projection period.





U.S. corn production has rebounded from the weather-reduced 2012 crop, resulting in declining prices and increased domestic use and exports in the 2013/14 season. Moderate growth in demand is projected over the next decade.

* Ethanol production in the United States is based almost entirely on corn as the feedstock. Only small growth is projected for corn‑based ethanol production over the next 10 years. This projection reflects declining overall gasoline consumption in the United States (which is mostly a 10-percent ethanol blend (E10)), infrastructural and other constraints on growth in the E15 (15‑percent ethanol blend) market, and the small size of the E85 (85‑percent ethanol blend) market. Nonetheless, a strong presence for ethanol in the sector continues, with about 35 percent of total corn use expected to go to ethanol production during the projection period.
* Lower corn prices and increasing meat production underlie projected gains in feed and residual corn use. Also supporting gains in feed use of corn is a slowdown in the growth of production of distillers grains, a co-product of dry mill ethanol production, as the corn-based ethanol expansion moderates.
* Food and industrial use of corn (other than ethanol production) is projected to rise over the next decade. Use of corn for high fructose corn syrup (HFCS) is supported by growing HFCS exports to Mexico as domestic use slows. Slower increases for glucose and dextrose use reflect consumer dietary concerns and changes in tastes and preferences. Other food uses of corn are also projected to rise more slowly than population increases. Starch use of corn, such as in the production of drywall and paper, responds to economic growth and industrial demand, rising faster than population throughout the projection period.
* U.S. corn exports increase during the projection period, in response to strong global demand for feed grains to support growth in meat production. Export gains are particularly strong to China. The United States resumes being the world’s largest corn exporter, following the sharp reduction in U.S. corn exports after the 2012 drought, and accounts for an average of about 40 percent of global corn trade over the projection period. Strong trade competition from Argentina, Brazil, and the FSU as well as the use of corn for ethanol production in the United States combine to hold the U.S. trade share well below its 1970‑2000 average of 71 percent.



Following a small projected increase in 2014, wheat plantings are projected to decline over the following years, continuing a long-term general downward trend since the early 1980s. Relatively weak overall demand growth for wheat is projected.

* Domestic demand for wheat reflects a relatively mature market. Food use of wheat is projected to show moderate gains, generally in line with U.S. population increases.

* Feed use of wheat, a lower value market for the crop, declines in the early years of the projections from the high volume of the past 2 years as corn supplies recover from drought-reduced 2012 levels. Wheat feed use remains steady through the rest of the projection period as prices relative to corn allow a moderate level of wheat in feed rations.
* U.S. imports of wheat are projected to rise through the projection period due to increases from Canada. The end of the Canadian Wheat Board’s monopoly for wheat and barley as well as transportation and other market factors are expected to result in more wheat shipped to the United States.
* U.S. wheat exports initially fall to 1,025 million bushels in the initial years of the projections before growing moderately for the remainder of the decade. U.S. wheat trade faces competition from countries of the FSU, whosewheat exports rise from 23 percent to 29 percent of global trade over the next decade. EU wheat exports grow from a global market share of 16 percent to 17 percent by 2023/24. For the same time period, the U.S. market share declines from 19 percent to 17 percent.



U.S. soybean plantings remain near 78 million acres over most of the projection period. Growth in both domestic use and export demand lead to increases in prices, allowing soybeans to compete with corn and other crops for land use.

* Lower U.S. livestock production since the 2008 peak and increased availability of distillers grains and canola meal have lowered demand for soybean meal as a livestock feed in recent years, thereby generally reducing domestic soybean crush. As increases in meat production resume and growth in distillers grains and canola meal slow, domestic demand for soybean meal and thus soybean crush is projected to grow in the coming decade.
* Strong global demand for soybeans, particularly in China, boosts soybean trade over the projection period—China accounts for all of the increase in world soybean imports. Even though U.S. soybean exports are projected to rise, competition from South America leads to a reduction in the U.S. share of global soybean trade from 38 percent in 2013/14 to about 32 percent in 2023/24. Brazil continues to be the largest exporter of soybeans.
* U.S. exports of soybean oil and soybean meal also face strong competition from South America. Argentina, in particular, is a competitive exporter of soybean products because its graduated export taxes favor exports of soybean products over soybeans. Increasing biodiesel production in Argentina, however, limits the country’s soybean oil export growth, allowing the U.S. global export share to increase. However, Argentina is projected to account for about half of global soybean meal exports over the next decade. Brazil remains the second largest soybean meal exporter.
* Soybean oil used to produce methyl esters (biodiesel) in the United States is projected at 5.0 billion pounds over the next decade, supporting the production of almost 700 million gallons of biodiesel annually. This use reflects the mandate of 1.28 billion gallons of biomass-based diesel use starting in 2013 and assumed to continue through the projections. Some additional demand for biodiesel to meet a portion of the Renewable Fuel Standard’s advanced biofuel mandate is also assumed. Soybean oil is assumed to account for about half of total biodiesel production. Other feedstocks used to produce biodiesel include corn oil extracted from distillers grains, other first-use vegetable oils, animal fats, and recycled vegetable oils.



Market responses to high crop prices in recent years, both in the United States and in other countries, are projected to lower prices over the next couple of years. Nonetheless, U.S. prices for corn, wheat, and soybeans are projected to remain historically high, above pre-2007 levels. The continuing influence of several long-term factors—including global growth in population and per capita income, a low-valued U.S. dollar, increasing costs for crude petroleum, and rising biofuel production—underlies these price projections.

* Corn prices are projected to decline through 2015/16, but then begin increasing in 2016/17 as ending stocks tighten due to growth in feed use, exports, and demand for corn by ethanol producers.
* Soybean prices initially fall from recent highs but then rise moderately after 2015/16, reflecting strengthening demand for soybeans and soybean products.
* Wheat prices decline through 2016/17, reflecting rising wheat stocks and falling corn prices. Wheat prices increase through the remainder of the projection period with export growth, moderate gains in food use, and declining stocks. Rising imports and increasing global competition limit price increases for wheat.



U.S. acreage planted to long-grain rice is projected to rise moderately through the projection period, but plantings for medium- and short-grain rice hold flat.

* Domestic use of rice is projected to grow slightly faster than population growth. Moderate expansion in U.S. food use of rice is projected to continue over the next decade. U.S. rice imports are projected to expand over the next decade, but at a slower rate than in the past. Asian aromatic varieties, classified as long-grain rice, are expected to continue to account for most of U.S. imports.
* U.S. rice exports are projected to rebound from a low level in 2013/14 and then increase over the next decade. Continued growth of U.S. rough-rice exports to Latin America (nearly all long-grain rice) is projected to account for most of the expansion of U.S. rice exports. Overall, the U.S. market share of global rice trade is projected at about 8 percent in the next decade.

* After near-term market adjustments in 2014, prices for rice are projected to rise moderately through most of the projection period.



Upland cotton plantings are projected to increase almost a million acres in 2014 to 11 million as prices for competing crops fall more than do cotton prices. Acreage falls to 10 million in 2015 and remains near that level for the remainder of the projection period, as world and U.S. cotton prices are projected below the recent 5-year average. U.S. mill use of upland cotton is projected to rise moderately while cotton exports increase in the second half of the projections.

* A decline in U.S. mill use of cotton since the late 1990s reflected a gradual, long-term movement of spinning capacity to developing countries. Continued increases in U.S. imports of apparel from Asia will reduce domestic apparel production and lower the apparel industry’s demand for fabric and yarn produced in the United States. However, U.S. mill use is projected to grow somewhat over the next decade in response to rising demand for U.S. textile product exports, mainly to other countries in the Western Hemisphere. Nonetheless, even with this growth, domestic mill use is projected to represent about 27 percent of total use at the end of the projection period, down from more than 60 percent in the late 1990s.
* U.S. upland cotton exports are projected to rise from 2013/14’s low level to about 10.5 million bales for several years, before showing moderate additional growth over the remainder of the projections. The United States remains the world’s largest exporter of cotton, although the U.S. share of global cotton trade falls below 23 percent by the end of the projection period, compared to an average of more than 37 percent in 2000-2010. China is the world’s largest importer of cotton.



The two primary influences on the U.S. sugar market in the projections are continued low world sugar prices and large supplies of sugar in Mexico available for export to the United States.

* World sugar prices are projected to average 17.74 cents per pound between 2014/15 and 2019/20, levels that would not provide support for U.S. sugar sector. Beyond then, however, world sugar prices are projected to be higher.
* Mexico’s harvested area for sugarcane grew in recent years in response to high returns and is expected to top out at 844,000 hectares in 2014/15. After that, declines in Mexican sugarcane returns lead to lower area. Nonetheless, sugar production averages 6.317 million tons, raw value (MTRV) in 2014/15‑2023/24, about 17 percent higher than the average for 2007/08-2011/12.
* Mexico’s consumption of high fructose corn syrup (HFCS) is expected to resume growth after a lull in 2012/13 due to unusually-high corn prices. By 2023/24, annual HFCS consumption is projected at 2.735 million metric tons, dry weight—about 85 percent more than forecasted for 2013/14—and will comprise about 41 percent of combined sugar and HFCS consumption in Mexico.
* The combination of Mexico’s improved sugar production prospects and declining sugar consumption makes more Mexican sugar available for export. Annual exports to the U.S. market are expected to average 1.768 million MTRV, or 1.949 million short tons, raw value (STRV). This projection contrasts with 1.364 million STRV, the estimated average for 2007/08-2012/13, the first 6 years since the full implementation of the sweetener provisions of the North American Free Trade Agreement (NAFTA). Over the long term, imports from Mexico are expected to constitute between 10.6 and 16.9 percent of annual U.S. sugar supply, or on average 12.8 percent. The corresponding average for 2007/08-2012/13 is estimated at 10.3 percent.
* Moderate growth is projected for U.S. sugar production over the next decade. There is no growth and not much year-to-year variation in either U.S. sugarbeet harvest area (1.182 million acres) or U.S. sugarcane harvest area (835,000 acres). Almost all production growth is attributable to steady gains in sugar crop yields and improved sucrose recovery. Beet sugar production grows 12.2 percent from 2014/15 through 2023/24 to 5.647 million STRV, while cane sugar production grows only 3.5 percent over the same period to 3.882 million STRV.
* U.S. sugar consumption is expected to increase about 6.5 percent from 2014/15 (11.806 million STRV) to 2023/24 (12.574 million STRV). All growth is attributable to the expected increase in population over the same time period.
* Sugar purchases by USDA’s Commodity Credit Corporation (CCC) for re-sale to ethanol producers are projected for 2014/15, 2017/18, and 2018/19 for a total of 568,000 STRV.



Farm sales of horticultural crops are projected to grow by 1.2 percent annually over the next decade, reaching $74 billion in calendar year 2023, up from $66 billion in 2013.

* The value of farm production of fruit and tree nuts is projected to grow at an annual rate of 2.2 percent over the next decade, largely due to sales growth of tree nuts and noncitrus fruits. Fruit and tree nuts are projected to rank first among horticultural crops in terms of farm sales value with a share of 47 percent. Farm sales value of vegetables and pulses is projected to grow 0.2 percent per year, while farm sales of greenhouse and nursery crops are projected to increase at an annual rate of 0.5 percent.
* The volume of U.S. farm production of horticultural crops is projected to rise by 0.4 percent annually. Vegetables lead this growth at an annual rate of 0.5 percent, reaching 132 billion pounds in 2023 as processing production averages 1.5-percent growth. Fruit and nut production expands by 0.2 percent per year to 71 billion pounds in 2023 as noncitrus production growth more than offsets citrus production declines.
* Producer prices for vegetables initially decline from high 2013 levels and then are projected to rise less than the inflation rate, at only 0.7 percent per year, due to strong processing vegetable production. Producer prices for fresh fruits rise by 1.9 percent per year due to slower production growth than for vegetables and due to higher citrus prices as citrus production declines.
* U.S. per capita use of fruits and tree nuts increases from 295 pounds in 2013 to 305 pounds by 2023, an annual average growth rate of 0.3 percent. Per capita use of vegetables initially drops in 2013 due to smaller potato and pulse crops, and then levels off to an average 386 pounds. The total supply of fruits, nuts, and vegetables over the next decade, both domestic and imported, is projected to grow at an average rate of 1.2 percent per year.



The U.S. trade deficit in horticultural crops and products is projected to expand from $12.8 billion in fiscal year (FY) 2013 (October 2012 to September 2013) to $23.1 billion in FY 2023.

* Imports increasingly supplement domestic production of horticultural crops and products. By FY 2023, imports are projected to supply 50 percent of domestic fruit and nut use and 25 percent of vegetable use, in terms of farm weight. In 2013, these shares were 42 percent and 19 percent, respectively.
* The export market becomes more important for U.S. horticultural producers. In FY 2023, exports are projected to be the destination for 27 percent of U.S. fruit and nut production, up from 23 percent in 2013, while 20 percent of vegetable production will be sold in foreign markets, up from 16.7 percent in 2013.
* The value of U.S. horticultural imports is projected to increase by 4.9 percent annually over the next decade, compared with 7.9 percent on average during the past 13 years, reaching $71.1 billion in FY 2023. Fruit and nut imports account for $24.5 billion, while vegetable imports account for $17.8 billion.
* Exports of U.S. horticultural products are projected to reach $48.1 billion in FY 2023, up an average of 4.4 percent annually from 2013. Of this amount, fruit and nuts contribute $23 billion, and vegetables contribute $9.5 billion. Exports of other horticultural products total $15.6 billion by 2023, up from $9.7 billion in 2013.



























**U.S. Livestock**

The livestock sector is slowly recovering from high feed prices and drought in the Southern Plains of the United States over the last few years. Improving returns have provided incentives for increased production in the livestock sector. As a result, total U.S. red meat and poultry production is projected to rise over the projection period, as is per capita consumption of red meat and poultry.



* Despite improved returns for cow-calf operators in 2013, low cow inventories will limit recovery from recent drought conditions for several years. Lower beef cow inventories and expected heifer retention are expected to lead to declines in beef production through 2016. Production then rises in the remainder of the projection period as returns support continued herd expansion. Beef cow numbers rise from about 29 million head at the start of 2014 to over 33 million in 2022-23. The total cattle inventory drops below 88 million head at the start of 2014 before expanding to about 96 million in 2023. Rising slaughter weights also contribute to the longer term increases in beef production.
* As feed costs decline, pork producers are expected to increase farrowings, with pork production projected to rise over the next decade. Production increases also will be supported by productivity gains in the breeding herd and increased slaughter weights.
* Poultry production rises through the projection period, but at lower rates than in the 1980s and 1990s. Production of both broiler and turkey meats are projected to expand. Production growth is expected to come from both higher numbers of birds and higher average weights at slaughter. Increased demand is expected to strengthen broiler prices, although poultry will face competition from increasing red meat production beyond 2016.



Since 2007, lower overall meat production and increased net exports have resulted in higher consumer prices and lower per capita consumption in the United States. Annual average consumption of red meats and poultry has fallen from over 221 pounds per capita in 2004-07 and is projected to be less than 203 pounds in 2014. As production increases, per capita consumption of red meats and poultry is projected to rise to about 215 pounds by 2023.

1. Per capita beef consumption declines through 2016, before rising moderately over the remainder of the projection period. The near-term decline reflects reductions in beef production over the next several years. As beef production increases in subsequent years, per capita consumption grows.

1. Per capita pork consumption is projected to rise through 2017 as gains in production are large enough to accommodate both increased domestic use as well as rising U.S. pork exports. Per capita consumption tapers off slightly from 2018 onward as pork production gains slow.

1. Poultry production increases throughout the projection period. Per capita consumption rises over the next 10 years and, in contrast to red meats, surpasses levels of the past decade.



During the initial years of the projection period, prices for hogs and broilers decline as production levels for those meats rise. In contrast, beef cattle prices continue to rise as projected beef production initially declines. Increases in beef cattle, hog, and broiler prices are generally less than the general inflation rate in the later years of the projections.

* Beef cattle prices are projected to fall in 2017 and then to rise more moderately than in the early years of the projections as beef production increases.

* Nominal prices for hogs and broilers have small increases over the last half the projection period as production gains for each slow.



The projected rise in U.S. red meat and poultry exports over the next decade reflects steady global economic growth, a continued weak U.S. dollar, and foreign demand for selected meat cuts and parts from the large U.S. market.

* Most U.S. beef exports are high-quality, grain-fed beef that typically go to Mexico, Canada, and Pacific Rim nations. A continuing recovery is assumed for U.S. beef exports to Japan and South Korea, export markets that were closed to the United States for several years following the first U.S. case of bovine spongiform encephalopathy (BSE) in December 2003.
* U.S. imports of processing beef increase in the projection period as herd rebuilding and relatively low beef cow slaughter in the United States raise import demand. This import demand will likely be met by increased purchases from Australia, New Zealand, and NAFTA countries.
* U.S pork exports are projected to rise over the next decade. Production efficiency in the U.S. pork sector enhances the sector’s international competitiveness. Pacific Rim nations and Mexico are key markets for long-term growth of U.S. pork exports. Russia is assumed to continue using investment and trade policies to facilitate expansion of its domestic pork industry and limit reliance on imports, affecting pork exports from the United States and Brazil the most.
* U.S. broiler exports rise though the projection period. Major U.S. export markets include China and Mexico, but U.S. broiler exports also have been increasing to a number of other countries. Longer term gains in these markets reflect their economic growth and increasing consumer demand. International demand for broilers also remains strong because of its lower cost relative to beef and pork. U.S. poultry producers continue to face strong competition from other major exporters, particularly Brazil. Over the projection period, most exports from Thailand and China will continue to be fully cooked products, although Thai export gains also reflect the reopening of trade in uncooked chicken products from that country to the EU. As noted for pork, Russia is assumed to also support its domestic poultry industry with investment and trade policies.



Milk production is projected to continue rising over the projection period. The long-term upward trend in output per cow continues, while milk cow numbers rise through 2017 and then fall.

* Milk cow numbers are projected to rise through 2017 as high milk prices and lower feed costs provide favorable returns to producers. In later years, feed costs begin to rise and milk cow numbers show year-to-year declines in 2018-23.
* U.S. milk output per cow is projected to increase through the projection period, reflecting continued technological and genetic developments.
* Domestic commercial use of dairy products increases faster than the growth in U.S. population over the next decade. The demand for cheese is expected to rise due to greater consumption of prepared foods and increased away‑from-home eating. The slow decline in per capita consumption of fluid milk products is expected to continue.
* The United States is expected to be well positioned to expand exports of dairy products. Commercial U.S. dairy exports are projected to increase steadily over the next decade, reaching record levels on both a fat and a skim-solids basis.  Production increases in other major dairy exporting countries are expected to lag growth in global import demand.
* After declining in 2014-16, nominal farm-level milk prices are projected to gradually rise over the rest of the projection period, with increases less than the overall rate of inflation. Real price decreases largely reflect efficiency gains in production, which result from technological improvements and consolidation in the sector. Even so, nominal milk prices exceed $20 per hundredweight in the last several years of the projections.















**U.S. Farm Income and Agricultural Trade Value**

High commodity prices led to record values of U.S. agricultural exports and U.S. net farm income in 2013. Projected reductions in prices for most major crops over the next several years result in declines in export values and farm cash receipts through 2016. Export values and cash receipts then grow over the rest of the projection period as steady domestic and international economic growth, a weak U.S. dollar, and continuing production of biofuels support longer term demand for U.S. agricultural products. Although farm production expenses also increase beyond 2015, net farm income remains historically high.



Net farm income reached a record level in 2013, largely reflecting the runup in prices for many agricultural commodities. While net farm income is projected to stay below the 2013 record, it remains well above the average of the previous decade (2001 to 2010).

* Strengthening global food demand, a weak dollar, and continued biofuel demand are major factors underlying projections of rising cash receipts after 2016.
* Total direct Government payments are projected to be significantly higher in 2015-17 due to increased payments under the Average Crop Revenue Election (ACRE) program, part of the 2008 Farm Act that is assumed to remain in place for these projections.
* Farm production expenses remain relatively flat in the near term as declining feed expenses offset gains in most other expenses. Expenses rise after 2015 once effects of lower grain and oilseed prices on feed costs are completed.



With lower crop prices projected over the next several years, direct Government payments to farmers rise sharply in 2015 and remain high in 2016 and 2017, mostly due to large payments under the ACRE program of the 2008 Farm Act (assumed to continue in the projection period). Direct Government payments average about $9.6 billion over the remainder of the projection period, compared to an average of $15 billion in 2001-10. The Conservation Reserve Program (CRP) and fixed direct payments are the largest Government payments to the agricultural sector beyond 2017.

* High crop prices in recent years made arable land more valuable, so rental rates for land in the CRP rose. However, high crop prices also led to reduced CRP enrollment, so overall CRP payments have been fairly flat. Acreage enrolled in the CRP is assumed to build back toward the legislative maximum of 32 million acres under the 2008 Farm Act. CRP payments are projected to rise from about $1.8 billion in 2014 to $2.75 billion in 2023.
* Fixed direct payments are projected to range from $4 billion to $5 billion annually. Within this range, these payments are lower in years when ACRE payments are anticipated to be high; farmers forgo part of their direct payments when they enroll in the ACRE program. In the later years of the projections, fixed direct payments average $4.8 billion as enrollment in the ACRE program falls.
* As crop prices decline from recent high levels, incentives to enroll in the ACRE program rise. Payments under the program associated with 2014-16 crops (paid in 2015-17) are projected to be large, over $9 billion annually in 2015-16 and more than $4 billion in 2017. Once most of the benefits of the ACRE program due to the decline in prices are completed, enrollment returns to low levels, with expected ACRE payments averaging less than $20 million annually over 2020-23.
* Government payments average less than 3 percent of gross cash income during the projection period (over 4 percent in the years of high-projected ACRE payments), compared to about 5.5 percent in 1981-2010. As a result, the sector relies more on the market for its income.



Total farm production expenses are projected to rise only moderately in 2014 and then fall in 2015 as declining crop prices lower feed costs and lower planted acreage and lower near-term crude oil prices reduce manufactured input expenses. Beyond 2015, production expenses rise less rapidly than the overall rate of inflation through 2023. While interest expenses and manufactured input costs rise faster than the general inflation rate during these years, expenses for farm-origin inputs are up less than the general inflation rate. Aggregate expenses for other nonfarm-origin inputs increase at rates near the overall level of inflation.

* Interest costs rise faster than the general inflation rate over the projection period, reflecting rising farm debt levels as well as increasing interest rates due largely to tightening monetary policy.

* Production expenses for fuel and oil also rise faster than the general inflation rate after 2016, largely reflecting increases in crude oil prices. Reductions in planted acreage in 2014-17 combine with anticipated higher domestic nitrogen fertilizer production capacity and relatively low natural gas prices to decrease fertilizer expenses in this period, but these costs rise faster than inflation later in the projection period.



The value of U.S. agricultural exports declines for 2 years at the beginning of the projections as prices for major field crops fall from current highs. Agricultural exports then rise through the remainder of the projections because of sustained global economic growth, strengthening agricultural demand, and a weak U.S. dollar. Domestic economic growth boosts demand for U.S. agricultural imports.

* High commodity prices have pushed the value of U.S. agricultural exports to high levels the past several years, including a record $141 billion in 2013. With prices for many crops projected to fall in the initial years of the projections, export values decline through 2016. Agricultural export values are then projected to grow over the rest of the decade and surpass the 2013 record. World economic growth, particularly sustained relatively high growth in developing countries, provides a foundation for increases in global food demand, trade, and U.S. agricultural exports. Continued global biofuel demand also contributes to rising commodity prices and gains in export values beyond 2016. Furthermore, a continued weak U.S. dollar remains an important factor underlying the projected longer term gains in U.S. exports.
* Exports of high-value products (HVP) are projected to grow to nearly three-fourths of total U.S. agricultural exports by 2023. Much of the growth in HVP exports is for animal products and horticultural products.
* U.S. agricultural import values rise throughout the projection period to almost $150 billion by 2023, up from $109.5 in 2014. These increases are boosted by gains in U.S. consumer incomes and demand for a large variety of foods. Strong growth in horticultural imports is assumed to continue, contributing more than half of the overall increase in agricultural imports in the projection period.
* With the value of U.S. exports initially falling, the agricultural trade balance is expected to decline to under $19 billion in 2016, down from 2011’s record of nearly $43 billion. The surplus then rises over the rest of the projection period, reaching $23 billion in 2023.





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