



United States  
Department of  
Agriculture

# USDA Agricultural Projections to 2022

Office of the  
Chief Economist

World Agricultural  
Outlook Board

Long-term  
Projections Report  
OCE-2013-1

February 2013

## Interagency Agricultural Projections Committee

World Agricultural Outlook Board, Chair

Economic Research Service

Farm Service Agency

Foreign Agricultural Service

Agricultural Marketing Service

Office of the Chief Economist

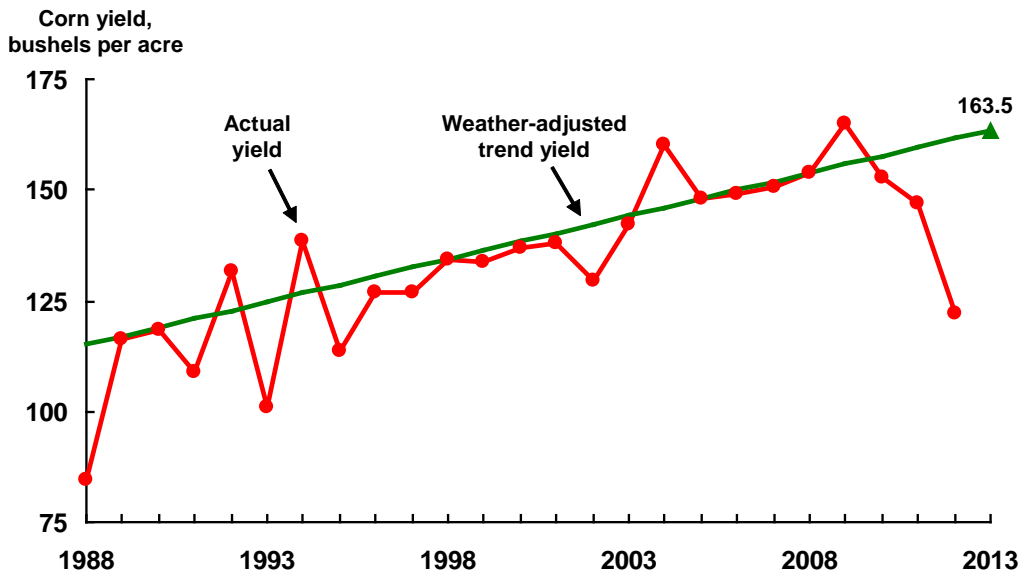
Office of Budget and Program Analysis

Risk Management Agency

Natural Resources Conservation Service

National Institute of Food and Agriculture

**Projected long-term weather-adjusted U.S. corn yield trend  
starts at 163.5 bushels per acre in 2013**



*USDA Long-term Projections*



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## Long-term Projections on the Internet

***USDA Agricultural Projections to 2022*** is available in both pdf and Microsoft Word formats at:

[www.usda.gov/oce/commodity/projections/](http://www.usda.gov/oce/commodity/projections/)

and also at:

[www.ers.usda.gov/publications/oce-usda-agricultural-projections/oce131.aspx](http://www.ers.usda.gov/publications/oce-usda-agricultural-projections/oce131.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/usda-baseline-process.aspx](http://www.ers.usda.gov/topics/farm-economy/agricultural-baseline-projections/usda-baseline-process.aspx)

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**USDA Agricultural Projections to 2022.** 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-2013-1, 105 pp.

### **Abstract**

This report provides projections for the agricultural sector to 2022. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income and food prices. 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. The projections in this report were prepared during October through December 2012, reflecting a composite of model results and judgment-based analyses.

Prospects for the agricultural sector in the near term reflect market adjustments to high prices for many farm commodities, in part due to effects of weather such as the 2012 U.S. drought. In response, global agricultural production of most major crops is projected to increase in 2013. Total U.S. red meat and poultry production is projected to fall in 2013 in response to high feed costs, reduced producer returns, and drought in the Southern Plains of the United States over the past two years. Meat production then increases in response to improved returns. Longrun developments for global agriculture reflect steady world economic growth and continued demand for biofuels, which combine to support increases in consumption, trade, and prices. Thus, following reductions from projected record levels in 2013, farm cash receipts and the value of U.S. agricultural exports grow beyond 2015. U.S. retail food price increases average less than the overall rate of inflation in 2014-22, largely reflecting higher livestock production that limits consumer meat price increases.

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

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## **Background Regarding USDA Long-term Projections**

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 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 current 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 2012 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2012.

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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### **Acknowledgments**

The report coordinators, on behalf of the Interagency Agricultural Projections Committee, thank the many analysts in different agencies of USDA for their contributions to the long-term projections analysis and to the preparation and review of this report.

# USDA Agricultural Projections to 2022

## Interagency Agricultural Projections Committee

### Introduction and Projections Overview

This report provides longrun projections for the agricultural sector to 2022. 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 and food prices.

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, in general, trend crop production yields is 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. 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 2012 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 2012 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2012.

Prospects for the agricultural sector in the near term reflect market adjustments to high prices for many farm commodities in recent years, in part due to weather such as the 2012 U.S. drought. In response, global agricultural production of most major crops will increase in 2013. Total U.S. red meat and poultry production is projected to fall in 2013 in response to high feed costs, reduced producer returns, and drought in the Southern Plains of the United States over the past two years. Meat production then increases in response to improved returns.

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 projected record levels in 2013, farm cash receipts and the value of U.S. agricultural exports grow beyond 2015. Although farm production expenses also increase beyond 2015, net farm income remains historically high. U.S. retail food prices are projected to rise at a rate that exceeds the general inflation rate in 2013, partly due to effects of the 2012 U.S. drought on agricultural commodity prices. Food prices increases then are projected to average less than the overall rate of inflation in 2014-22, as higher livestock production moderates future increases in consumer meat prices.

## Key Assumptions and Implications

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

#### *Economic Growth*

- Global economic growth is assumed in the projections at a 3.3-percent average annual rate over the next decade. However, the assumptions reflect a dichotomy between relatively weak longrun economic growth in developed countries and stronger growth 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 the ongoing financial instability and adjustments in the Eurozone.
- The U.S. economy is projected to grow at an average rate of about 2.6 percent over the next decade. With slower growth in the United States than in the world economy, the U.S. share of global gross domestic product (GDP) falls from about 26 percent currently to 24 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 remain above those in the rest of the world. As a consequence, the share of world population accounted for by developing countries increases to 82 percent by 2022, up from 80 percent in 2010.
- 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.



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

- The U.S. dollar is projected to continue to depreciate through the projection period. The dollar depreciation is part of a global rebalancing of trade and financial markets in the aftermath of the global financial crisis and recession.
- The weaker dollar will remain a facilitating factor in projected 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 2013, crude oil prices are assumed to increase over the next decade as global economic activity improves. Increases are somewhat faster than the general inflation rate in the latter part of the projections. By the end of the projection period, the nominal refiner acquisition cost for crude oil imports is projected to be over \$120 per barrel, compared with \$93.20 projected for 2013.
- 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. That assumed extension has a broader coverage of provisions than was subsequently included in the American Taxpayer Relief Act of 2012, which was enacted in January 2013 after these projections were completed.
- Acreage enrolled in the Conservation Reserve Program (CRP) is projected to decline to less than 28 million acres through 2014 before rising back to close to its legislated maximum of 32 million acres throughout the remainder of the projections.
- Direct Government payments to farmers are projected to be lower than during 2000-10. 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 throughout the projection period, although payments under the Average Crop Revenue Election program jump to \$1.8 billion in 2015 following the decline in commodity prices from recent highs.
- Large crop insurance indemnities are paid to the sector in 2012 and 2013, mostly related to the effects of the 2012 U.S. drought.

### *U.S. Biofuels*

- The 45-cents-per-gallon tax credit that had been available to blenders of ethanol and the 54-cents-per-gallon tariff on imported ethanol used as fuel expired at the end of 2011. The projections assume that these provisions are not reinstated.

- The \$1-per-gallon tax credit for blending biodiesel, which had expired at the end of 2011, was assumed to be unavailable in the projections—its retroactive reinstatement and extension through 2013 occurred in January 2013, after the projections were completed.
- 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. However, ethanol production gains are smaller than have occurred in recent years. The projected slower expansion reflects declining overall gasoline consumption in the United States (which is mostly a 10-percent ethanol blend (E10) market), 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.
- The biomass-based diesel use mandate, as administered by the U.S. Environmental Protection Agency, has risen to 1.28 billion gallons for 2013 and is assumed to remain at that level for subsequent years. Some biodiesel production above this mandate is assumed to meet a portion of the advanced biofuel mandate of the Renewable Fuel Standard of the Energy Independence and Security Act of 2007. Soybean oil, other first-use vegetable oils, animal fats, and recycled vegetable oil are used as feedstocks to produce biodiesel in the projections.

#### ***Livestock and Meat Trade***

- World meat demand and imports continue strong growth, especially in many middle- and low-income countries. Projected growth for global meat consumption averages 1.8 percent annually over the next decade, with larger gains for poultry than for pork or beef. Africa and the Middle East account for more than 40 percent of the global increase in meat imports.
- 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 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 and domestic policies in place in November 2012.
- 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.
- Mandatory marketing through the Canadian Wheat Board of wheat and barley produced in western Canada ended in August 2012 and is assumed to not be reinstated.

#### ***International Biofuels***

- Continued expansion of global biofuel production is projected, largely due to biofuel policies. As a result, demand for biofuel feedstocks continues to grow, as well. The largest producers—the United States, Brazil, the EU, and Argentina—are projected to expand output, although at a slower pace than in recent years, mainly due to a projected slowdown

of U.S. ethanol production. Increases in biofuel output are also expected for many smaller producing countries, generally for their domestic use.

- The EU remains the world's largest importer of biofuels throughout the projection period. To boost biodiesel production, the EU increases oilseed production and imports of oilseeds and vegetable oil feedstocks, mainly from Ukraine, Russia, and Indonesia. About 80 percent of the expansion in EU ethanol production comes from increased use of wheat and corn feedstocks. The EU also increases imports of biofuels, particularly biodiesel from Argentina and ethanol from Brazil.
- Argentina and Brazil remain the world's dominant biofuels exporters—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.

### *Prices*

- Prices for many major crops are projected to decline in the near term as global production responds to recent high prices. Nonetheless, after these initial price declines, long-term growth in global demand for agricultural products, a depreciating 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.
- Increasing prices in the livestock sector initially reflect reduced total meat and poultry production. As feed costs fall from recent highs and meat demand strengthens, improved livestock-sector net returns provide economic incentives for expansion. Additionally, improved forage supplies encourage cattle herd expansion. Thus, after increasing through 2015, beef cattle prices decline for several years as production expands starting in 2016. Hog prices rise in the near term but then decline for several years as red meat production rises. Over the latter half of the projection period, livestock prices generally rise, reflecting a moderate pace of production expansion combined with increasing domestic use and export demand. After declining in 2012-15, nominal farm-level milk prices are projected to rise gradually over the rest of the projection period, with increases less than the overall rate of inflation largely due to efficiency gains in production.
- Farm income is projected to reach a record high nominal level in 2013 reflecting high commodity prices as well as large crop insurance indemnities paid to the sector. Although projected to decline from this record as commodity prices retreat, strengthening global food demand, a weaker dollar, and sustained biofuel demand keep net farm income historically high over the projection period.
- U.S. retail food prices are projected to rise faster than the overall rate of inflation in 2013 in part due to effects of the 2012 U.S. drought on farm commodity prices. For the remainder of the projection period, consumer food price increases average somewhat less than the general inflation rate, largely reflecting production gains in the livestock sector which limit consumer meat price increases. As the domestic economy continues to rebound and consumer demand strengthens, food expenditures for meals away from home rise faster than expenditures for food at home and account for a growing share of total food spending.

## Macroeconomic Assumptions

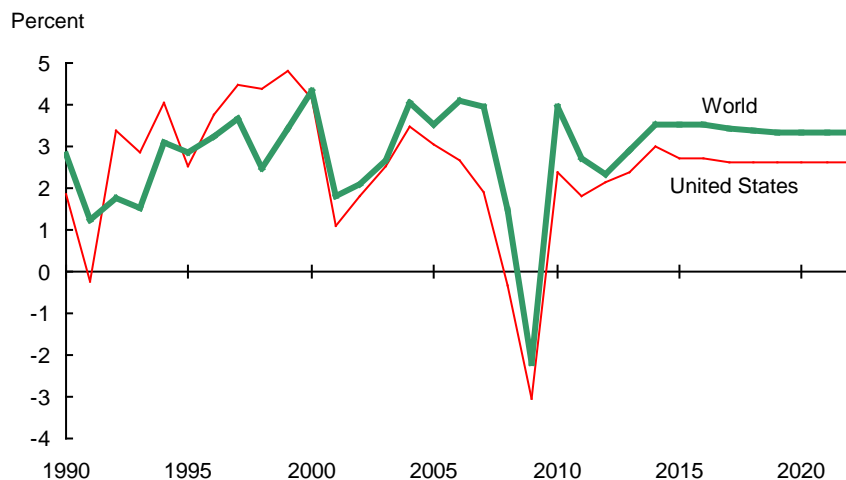
The macroeconomic assumptions underlying USDA's long-term projections reflect a dichotomy between relatively weak long-run sustainable growth in developed countries (especially Japan and the European Union (EU)) and relatively strong, above-average growth in developing countries. As a result, developing countries become a larger part of the world economy. The macroeconomic assumptions were completed in October 2012.

World GDP growth is projected to increase at an average annual rate of around 3.3 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. 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 58 percent at the end of the projection period, down from 67 percent in 2010.

Following a contraction of about 3.1 percent in 2009, the U.S. economy grew 2.4 percent in 2010, 1.8 percent in 2011 and an estimated 2.1 percent in 2012. U.S. growth in 2013 is expected to be 2.4 percent. Stronger growth for the U.S. economy of between 2.7 percent to 3.0 percent is then assumed for 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 nearly 26 percent in 2012 to 24 percent by 2022.

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 historically low rates for the next several years. The projections assume that interest rates will then move back toward historical averages.

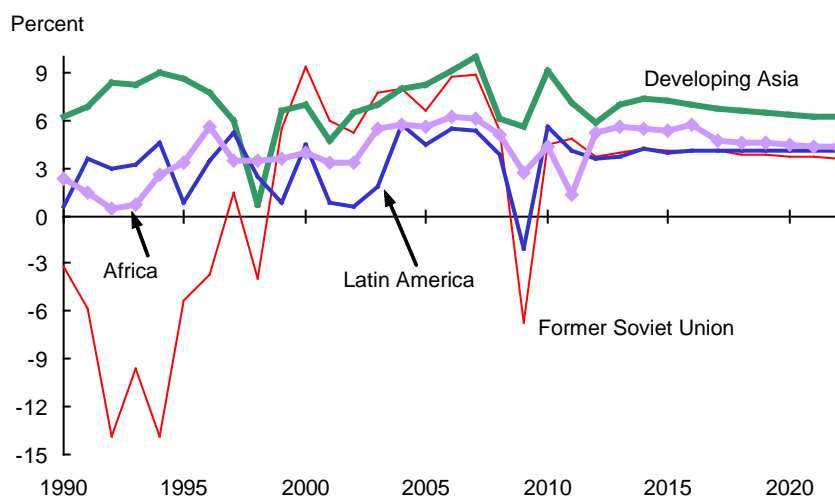
**U.S. and world gross domestic product (GDP) growth**



## **Agricultural Implications**

Global economic growth and population gains are expected to boost food and feed demand over the projection period. This is particularly true since world growth is concentrated in emerging markets and developing countries with high income-related propensities for consumption of food and agricultural products. 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. The depreciated dollar makes U.S. agricultural exports increasingly competitive in international markets. Among agricultural products, U.S. exports of bulk commodities and horticultural products tend to be the most sensitive to the U.S. dollar's value because they face more global trade competition.

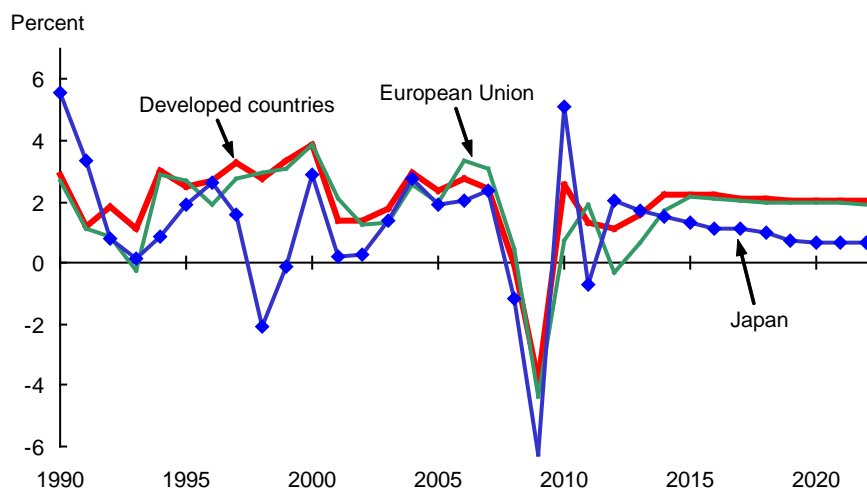
### GDP growth for developing economies and the former Soviet Union



Economic growth in developing countries is projected to average 5.6 percent annually during 2012-22. Average annual growth is projected to be 7.8 percent in China and 7.5 percent in India, while the rest of the developing economies average 4.2 percent annual growth over 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 consumers enter the middle class, they tend to diversify their diets, increasing their 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.
- 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. Projected annual growth for Southeast Asia averages 5.1 percent. Growth in developing countries of East Asia is projected to average 6.6 percent per year, largely due to China's strong economic gains. 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 where more of the growth is due to service sector expansion.
- China's economic growth has been consistently the strongest in Asia, averaging over 10 percent between 2001 and 2010. While some slowing is expected, China's economic growth is expected to average around 7.8 percent over the next decade. China is expected to account for about 13 percent of the world economy in 2022. India's projected average economic growth of 7.5 percent per year also puts it in the top tier of high-growth countries. Nonetheless, India remains a low-income country, with real (inflation-adjusted) 2005-based per capita income of \$1,171 in 2012, compared with \$3,353 in China. Continued strong income growth in India and China is expected to more than double both countries' real per capita income by the end of the projection period. This growth in per capita income is expected to move a significant number of people out of poverty and continue to boost food demand.
- Latin America sustains projected growth of 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 3.6 percent per year.
- The countries of the former Soviet Union (FSU) are projected to return to sustainable growth averaging 3.9 percent annually for the next decade. Continuing relatively high oil prices benefit Russia and other energy-rich FSU countries.

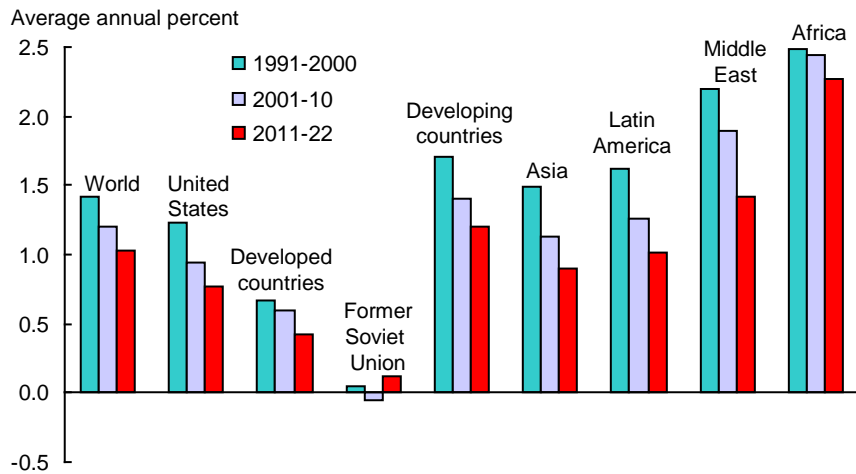
### GDP growth for developed countries, European Union, and Japan



Developed economies are projected to grow about 2 percent annually, on average, from 2012 to 2022. 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 1.7 percent per year in the next decade. Continuing difficulties in overcoming Eurozone financial difficulties remain a constraint on EU growth prospects. Additionally, structural rigidities, particularly inflexible labor laws and an expensive social security system, constrained 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 between 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. Japan continues to face constraints to economic growth from long-term structural rigidities, a political process that makes economic reform difficult, and an aging 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. The recent passage of a doubling of the consumption tax, which goes into effect in 2014-15, will 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 the importance of Japan in the global economy will diminish throughout the projection period.

### Population growth continues to slow



Source: U.S. Department of Commerce, U.S. Census Bureau.

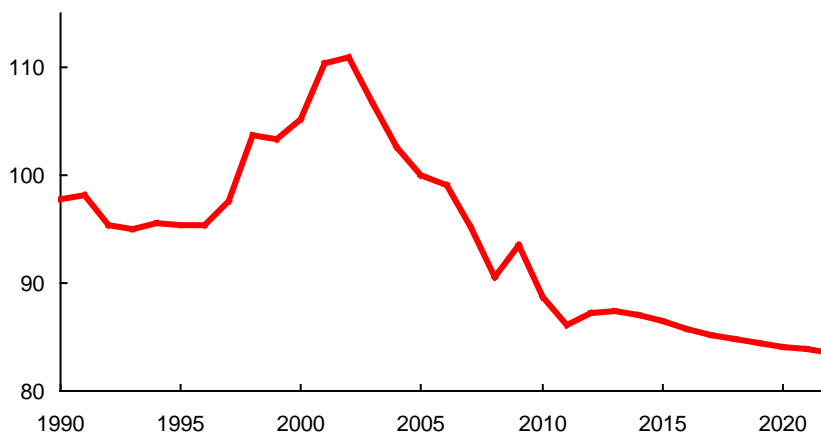
World population growth is projected to continue slowing over the next decade, rising about 1.0 percent per year for the projection period compared to an annual rate of 1.2 percent in 2001-10.

- Developed countries have very low projected rates of population growth, at 0.4 percent over 2012-22. 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 the 1980s and 1990s, 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 2022, compared to 74 percent in 1980.
- China and India together accounted for 37 percent of the world's population in 2012. China's population growth rate slows from 1.0 percent per year in 1991-2000 to less than 0.4 percent in 2012-22, 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 2012-22. 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.
- Countries with declining populations include Germany, Russia, Ukraine, Japan, and South Africa.



### U.S. agricultural trade-weighted dollar continues depreciation 1/

Index values, 2005=100

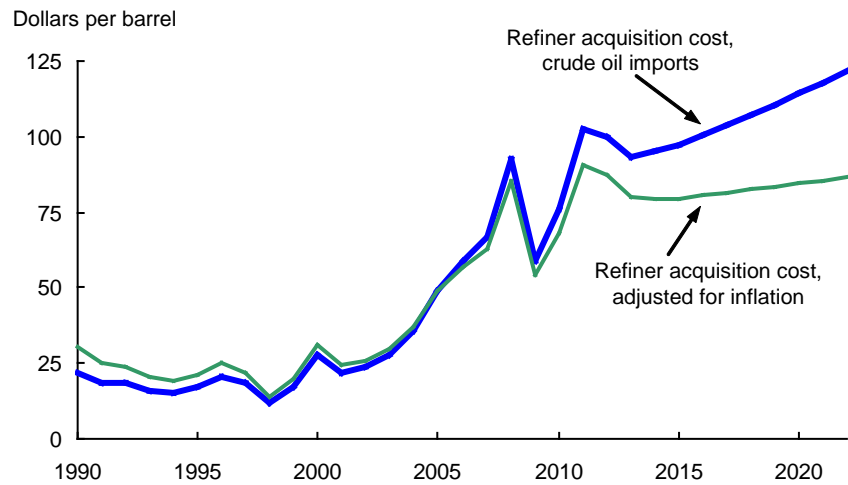


1/ Real U.S. agricultural trade-weighted dollar exchange rate, using U.S. agricultural export weights, based on 192 countries.

The U.S. dollar is projected to maintain its low value through the projection period. The dollar depreciation is part of a global rebalancing of trade and financial markets in the aftermath of the global financial crisis and recession.

- The depreciation of the U.S. dollar since 2002 is projected to continue over the next decade. However, strong GDP growth in the United States relative to the EU and Japan will tend to mitigate tendencies toward appreciation of the euro and yen relative to the U.S. dollar. The euro could weaken further if the Eurozone problems continue pushing the dollar toward appreciation. The yen is projected to depreciate moderately in real terms relative to the U.S. dollar over the projection period.
- 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 June 2012, there was a 9-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 real appreciation of the yuan also leads to some appreciation of other Asian currencies. These exchange-rate developments will strengthen U.S. agricultural exports to Asian countries.

### U.S. crude oil prices



Prices for crude oil are assumed to remain historically high over the next decade. Recently, oil prices have been constrained by high non-OPEC (Organization of the Petroleum Exporting Countries) oil production, relatively slow growth in demand due to conservation in developed countries, and slowing economic growth in developing economies. Crude oil prices are projected to rise somewhat faster than the general inflation rate in the latter part of the projections reflecting sustained global economic growth. By the end of the projection period, the nominal refiner acquisition cost for crude oil imports is projected to exceed \$120 per barrel.

Table 1. U.S. macroeconomic assumptions

Item	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Gross Domestic Product</b>												
Nominal, billion dollars	15,076	15,630	16,223	16,789	17,907	18,777	19,670	20,605	21,584	22,611	23,686	24,812
Real, billion 2005 chain-weighted dollars	13,299	13,584	13,910	14,325	14,712	15,109	15,502	15,905	16,318	16,743	17,178	17,625
percent change	1.8	2.1	2.4	3.0	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6
<b>Disposable personal income</b>												
Nominal, billion dollars	11,549	11,878	12,251	12,815	13,442	14,101	14,792	15,517	16,277	17,075	17,911	18,789
percent change	3.8	2.8	3.1	4.6	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Nominal per capita, dollars	37,012	37,791	38,699	40,184	41,840	43,552	45,324	47,167	49,086	51,082	53,160	55,322
percent change	3.0	2.1	2.4	3.8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Real, billion 2005 chain-weighted dollars	10,150	10,309	10,505	10,749	11,050	11,359	11,677	12,004	12,341	12,686	13,041	13,406
percent change	1.3	1.6	1.9	2.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Real per capita, 2005 chained dollars	32,527	32,799	33,183	33,707	34,393	35,084	35,780	36,490	37,214	37,953	38,706	39,474
percent change	0.6	0.8	1.2	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
<b>Consumer spending</b>												
Real, billion 2005 chain-weighted dollars	9,429	9,600	9,838	10,121	10,374	10,633	10,899	11,172	11,451	11,737	12,031	12,331
percent change	2.5	1.8	2.5	2.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>Inflation measures</b>												
GDP chained price index, 2005=100	113.4	115.1	116.6	119.2	121.7	124.3	126.9	129.6	132.3	135.0	137.9	140.8
percent change	2.1	1.5	1.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
CPI-U, 1982-84=100	224.9	227.6	231.9	236.9	242.6	248.4	254.3	260.4	266.7	273.1	279.6	286.4
percent change	3.2	1.2	1.9	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PPI, finished goods 1982=100	190.5	193.3	193.6	197.3	201.1	204.9	208.8	212.8	216.8	220.9	225.1	229.4
percent change	6.0	1.5	0.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
PPI, crude goods 1982=100	249.4	251.4	257.9	260.5	263.1	265.8	268.4	271.1	273.8	276.6	279.3	282.1
percent change	17.5	0.8	2.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Crude oil price, \$/barrel</b>												
EIA refiner acquisition cost, imports	102.7	100.1	93.2	95.0	97.0	100.2	103.6	107.0	110.6	114.2	118.0	122.0
percent change	35.3	-2.5	-6.9	1.9	2.1	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Real 2005 chain-weighted dollars	90.6	87.0	79.9	79.7	79.7	80.7	81.6	82.6	83.6	84.6	85.6	86.6
percent change	32.5	-3.9	-8.1	-0.3	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
<b>Labor compensation per hour nonfarm business, 2005=100</b>												
percent change	118.2	120.8	124.2	128.0	132.1	136.4	140.7	145.2	149.9	154.7	159.6	164.7
percent change	2.2	2.2	2.8	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
<b>Interest rates, percent</b>												
3-month Treasury bills	0.1	0.1	0.1	0.1	1.0	1.5	2.5	3.5	4.0	4.0	4.0	4.0
3-month AA nonfinancial commercial paper	0.2	0.2	0.2	0.2	2.0	2.5	3.5	4.3	4.8	4.8	4.8	4.8
Bank prime rate	3.3	3.3	3.3	3.4	5.2	5.8	6.4	7.2	7.5	7.5	7.5	7.5
10-year Treasury bonds	2.8	1.8	2.2	2.5	3.0	3.5	4.5	5.3	5.8	5.8	5.8	5.8
Moody's Aaa bond yield index	4.6	3.8	4.1	4.5	5.1	5.7	6.0	6.2	6.5	6.5	6.5	6.5
<b>Labor and population</b>												
Civilian unemployment rate, percent	8.9	8.2	8.0	7.7	7.4	7.0	6.8	6.6	6.6	6.6	6.6	6.6
Nonfarm payroll employees, millions	131.4	133.1	134.7	136.0	137.4	138.8	140.0	141.1	142.3	143.4	144.6	145.7
percent change	1.1	1.3	1.2	1.0	1.0	1.0	0.9	0.8	0.8	0.8	0.8	0.8
Total population, millions	312.0	314.3	316.6	318.9	321.3	323.8	326.4	329.0	331.6	334.3	336.9	339.6
percent change	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Domestic macroeconomic assumptions were completed in October 2012. CPI-U is the consumer price index for all urban consumers. PPI is the producer price index. EIA is the Energy Information Administration, U.S. Department of Energy.

Table 2. Global real GDP growth assumptions

Region/country	GDP, 2012	GDP share		Per capita							Average				
		Bil. 2005 dollars	Percent	2005 dollars	2011	2012	2013	2014	2015	2016	1991-2000	2001-2010	2012-2022		
				Percent change in real GDP											
World	53,539	100.0	7,745	2.7	2.3	2.9	3.5	3.5	3.5	2.8	2.5	3.3			
North America	14,842	28.1	42,575	1.9	2.1	2.4	2.9	2.7	2.7	3.4	1.6	2.6			
Canada	1,258	2.4	36,671	2.4	2.0	2.1	2.6	2.6	2.6	2.9	1.9	2.4			
United States	13,584	25.7	43,219	1.8	2.1	2.4	3.0	2.7	2.7	3.4	1.6	2.6			
Latin America	3,589	6.5	5,959	4.1	3.6	3.7	4.2	4.0	4.1	3.2	3.2	4.0			
Mexico	1,000	1.8	8,701	4.2	3.6	3.8	3.7	3.6	3.6	3.5	1.9	3.6			
Caribbean & Central America	373	0.7	4,514	2.2	2.9	3.2	3.8	4.2	4.1	3.1	3.2	3.9			
South America	2,215	4.0	5,476	4.4	3.8	3.8	4.6	4.2	4.4	3.0	3.8	4.2			
Argentina	284	0.5	6,741	8.9	3.0	3.5	4.1	4.2	4.4	4.7	4.6	4.1			
Brazil	1,016	2.1	5,634	2.5	3.5	3.7	5.0	4.3	4.7	2.6	3.6	4.4			
Other	771	1.4	4,927	5.6	4.5	4.1	4.1	4.0	3.9	3.3	4.0	4.1			
Europe	15,381	29.9	28,044	1.6	-0.2	0.7	1.7	2.2	2.1	2.2	1.4	1.7			
European Union-27	14,498	28.2	28,164	1.9	-0.3	0.7	1.7	2.1	2.1	2.2	1.2	1.7			
Other Europe	882	1.7	26,208	1.8	2.0	1.8	2.4	2.4	2.3	1.7	1.8	2.2			
Former Soviet Union	1,323	2.4	4,691	4.9	3.8	4.0	4.2	4.1	4.1	-4.0	5.4	3.9			
Russia	980	1.8	6,877	4.3	3.8	3.9	4.0	3.8	3.8	-3.6	4.9	3.8			
Ukraine	97	0.2	2,170	5.1	2.5	3.5	4.8	5.3	5.5	-7.7	4.5	4.7			
Other	245	0.4	2,593	6.9	4.2	4.9	4.7	4.9	4.9	-3.2	8.6	4.2			
Asia and Oceania	15,073	27.1	3,987	4.1	4.4	5.0	5.3	5.2	5.1	3.5	4.4	4.9			
East Asia	11,011	19.8	7,087	3.8	4.3	4.8	5.1	4.9	4.8	3.2	4.1	4.7			
China	4,504	7.5	3,353	9.3	7.5	8.5	8.8	8.5	8.3	10.5	10.5	7.8			
Hong Kong	233	0.4	32,556	5.0	2.8	4.3	4.7	4.9	4.6	4.0	4.1	4.2			
Japan	4,690	9.0	36,823	-0.7	2.0	1.7	1.5	1.3	1.1	1.2	0.9	1.1			
South Korea	1,081	2.0	22,133	3.6	2.6	3.7	4.5	4.2	3.9	6.2	4.2	3.5			
Taiwan	466	0.8	20,066	4.0	2.5	4.1	4.0	4.0	3.9	6.2	3.9	3.7			
Southeast Asia	1,261	2.2	2,281	4.5	5.0	5.7	5.5	5.3	5.1	5.1	5.1	5.1			
Burma	58	0.1	1,063	5.5	6.0	6.0	6.1	6.2	6.3	6.5	5.2	5.9			
Cambodia	10	0.0	649	6.3	6.8	8.2	8.4	8.3	8.2	6.9	7.9	7.9			
Indonesia	426	0.7	1,715	6.5	6.2	6.6	6.0	5.7	5.4	4.4	5.2	5.6			
Malaysia	188	0.3	6,443	5.1	4.3	5.0	4.7	4.5	4.5	7.2	4.6	4.4			
Philippines	142	0.3	1,373	3.9	4.6	4.8	5.0	4.8	4.8	2.9	4.8	4.7			
Thailand	221	0.4	3,297	0.1	5.2	6.2	5.7	5.5	5.2	4.6	4.4	5.2			
Vietnam	83	0.2	906	5.9	5.4	5.7	6.4	7.0	7.0	7.6	7.3	6.3			
South Asia	1,723	3.0	1,051	7.0	5.6	7.0	8.1	8.0	7.5	5.2	7.3	7.1			
Bangladesh	91	0.2	567	6.7	6.2	5.7	6.2	6.3	6.2	4.8	5.8	6.0			
India	1,411	2.4	1,171	7.5	5.7	7.5	8.7	8.5	7.9	5.5	7.8	7.5			
Pakistan	149	0.3	784	3.0	3.7	3.6	4.1	4.5	4.4	4.0	4.7	4.1			
Oceania	1,080	2.0	30,272	2.0	3.0	2.5	3.2	3.4	3.1	3.3	3.0	2.9			
Australia	930	1.7	42,239	2.1	3.0	2.4	3.1	3.3	3.1	3.4	3.1	2.8			
New Zealand	122	0.2	28,207	1.4	2.5	3.2	3.3	3.1	2.7	2.9	2.6	2.8			
Middle East	2,012	3.6	6,743	5.5	3.2	3.4	3.9	4.3	4.3	3.9	4.2	3.8			
Iran	256	0.5	3,240	2.0	-2.0	-1.3	1.1	2.1	3.4	3.8	5.4	2.1			
Iraq	84	0.1	2,689	8.9	7.0	5.2	5.7	6.1	5.8	12.2	5.9	5.8			
Saudi Arabia	402	0.7	15,162	6.8	4.7	3.3	4.5	4.3	4.0	2.8	3.2	3.7			
Turkey	631	1.1	7,914	8.5	2.9	4.1	3.9	4.8	4.6	3.8	4.0	4.0			
Other	640	1.2	7,785	3.1	4.0	4.3	4.4	4.3	4.2	4.9	4.7	4.1			
Africa	1,320	2.4	1,254	1.3	5.2	5.6	5.5	5.4	5.7	2.9	4.8	4.9			
North Africa	422	0.8	2,487	-4.8	6.8	6.2	5.7	5.7	5.5	3.7	4.5	5.3			
Egypt	136	0.3	1,625	1.8	1.8	3.4	5.2	5.9	5.9	4.3	5.1	4.7			
Morocco	81	0.2	2,514	4.9	2.7	5.5	5.0	4.8	4.8	2.5	4.9	4.6			
Sub-Saharan Africa	898	1.6	1,017	4.4	4.5	5.3	5.4	5.2	5.8	2.5	5.0	4.8			
South Africa	305	0.6	6,254	3.1	2.6	3.8	4.7	4.7	7.4	1.8	3.5	4.3			
West African Community	264	0.5	825	3.8	3.8	4.0	4.1	4.8	5.1	2.9	4.0	4.7			
Other Sub-Saharan Africa	329	0.6	639	4.0	4.5	6.0	5.7	5.5	5.3	2.9	6.2	5.1			

Source: Historical data from various sources; compiled in the International Macroeconomic Data Set, U.S. Department of Agriculture, Economic Research Service. International macroeconomic assumptions were based on information available in August 2012.

Table 3. Population growth assumptions

Region/country	Population in							Average		
	2012	2011	2012	2013	2014	2015	2016	1991-2000	2001-2010	2012-2022
	<i>Millions</i>							<i>Percent change</i>		
World <sup>1</sup>	6,913	1.1	1.1	1.1	1.1	1.1	1.1	1.4	1.2	1.0
North America	349	0.7	0.7	0.7	0.7	0.8	0.8	1.2	0.9	0.8
Canada	34	0.8	0.8	0.8	0.8	0.8	0.7	1.1	0.8	0.7
United States	314	0.7	0.7	0.7	0.7	0.8	0.8	1.2	0.9	0.8
Latin America	602	1.1	1.1	1.1	1.1	1.1	1.0	1.6	1.3	1.0
Mexico	115	1.1	1.1	1.1	1.1	1.0	1.0	1.6	1.2	1.0
Caribbean & Central America	83	1.0	1.0	1.0	1.0	1.0	1.0	1.7	1.2	1.0
South America	404	1.2	1.1	1.1	1.1	1.1	1.0	1.6	1.3	1.0
Argentina	42	1.0	1.0	1.0	1.0	0.9	0.9	1.2	1.0	0.9
Brazil	206	1.2	1.1	1.1	1.1	1.0	1.0	1.6	1.3	1.0
Other	157	1.2	1.2	1.2	1.2	1.1	1.1	1.8	1.3	1.1
Europe	548	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
European Union-27	515	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2
Other Europe	34	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1
Former Soviet Union	282	0.2	0.2	0.2	0.2	0.2	0.1	0.1	-0.1	0.1
Russia	143	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.1
Ukraine	45	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.5	-0.8	-0.7
Other	95	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.7	0.7
Asia and Oceania	3,781	1.0	1.0	1.0	0.9	0.9	0.9	1.4	1.1	0.9
East Asia	1,554	0.4	0.4	0.4	0.4	0.4	0.3	0.9	0.5	0.3
China	1,343	0.5	0.5	0.5	0.5	0.4	0.4	1.0	0.5	0.4
Hong Kong	7	0.5	0.4	0.4	0.4	0.4	0.3	1.6	0.6	0.3
Japan	127	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	0.3	0.1	-0.2
South Korea	49	0.2	0.2	0.2	0.2	0.2	0.1	0.9	0.4	0.1
Taiwan	23	0.2	0.3	0.3	0.3	0.2	0.2	0.9	0.4	0.2
Southeast Asia	553	1.2	1.2	1.2	1.1	1.1	1.1	1.8	1.4	1.1
Burma	55	1.1	1.1	1.1	1.0	1.0	1.0	1.6	1.2	1.0
Cambodia	15	1.7	1.7	1.7	1.7	1.6	1.6	2.8	1.6	1.5
Indonesia	249	1.1	1.0	1.0	1.0	0.9	0.9	1.7	1.3	0.9
Malaysia	29	1.6	1.6	1.5	1.5	1.5	1.4	2.6	2.0	1.4
Philippines	104	1.9	1.9	1.9	1.8	1.8	1.8	2.2	2.1	1.7
Thailand	67	0.6	0.6	0.5	0.5	0.5	0.5	1.2	0.7	0.4
Vietnam	92	1.1	1.1	1.0	1.0	1.0	1.0	1.6	1.2	0.9
South Asia	1,639	1.4	1.4	1.4	1.4	1.3	1.3	2.0	1.6	1.3
Bangladesh	161	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.6
India	1,205	1.4	1.3	1.3	1.3	1.2	1.2	1.8	1.5	1.2
Pakistan	190	1.6	1.6	1.5	1.5	1.5	1.5	2.5	1.9	1.5
Oceania	36	1.3	1.2	1.2	1.2	1.2	1.2	1.4	1.4	1.1
Australia	22	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.0
New Zealand	4	0.9	0.9	0.9	0.8	0.8	0.8	1.1	1.1	0.8
Middle East	298	1.6	1.4	1.4	1.5	1.5	1.5	2.2	1.9	1.4
Iran	79	1.3	1.3	1.2	1.2	1.2	1.2	1.7	1.1	1.1
Iraq	31	2.5	2.4	2.3	2.3	2.2	2.2	2.3	2.7	2.1
Saudi Arabia	27	1.6	1.5	1.5	1.5	1.5	1.5	2.9	1.9	1.5
Turkey	80	1.3	1.2	1.2	1.1	1.1	1.1	1.8	1.5	1.0
Other	82	2.0	1.5	1.3	1.6	1.8	1.9	3.1	2.9	1.7
Africa	1,052	2.3	2.4	2.4	2.3	2.3	2.3	2.5	2.4	2.3
North Africa	170	1.5	1.6	1.9	1.7	1.7	1.6	1.7	1.8	1.5
Egypt	84	2.0	2.0	1.9	1.9	1.8	1.8	1.7	2.1	1.7
Morocco	32	1.1	1.1	1.1	1.0	1.0	1.0	1.6	1.2	1.0
Sub-Saharan Africa	883	2.5	2.5	2.5	2.5	2.4	2.4	2.6	2.6	2.4
South Africa	49	-0.2	-0.4	-0.4	-0.5	-0.2	0.1	1.6	0.9	-0.1
West African Community	320	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.5
Other Sub-Saharan Africa	514	2.7	2.7	2.7	2.6	2.6	2.5	2.8	2.7	2.5

1/ Totals for the world include countries not otherwise listed in the table.

Source: U.S. Department of Commerce, U.S. Census Bureau.

The population assumptions were completed in July 2012 based on the June 2012 update from the U.S. Census Bureau.

## Agricultural Trade

Global income growth and population gains are projected to continue during the 2013-2022 projection period. This growth provides a foundation for continued gains in world demand and trade for agricultural products. Although agricultural prices decline in the near term, continued growth in global demand for agricultural products holds price at historically high levels.

Developing countries are projected to be the main source of growth in world agricultural demand and trade. Food consumption and feed use are particularly responsive to income growth in developing countries, with movement away from staple and/or traditional foods and toward more diversified diets. Per capita meat consumption is projected to rise rapidly, with poultry rising much faster than pork, and pork slightly faster than beef. Agricultural product demand in developing countries is further reinforced by population growth rates that are about twice the average of those in developed countries.

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 more than half of the increase in world poultry and 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 20 percent for coarse grain, 53 percent for wheat, 50 percent for rice, and 25 percent for soybean oil.

### General International Assumptions

Trade projections to 2022 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 and domestic policies in place or authorized by November 2012. International macroeconomic assumptions were completed in October 2012.

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.

Mexico is projected to be another large growth market for 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. Imports of beef, pork, and poultry are projected to rise by 67, 32, and 50 percent, respectively. 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.

At the beginning of the projection period, world stock levels are low for most crops and world market prices are high for most crops and meats. Livestock producers face high feed prices. Although stocks are low for most commodities in most countries, there are several notable exceptions. Policies in China and India have led to the accumulation of large cotton stocks. Similarly, Thailand and India currently hold unusually large rice stocks. How these countries draw down stocks to more normal levels has implications for world cotton and rice markets.

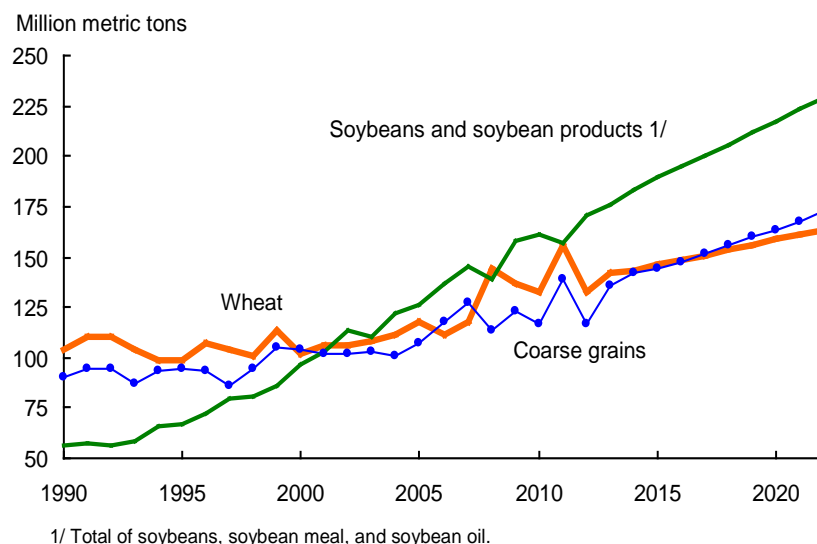
While agricultural prices initially fall from recent high levels, they are projected to remain above pre-2007 levels during the coming decade. The main contributing factors are increasing per capita incomes in low- and middle- income countries that continue to stimulate world demand for grains, oilseeds, and livestock products; a continuing depreciation of the U.S. dollar; high energy prices; and some further growth in biofuels production.

Prices for vegetable oils are projected to rise relative to prices for protein meals. Oilseed prices rise slightly more than grain prices, and meat prices rise relative to the costs of feeds, both for protein meals and grains.

World agricultural production is projected to rise in response to high prices and technological enhancements. 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 in world-average crop yields, especially yields for cereal crops, has been slowing for nearly two decades, to some extent as a result of reduced research and development funding. Water constraints in some countries are impeding the expansion in 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 also are likely to increase.

Countries that export a large amount 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 in global trade in the coming decade. But countries that have made significant investments in their agricultural sectors and are increasingly pursuing policies intended to encourage agricultural production, including Russia, Ukraine, and Kazakhstan, are expected to have an increasing presence in export markets for basic agricultural commodities.

### Global trade: Wheat, coarse grains, and soybeans and soybean products



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-product trade well above wheat and coarse grain trade throughout the next decade.

- Globally, the total area planted to grains, oilseeds, and cotton is projected to expand about 0.45 percent per year. However, in most countries, area expansion is less than 0.4 percent per year, and cropped area even contracts in some countries. Area expands more rapidly in countries with a reserve of available land and policies that allow farmers to respond to higher prices. Such countries include Russia, Ukraine, Brazil, Argentina, some other countries in South America, and some countries in Eastern Europe and Sub-Saharan Africa. About two-thirds of the projected growth in global production 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 many countries supplements population gains in the demand for vegetable oils, meats, horticultural and dairy products, and grains. World per capita use of vegetable oils is projected to rise 17 percent over the next 10 years, compared with 7 percent for meats and 8 percent for total coarse grain. In contrast, per capita use of wheat and rice is projected to decline nearly 1 percent.
- Increasing demand and high prices 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.



## Demand for Biofuel Feedstocks

The global demand for feedstocks used to produce ethanol and biodiesel is projected to continue growing, although at a slower pace than in recent years. Expansion will continue to depend on biofuels policies.

The United States, Brazil, the European Union (EU), Argentina, Canada, China, and Indonesia, accounted for more than 90 percent of world biofuel production, consumption, and trade in 2012. Their dominance in global biofuels markets is expected to change little in the coming decade. Between 2013 and 2022, aggregate production in these countries is projected to rise about 30 percent for biodiesel and 40 percent for ethanol.

### Country Assumptions and Projections

**EU.** The EU is the world's largest biodiesel consumer and the largest biofuels importer. Biodiesel and ethanol production are projected to increase 45 percent and 60 percent, respectively, between 2013 and 2022. To boost biodiesel production, the EU increases oilseed production and imports of oilseeds and vegetable oil feedstocks, mainly from Ukraine and Russia. Use of animal fats and used cooking oils also increase. Biodiesel imports, mainly from Argentina, rise steadily. Over 80 percent of the expansion in ethanol production comes from increased use of wheat and corn as feedstocks. EU ethanol imports, mainly from Brazil, are assumed to capture an increasing share of EU domestic use.

**Brazil.** In Brazil, the world's second-largest ethanol producer, sugarcane-based ethanol production is projected to increase 90 percent, primarily to meet increasing domestic demand for transport fuel with higher ethanol blends. Exports to the EU and the United States rise as well. Soybean oil-based biodiesel production increases 50 percent. Most of Brazil's biodiesel production is expected to be used domestically.

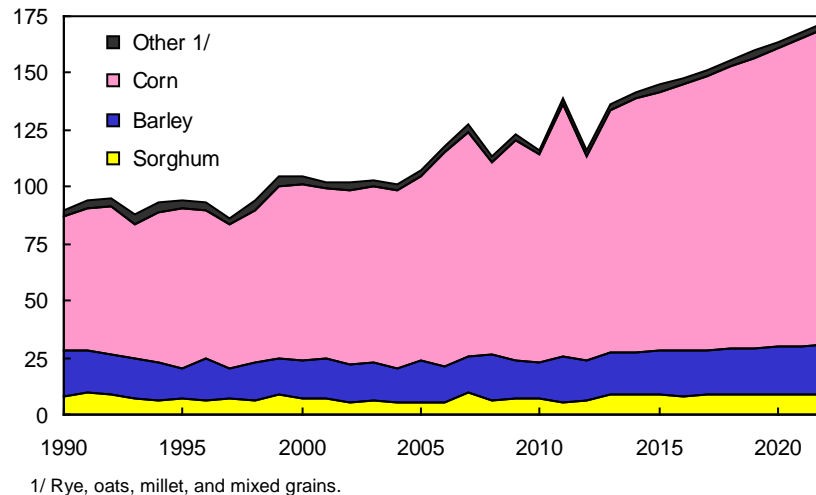
**Argentina.** Argentina's biodiesel production is projected to expand 80 percent between 2013 and 2022. A large share of the increased production goes to exports, which are supported by a tax structure that favors exports of biodiesel relative to soybean oil. However, domestic biodiesel use is assumed to also rise in response to a mandated increase in the domestic blend rate. Argentina's corn-based-ethanol production doubles, supported by a growing gasoline market and a rising blend rate.

**Canada.** Ethanol production is projected to increase 35 percent, with corn imports accounting for an increasing share of the feedstock. Biodiesel production climbs about 28 percent, with rapeseed (canola) oil providing more than 40 percent of the feedstock. Most of the biodiesel output is consumed in Canada, but limited amounts are exported to the United States and the EU. Biofuel exports and imports are projected to remain under 10 percent of production and use.

**China.** In 2012, 4.6 million tons of corn and 1 million tons of wheat were used to produce fuel ethanol. China has policies to limit further expansion of grain- and oilseed-based biofuel production for transportation fuel use. Thus, no significant expansion is projected.

## Global coarse grain trade

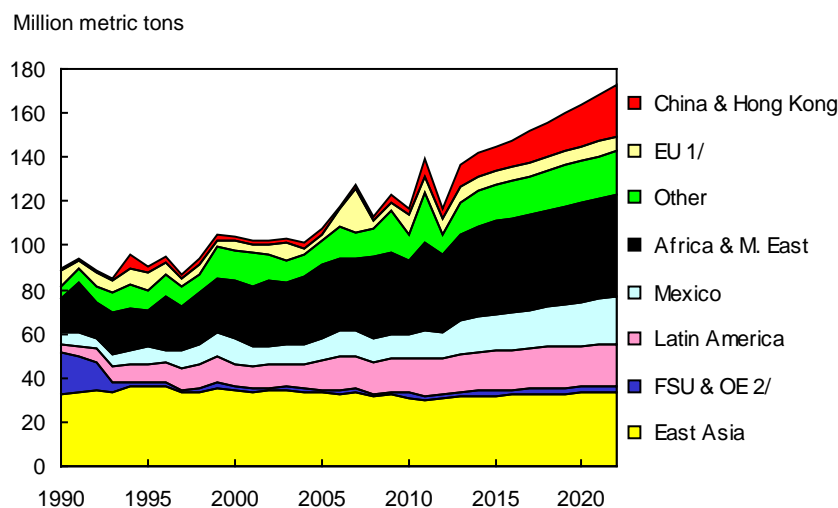
Million metric tons



World coarse grain trade is projected to increase 27 percent between 2013/14 and 2022/23. During this period, corn is expected 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 trade, particularly in the Middle East, North Africa, and Asia.

- During the last decade, the percentage of global coarse grain used for feed has declined while the share going to food, seed, and industrial uses has increased. In the projections, the expansion in feed use increases more rapidly than food use. However, industrial uses, such as starch, ethanol, and malt production, increase more than twice as fast as feed use, although from a much smaller base.
- Corn is the dominant feed grain traded in international markets, accounting 80 percent of world coarse grain trade at the end of the projection period. Barley has the next largest share (13 percent), followed by sorghum (5 percent). The trade share of the other coarse grains, mostly oats and rye, continues to decline slowly and falls below 2 percent by 2022.
- Corn's share of world coarse grain trade has risen steadily. Increasing use of modern varieties and inputs has resulted in corn area and yield growth rates that are more rapid than for other grains. Demand has increased due to corn's preferred qualities for feed, biofuels, and other industrial uses.
- Commercialization of livestock feeding has been a driving force behind the growing dominance of corn in international feed grain markets. Ruminants, such as cattle and sheep, are capable of digesting a broad range of feedstuffs, making demand price-sensitive across alternate feed sources. However, as pork and poultry production become increasingly commercialized throughout the world, higher quality feeds are used, boosting the demand for corn and soybean meal.

## Global coarse grain imports



1/ Excludes intra-EU trade.

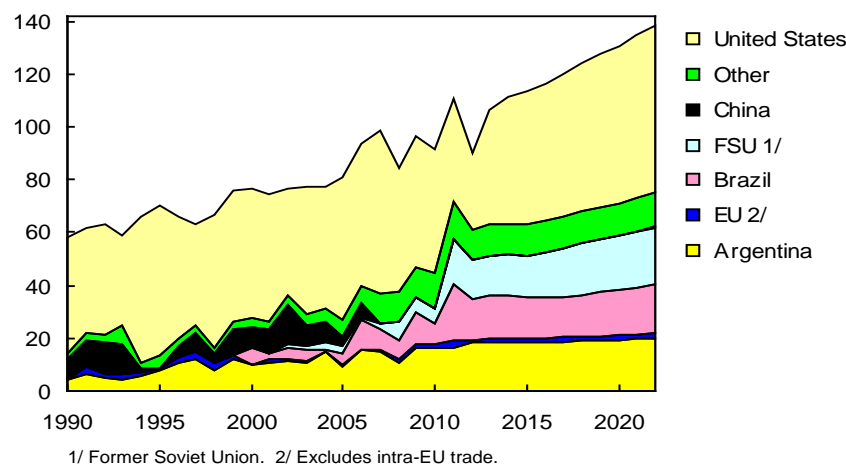
2/ Former Soviet Union and other Europe; prior to 1999, includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

World coarse grain trade is projected to increase by 36 million tons (27 percent) from 2013/14 to 2022/23.

- Growth in coarse grain imports is closely linked to expansion of livestock production in regions unable to meet their own feed needs. Key growth markets include China, Mexico, the Middle East, Southeast Asia, and North Africa.
- China's imports of corn are projected to rise steadily and reach 19.6 million tons by 2022/23. China's strengthening domestic demand for corn is driven by its expanding livestock and industrial sectors. The increase in China's imports accounts for 40 percent of the projected growth in world corn trade.
- Imports by Africa and the Middle East account for about 20 percent of the growth in world coarse grain trade through 2022/23, as rising populations and increasing incomes sustain strong demand growth for livestock products.
- Mexico's corn imports are projected to rise from 9 million tons in 2012/13 to 17 million in 2022/23. During the same period, Mexico's sorghum imports rise rapidly from reduced levels in recent years to 4.2 million tons, mostly in response to increased U.S. supplies. Altogether, the growth in Mexico's coarse grain imports represents more than one-sixth 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 meat imports.
- Southeast Asian corn imports rise 3.6 million tons (49 percent) by 2022 in response to increased demand from livestock producers. The region accounts for 11 percent of the growth in world corn imports.
- In East Asia—excluding China—environmental constraints on expanding livestock production, and increasing imports of selected cuts of meat greatly limit the growth in coarse grain imports. South Korea is the only country projected to show much growth in coarse grain imports.

## Global corn exports

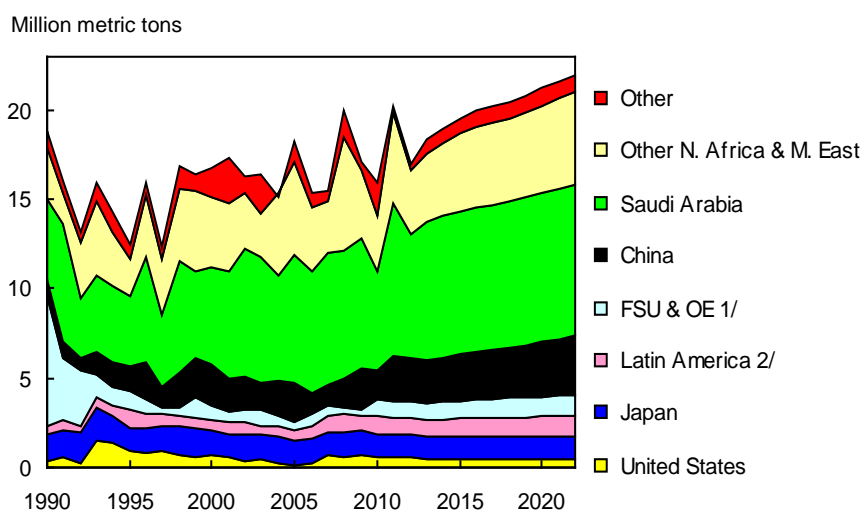
Million metric tons



U.S. corn exports declined sharply in 2010/11-2012/13, largely due to weather-induced production shortfalls. Meanwhile, exports from Brazil, the former Soviet Union (FSU), and Argentina have continued to rise. U.S. corn exports are projected to rebound in 2013/14 and then trend upward to a record high by 2022/23. However, the U.S. share of world corn exports only rises to 46 percent, well below the 65 percent average share during the two decades preceding 2010/11.

- Corn exports from the FSU, mostly Ukraine, rise nearly 6.6 million tons (43 percent) to nearly 22 million tons by 2022. 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 any exporting region other than the United States. The FSU becomes the world's second-largest corn exporter as its shipments surpass Argentina's.
- Argentina's corn area and exports are projected to stagnate in the early years of the projections due to the continuation of quantitative export controls. Argentina drops to the world's third-largest corn exporting country.
- Brazil's corn exports have quadrupled during the last 7 years. 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 get exported when port capacity is not occupied with soybeans. As corn prices drop in the first half of the next decade, 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 increasing world prices and improved export infrastructure.
- In the EU, corn used for ethanol production is projected to increase during the coming decade. However, it maintains exports of more than 1.5 million tons as it takes advantage of its lower transportation costs to parts of North Africa and the Middle East.
- The growth rate in corn exports from the Other Europe region is faster than from any other exporter, although from a small, drought-constrained base. Exports from Serbia to the EU account for most of the increase.

## Global barley imports



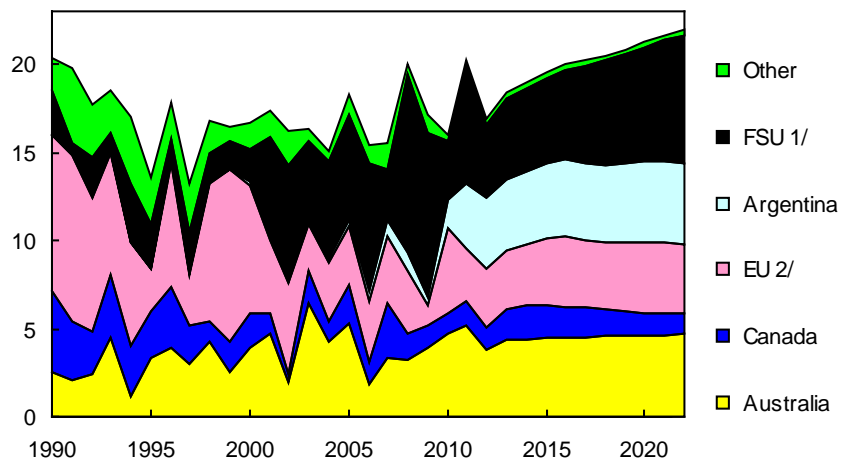
1/ Former Soviet Union and other Europe; prior to 1999, includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.  
2/ Includes Mexico.

Global barley trade is projected to expand by 3.6 million tons (20 percent) during the projection period and reaches 22 million tons by 2022. Rising demand for both malting and feed barley underpins the increased trade.

- Feed barley imports by the North African and Middle Eastern countries are expected to grow steadily over the next decade. This region accounts for 62 percent of the projected growth in world barley imports during the coming decade, and by 2022/23 imports from these countries account for 63 percent of total world imports.
- Saudi Arabia remains by far the world's leading importer of barley, accounting for about 38 percent of world imports in 2022/23. However, its share declines slightly during the projections as the barley imports of many other countries climb at a faster rate. Saudi Arabia's barley imports are used primarily as feed for sheep, goats, and camels.
- Among countries in the Middle East, Iran's barley imports are projected to experience the fastest growth rate 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 fourth 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 in 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.

## Global barley exports

Million metric tons

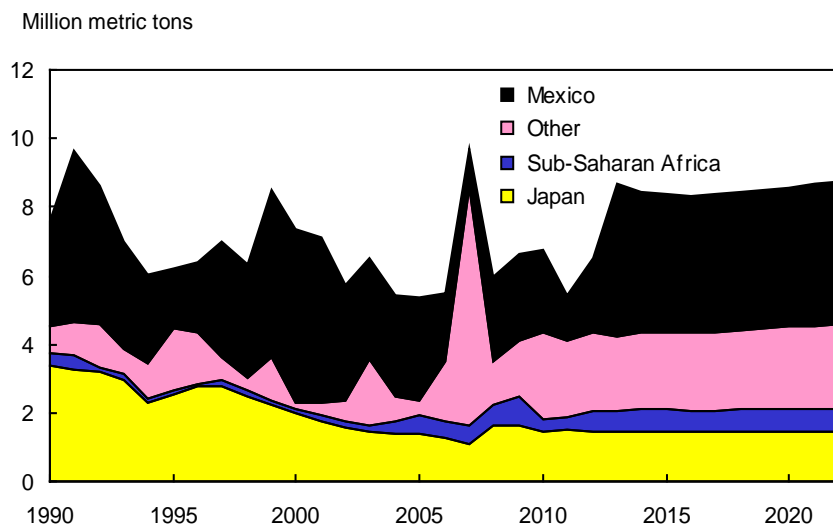


1/ Former Soviet Union and other Europe; prior to 1999, includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.  
2/ Excludes intra-EU trade.

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

- Australia's barley exports are expected to rebound after a drought-reduced harvest in 2012 and to rise slowly during the coming decade. The country remains the world's largest barley exporter
- Argentina's barley exports have risen sharply in recent years. Export restrictions for wheat have caused a shift in winter grains production from wheat to barley. Expansion in the barley area has occurred in the southern part of the country, and barley has been used for double-cropping with soybeans in the north. The country's barley exports are projected to remain large in the future. Other South American countries and Saudi Arabia are the main buyers of feed barley. Malting barley is mostly exported to Brazil.
- Barley exports by the FSU are projected to reach 7.3 million tons by 2022/23, with Ukraine accounting for 3.4 million tons and Russia accounting for 2.5 million tons. All of Ukraine's exports are feed-quality barley. The most rapid growth in barley exports, albeit from a small base, is projected for the Other FSU region, where Kazakhstan is expected to increase exports, especially to Iran. Total FSU exports are projected to account for 73 percent of the increase in world exports over the projection period.
- The EU's barley exports are projected to climb modestly during the coming decade, but remain well below the levels of the late 1990s.
- Malting barley commands a substantial price premium over feed barley. That quality 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 canola remains more profitable.

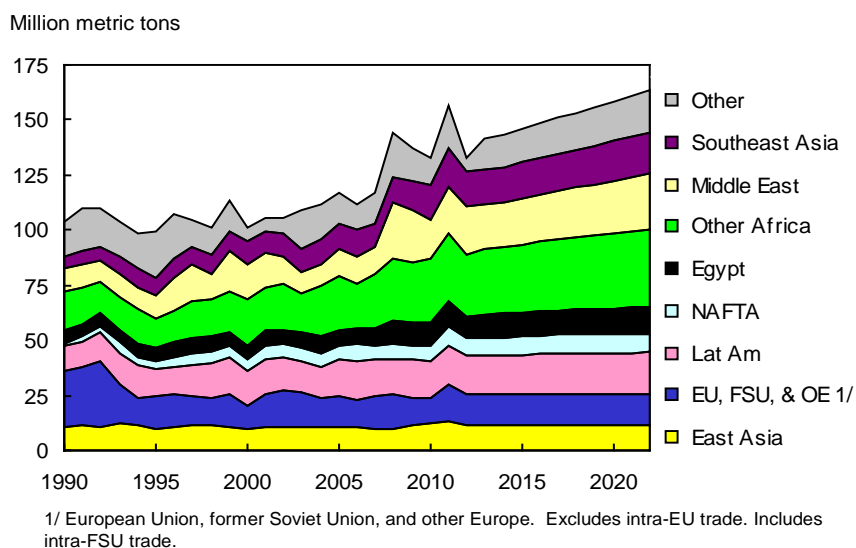
## Global sorghum imports



World sorghum trade is projected to trend upward from around 6.5 million tons in 2012/13 to 8.7 million tons by 2022/23. U.S. sorghum exports to Mexico and Japan account for the bulk of world sorghum trade although Argentine exports are projected to gain market share.

- Mexico's sorghum imports are projected to more than double to 4.5 million tons in 2013/14 due to increased U.S. supplies. Many Mexican livestock producers have a slight preference for feeding sorghum, while U.S. livestock feeders increasingly prefer 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 rise to nearly 50 percent.
- Sorghum imports by Japan—the world's second-largest importer—trended slowly downward in the 15 years prior to 2008/09. After a small rebound in 2008/09, imports have been, and are projected to remain stable over the next decade.
- Imports by South American countries grow more rapidly than imports by any other market. Although these imports rise 27 percent, the volume increase is only 0.3 million tons.
- Sub-Saharan Africa is the only other major sorghum importing area where imports are projected to grow during the coming decade, and that projected growth is small.
- U.S. sorghum exports are projected to rebound in 2013 from low levels during the past several years, then to decline slightly for several years as U.S. supplies tighten. Exports remain flat throughout the remainder of the projections. Although exports remain well below historical highs, the United States continues to be the leading sorghum exporter.
- Argentina and Australia are expected to continue to be the world's second- and third-largest sorghum exporters during the coming decade. Argentina's exports are projected to rise 19 percent to 3.2 million tons, while Australia's exports are projected to remain slightly less than 1 million tons. Argentina's production of new sorghum varieties with lower tannin content enables it to gain a larger share of the international market. The primary sorghum markets for Argentina are Japan, Chile, Europe, and other countries in South America.

## Global wheat imports



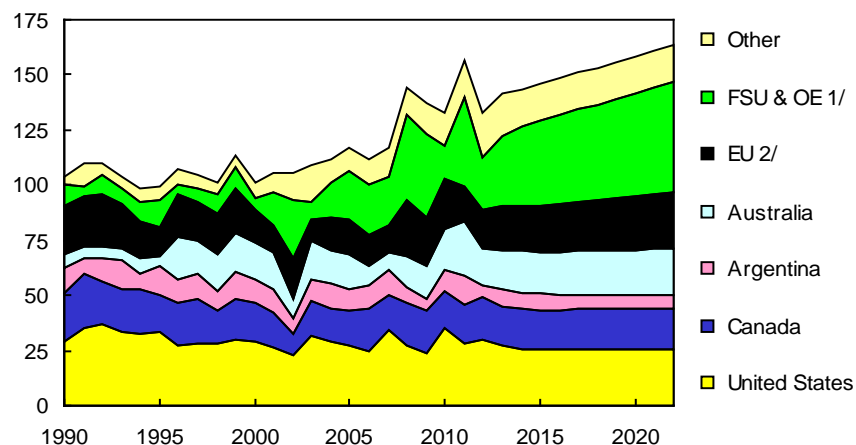
World wheat trade (including flour) is projected to expand by 22 million tons (16 percent) between 2013/14 and 2022/23, rising to nearly 164 million tons. Growth in wheat imports is concentrated in those developing countries where income and population gains drive increases in demand. The largest growth markets include Indonesia and other Asian countries, Egypt, Saudi Arabia, the 15 countries of the Economic Community of West African States, other Sub-Saharan Africa countries, and other countries in the North Africa and Middle East region.

- Globally, per capita use of wheat is projected to decline slightly. 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 2022. Imports by Indonesia grow rapidly to 8.6 million tons and it replaces Brazil as the second-largest importing country.
- Imports by Vietnam and Bangladesh are both projected to rise rapidly, increasing a total of 2.1 million tons. Partially offsetting this increase are projected lower imports by Japan and South Korea.
- Imports by countries in Africa and the Middle East rise nearly 12 million tons and account for 53 percent 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, and imports are projected to rise to 3.4 million tons by 2022/23.
- Historically, India has been a big wheat importer in some years and a big exporter in some other years. In the past two 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.



## Global wheat exports

Million metric tons



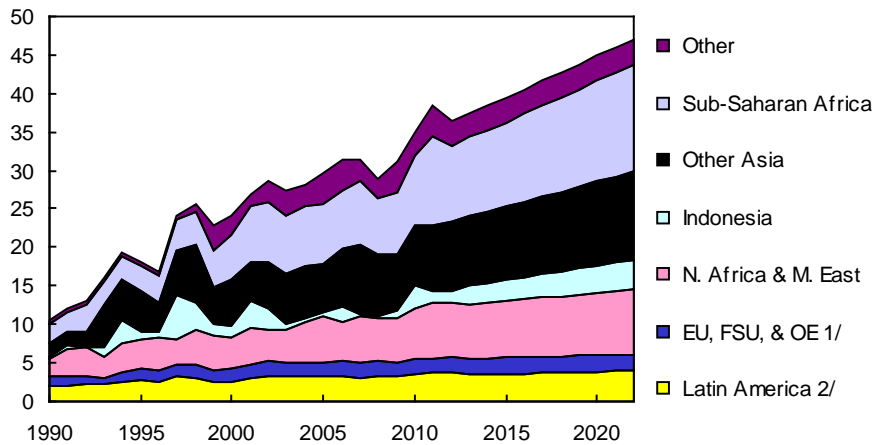
1/ Former Soviet Union and other Europe; prior to 1999, includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.  
2/ Excludes intra-EU trade.

The traditional five largest wheat exporters (the United States, Australia, the EU, Argentina, and Canada) are projected to account for about 60 percent of world trade in 2022, compared with nearly 70 percent during the last decade. This decrease in share is mostly due to increased exports from the Black Sea area.

- U.S. wheat exports are projected to decline from nearly 30 million tons in 2012/13 to just over 25 million tons at the end of the projection period. U.S. exports are projected to account for less than 16 percent of global wheat trade at the end of the projection period, down from about 22 percent in the past 5 years.
- Canada's wheat area continues to decline slowly in response to increased global demand and more favorable returns for vegetable oils (especially rapeseed oil). 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 Canada's exports to the United States due to logistical considerations.
- In Argentina, some of the area formerly planted to wheat shifts to barley in response to government policies and increased use of barley for double-cropping in crop rotation practices. Exports rebound in 2013 and 2014 after production shortfalls the previous 2 years, but then gradually decline during the rest of the projection period.
- The EU is the only traditional exporter whose market share is projected to increase. After dropping sharply in 2011 and 2012, EU wheat exports are projected to trend upward and reach 25 million tons by 2022, well above the levels of the last decade.
- The strong upward trend in wheat exports from Russia, Ukraine, and Kazakhstan was interrupted by droughts in 2010 and 2012. However, exports from these countries are expected to recover and rise more than 55 percent, climbing to nearly 50 million tons by 2022 and accounting for about 80 percent of the projected increase in world wheat trade. Increasing domestic feed use prevents even more rapid export growth. Although not explicitly reflected in the projections, continued year-to-year volatility in production and trade is likely because of the region's highly variable weather and yields.

## Global rice imports

Million metric tons



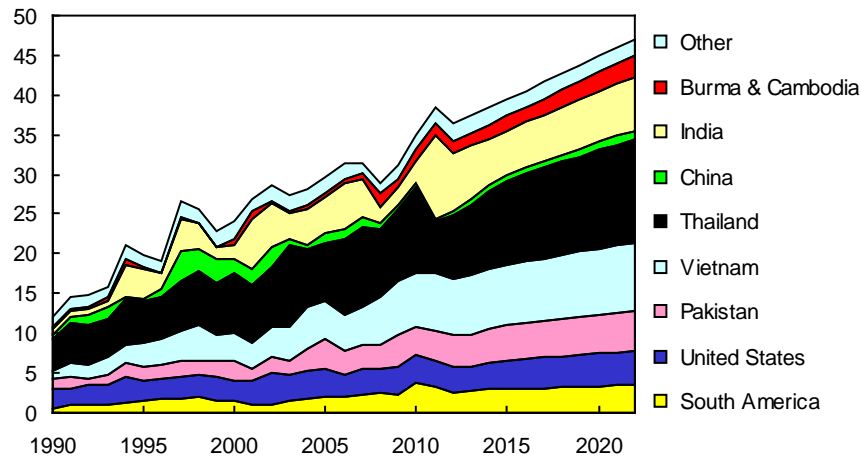
1/ European Union, former Soviet Union, and other Europe. 2/ Includes Mexico.

Global rice trade is projected to grow 2.5 percent per year from 2013 to 2022. In 2022, global rice trade reaches 47 million tons, 42 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 growth 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 Africa and Middle East region accounts for nearly half of the increase in world rice trade during the projections. Africa accounts for most of this region's rising imports.
- Indonesia and the Philippines are projected to become the largest individual rice-importing countries. By the end of the projection period they import 4.0 and 2.5 million tons, respectively.
- China's rice imports jumped nearly 2 million tons between 2010 and 2012. In the projections, China's imports decline from record 2012 levels, but remain historically large as China imports lower-priced rice, primarily from Vietnam.
- Other major importing countries—Iran, Iraq, Malaysia, and Saudi Arabia—each take more than 1.3 million tons. These 4 countries have limited ability to expand rice production and are expected to account for more than 10 percent of the projected increase in global rice imports.
- Rice imports by other Asian countries account for most of the rest of the increase in world imports. Population growth and rising per capita incomes boost rice consumption and raise imports in this region.
- In the EU, Canada, and the United States, immigration continues to support slightly higher per capita consumption and modest import growth. In Mexico, higher incomes contribute to higher per capita consumption and moderate gains in imports.
- Imports by the FSU are projected to decline slowly as a result of strong production growth and a declining population that more than offset slowly rising per capita consumption.

## Global rice exports

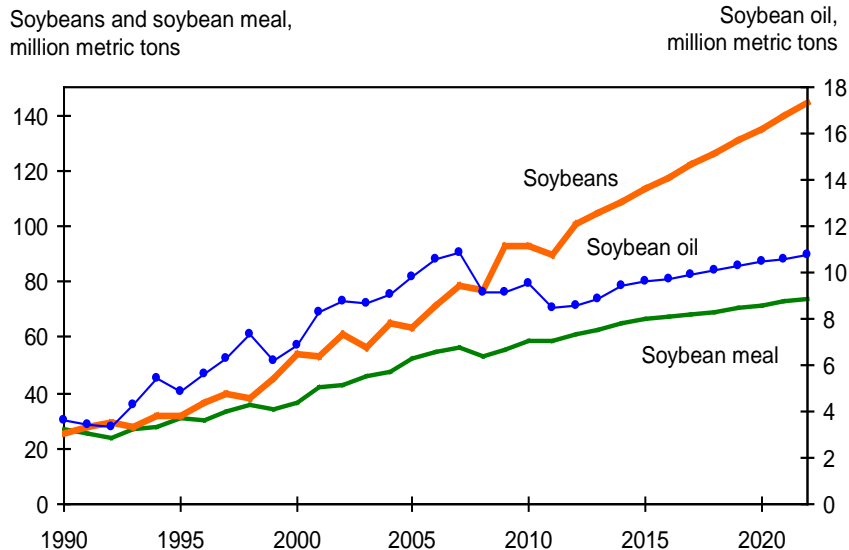
Million metric tons



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

- Rice exports from Thailand and Vietnam, typically the world's largest rice-exporting countries, account for more than 46 percent of world trade and for more than 58 percent of the growth in world exports in the coming decade. In Thailand, rice area and yields are projected to increase. Increasing production combined with a drawdown in large stocks enable exports to rise 4.2 million tons, to 13 million by 2022. Vietnam's export expansion is smaller, rising from 7.4 to 8.7 million tons. Per capita consumption in both countries declines slowly as incomes rise.
- India typically has been the third- or fourth-largest rice exporter since the mid-1990s, but its export levels have been volatile, primarily due to Government policies and fluctuating stock levels. In September 2011, the Government eased an export ban on non-basmati rice and exports jumped from less than 3 million tons to more than 10 million tons, making India the number one exporter in 2012. Although projected exports retreat from that peak, they remain large for the next several years as the country's large stocks are drawn down.
- Pakistan and the United States have each been exporting between 3 and 4 million tons in recent years. Pakistan has expanded its rice area, and rice production and exports are projected to climb to 5 million tons, establishing the country as the fourth largest exporter.
- Modest expansion in U.S. rice exports is attributable to a slight area expansion after 2013, continued yield growth, and slow growth in domestic use. The U.S. export share is projected to remain about 9 percent during the projections.
- Rice exports from China, the sixth-largest rice-exporting country, have declined in recent years but are projected to begin rising again and to reach 1.1 million tons by 2022, about double the level shipped in recent years. Little change in production is expected. Higher yields are expected to offset declining area 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-induced, levels shipped during much of the past decade. Exports are projected to stabilize at about 0.5 million tons.

### Global exports: Soybeans, soybean meal, and soybean oil

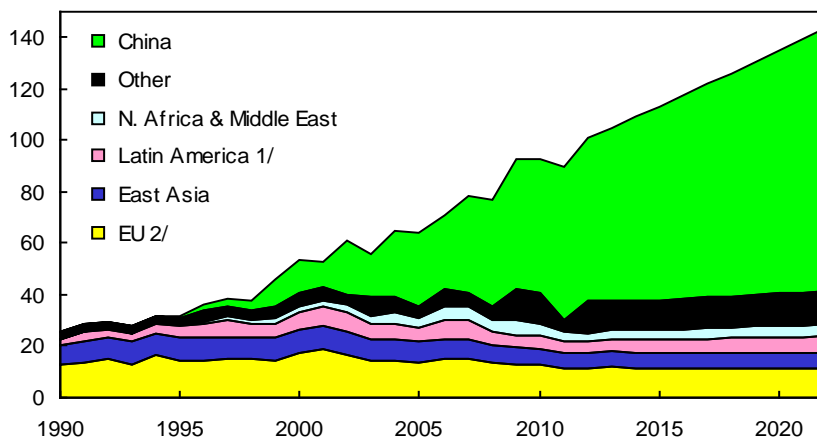


Economic growth and population increases in developing countries are projected to boost demand for vegetable oils for food consumption and for protein meals used in livestock production. Vegetable oil used for biodiesel production also is projected to increase. With demand for vegetable oils increasing at a faster rate than for protein meals, prices rise more rapidly for vegetable oils than for oilseeds and protein meals, particularly for rapeseed oil compared with rapeseed meal.

- Many countries with limited opportunities to expand oilseed production, such as China and 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 37 percent, soybean oil by 21 percent, and soybean meal by 19 percent.
- In China, per capita income is projected to continue rising rapidly, thereby expanding consumer demand for livestock products and vegetable oils. Feed rations are expected to include an increasing percentage of protein meal to improve rates of weight gain for meat-producing animals. China mostly will import oilseeds for crushing rather than large amounts of oilseed meals and oils. That preference affects the composition of world trade by raising global import demand for oilseeds rather than for oilseed products.
- Argentina, Brazil, and the United States account for 87 percent of the world's aggregate exports of soybeans, soybean meal, and soybean oil during the coming decade. Brazil's share of world exports of soybeans and soybean products climbs to more than 36 percent, as area expansion and yield growth boost production faster than in other exporting countries. In Argentina, uncertainties about grain policies cause farmers to keep more land in soybean production. Also, some pasture land is shifted to soybean cultivation. Argentina's share of world exports of soybeans and soybean products rises slightly to about 27 percent.
- The U.S. share of global exports of soybeans and soybean products declines from about 29 percent to 24.5 percent by 2022.
- The EU continues expanding biodiesel production using rapeseed oil as a primary feedstock. Rapeseed area increases, particularly early in the projection period, but imports of rapeseed and rapeseed oil also rise. EU imports of soybean meal and soybean oil are projected to increase.

## Global soybean imports

Million metric tons



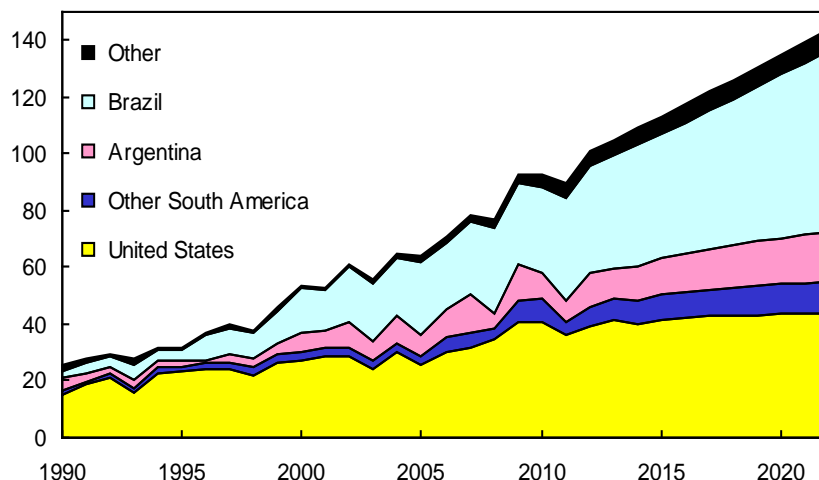
1/ Includes Mexico. 2/ Excludes intra-EU trade.

World soybean trade is projected to rise rapidly during the next 10 years, but at a slower pace than in recent years, climbing nearly 39 million tons (37 percent), to 144 million tons.

- China's soybean imports have risen sharply and now account for more than half of world trade. Over the coming decade, China will face policy decisions regarding the tradeoffs between producing and importing corn and soybeans. The projections assume that Chinese policies will pursue increasing corn production and letting soybean imports increase to fill the shortfall in domestic production. China's modern, efficient, but underutilized oilseed crushing capacity is expected to drive strong gains in soybean imports. Thus, China's soybean imports are projected to rise 52 percent to 103 million tons in 2022/23 and to account for more than 90 percent of the projected growth in global soybean imports. Soybean oil will be used domestically, but 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, increases in grain and rapeseed meal feeding, and rising imports of soybean meal. These trends are projected to continue, although at a slower pace, with soybean imports remaining mostly unchanged.
- Imports of soybeans and soybean meal by East Asia (Japan, South Korea, and Taiwan) are influenced by a continuing shift from importing feedstuffs to importing meat and other livestock products. As a result, this region's projected expansion in soybean imports is small. Small increases in soybean meal imports support slowly rising meat production in this region.
- Mexico's soybean imports are projected to increase 21 percent to 4.5 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.
- Egypt is projected to increase soybean imports in an effort to improve feed rations and to meet increased per capita demand for vegetable oil consumption. Many other countries in the North Africa and Middle East region also have a limited ability to expand their soybean production, and so they increase imports to fill their growing feed and food needs.

## Global soybean exports

Million metric tons

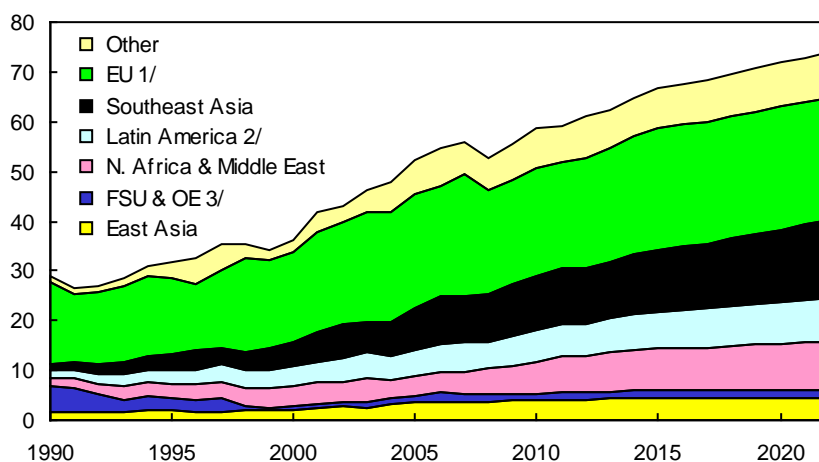


The three leading soybean exporters—the United States, Brazil, and Argentina—accounted for slightly more than 90 percent of world trade prior to 2009/10. Since then, exports from Uruguay, Paraguay, Bolivia, Ukraine, and a few other countries have increased—a trend that is expected to continue during the coming decade. As a result, the share held by the traditional exporters slips to 87 percent.

- Brazilian soybean exports are projected to rise 24.5 million tons (62 percent) to 63.8 million tons during the 2013/14 to 2022/23 projection period, enabling the country to strengthen its position as the world’s leading exporter of soybeans and soybean products. As world oilseed prices rise relative to grain prices, soybeans remain more profitable 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 just above 2 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 whole seeds and exporting of the resulting products. However, in response to world demand for soybeans for crushing, Argentina’s soybean exports have risen sharply and are projected to continue doing so, rising about 60 percent to more than 17 million tons by 2022/23. Most of the soybeans exported by Argentina go to China.
- Other South American countries, principally Uruguay, Paraguay, and Bolivia, respond to higher oilseed prices by expanding the area planted to soybeans. Exports by these countries increase 46 percent, to more than 11 million tons.
- Although Ukraine’s soybean exports are small, the country is expected to respond to higher international prices for oilseeds by increasing production of rapeseed and soybeans. Ukraine soybean exports are projected to rise 65 percent, to 3.2 million tons by 2022/23.

## Global soybean meal imports

Million metric tons



1/ Excludes intra-EU trade.

2/ Includes Mexico. 3/ Former Soviet Union and other Europe; prior to 1999, includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

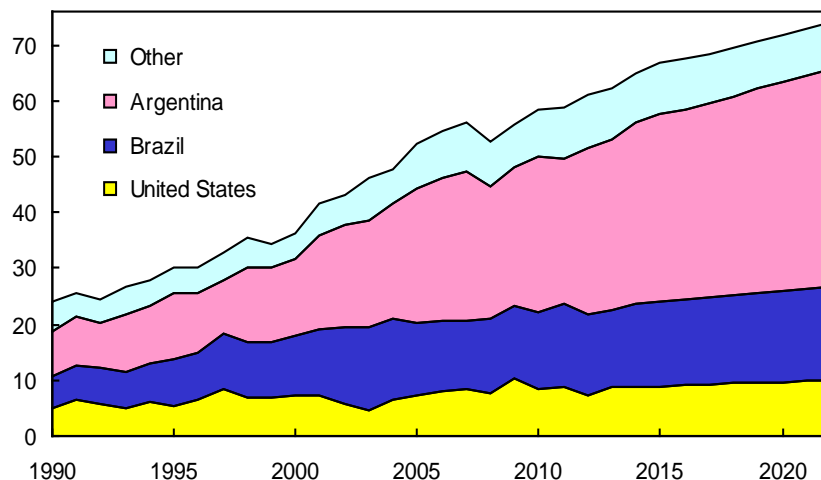
World soybean meal trade is projected to climb by more than 11 million tons (19 percent), to 74 million tons by 2022/23. In a number of countries with rising middle-income populations, soybean meal use is boosted by continued growth in the demand for livestock products, limited capability to increase domestic oilseed production, and low world prices for protein meals relative to feed grains. Low soybean meal import prices provide incentives to use a higher percentage of soybean meal in feed rations.

- 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 expanded EU biodiesel production, there are nutritional considerations that limit how much rapeseed meal can be incorporated into livestock rations. As a result, growth in EU soybean meal imports is expected to continue.
- 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 and low oilseed meal prices. Imports by Southeast Asia, especially Vietnam, climb rapidly and account for 35 percent of the projected increase in world soybean meal trade. Imports by countries in North Africa and the Middle East are projected to rise 1.6 million tons, and account for 14 percent of the increase in world trade. Soybean meal imports by Latin American countries other than Argentina and Brazil increase by 2 million tons, with much of that trade 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. Although China's projected growth rate for soybean meal use is one of the highest in the world, imports are small. Most of China's soybean meal will be supplied by domestic crushing of domestically produced and imported soybeans.



## Global soybean meal exports

Million metric tons



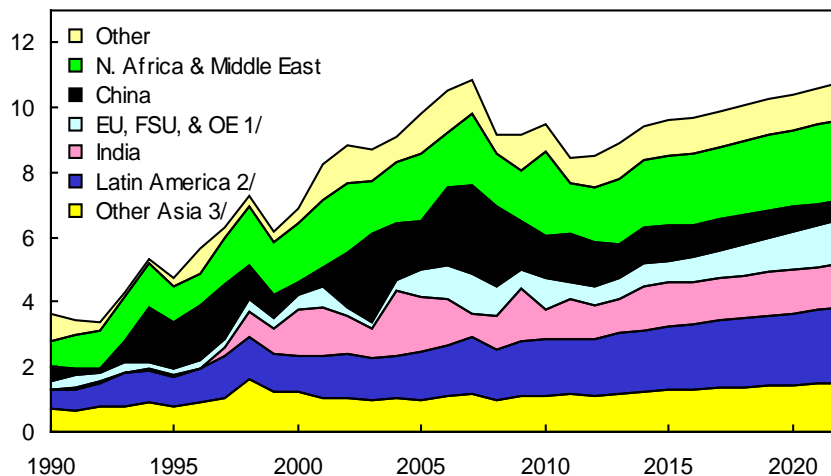
Argentina, Brazil, and the United States remain the three largest exporters of soybean meal. Together, their share of world exports rises slightly, to nearly 90 percent over the next 10 years. Argentina, the world's largest soybean meal exporter, increases its share of the world market from around 46 percent in recent years to nearly 53 percent in 2022/23.

- 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 domestic 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 around 23 percent.
- U.S. soybean meal exports gradually increase by about 1 million tons during the next 10 years, reaching 10 million tons by 2022/23. Meanwhile, the U.S. share of world soybean meal exports declines slightly.
- India's soybean meal exports decline as domestic use strengthens and export competition from South America intensifies. Exports fall from more than 4 million tons in most recent years, to 2.3 million in 2022, 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 East European countries, where livestock production is expected to increase significantly.



## Global soybean oil imports

Million metric tons



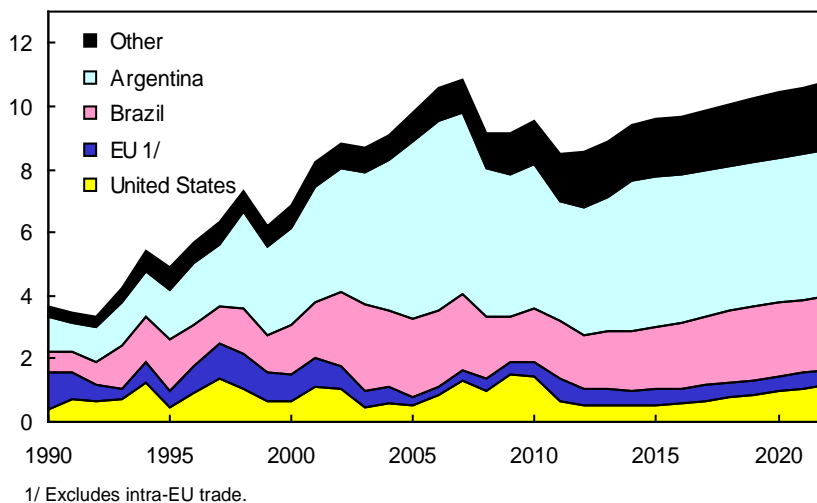
1/ European Union, former Soviet Union, and other Europe.  
2/ Includes Mexico. 3/ Asia excluding India and China.

World soybean oil imports climb 1.9 million tons (21 percent) to 10.8 million tons over the 2013/14 to 2022/23 projection period, bolstered by rising food and industrial use. China and India are the two countries that currently import the most soybean oil. 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 28 percent to 1.4 million tons in 2022/23. Factors contributing to the continued growth of India's soybean oil imports include burgeoning demand for vegetable oils and limited area for expanding domestic oilseed area. 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 tariffs on crude edible oils, which stood at 40 percent for soybean oil and 75-85 percent for other oils, to zero. 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 domestic crushing during the coming decade, the country's soybean oil imports are projected to decline about 50 percent, to 0.6 million tons. As a result, China will be replaced by India as the world's leading soybean oil importer.
- Income and population growth in Latin America, North Africa, and the Middle East contribute to gains in soybean oil demand and imports, although rising international prices for soybean oil will temper consumption. Nevertheless, the North Africa and Middle East region is projected to become the largest importing region, followed by Latin America.

## Global soybean oil exports

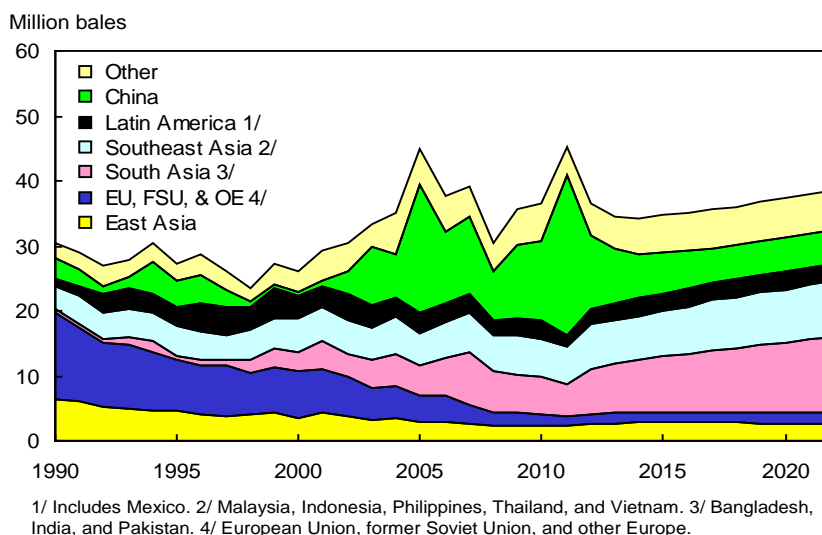
Million metric tons



Argentina and Brazil are by far the world's largest soybean oil exporters, and their combined share of world soybean oil exports is projected to remain above 64 percent during the coming decade.

- Soybean oil exports from Argentina—the world's largest exporter—are projected to climb modestly to 4.6 million tons by 2022/23. 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.
- After falling sharply during the last 2 years, U.S. soybean oil exports are projected to begin climbing once again. By 2022, exports double, rising to 1.2 million tons, allowing the United States to remain the world's third-largest soybean oil exporter. U.S. soybean oil used for biodiesel production also increases steadily. U.S. imports of canola oil from Canada and palm oil from Southeast Asia are projected to continue to grow strongly, and augment the U.S. edible oil supply.
- In the EU, as in Argentina and the United States, exportable supplies of vegetable oils are limited by the growth in biodiesel production.

### Global cotton imports



World cotton trade is projected to trend upward at 1.2 percent a year between 2013 and 2022, but does not surpass the 2005 record. Significant geographical shifts in mill use and cotton trade are expected during the next decade as a result of recent changes in China's cotton policy (see box).

- China's textile industry is expected to stagnate during the coming years and cotton imports are projected to decline sharply as a result of Chinese policies. The projected 3-million-bale decline in Chinese imports between 2013 and 2022 is more than offset by increased imports by Pakistan, Bangladesh, and other Asian countries. Asia's share of world cotton imports peaked at 84 percent in 2011/12, largely due to record Chinese imports. Asia's share is projected to retreat to just above 70 for most of the coming decade.
- As textile production and cotton imports shift from China to other countries, Pakistan, Bangladesh, and Vietnam, become major beneficiaries. Bangladesh became the world's second-largest cotton importer during the last decade and is projected to replace China as the world's largest importer midway through the projection period.
- Pakistan has moved up to become a major importer in recent years. Even though new *Bacillus thuringiensis* (*Bt*) cotton varieties specific to Pakistan's cotton growing conditions stimulate additional production, cotton imports are projected to increase rapidly and to surpass Turkish and Chinese imports by 2022.
- Turkey's textile industry benefited from favorable access to the EU until the end of the Multifiber Arrangement (MFA) quotas gave lower cost competitors more favorable access to EU markets. Turkey's cotton imports have stagnated since then. In the projections, Turkey's imports increase over the next several years as the country's textile trade gains some benefits from China's decline. However, Turkey's cotton imports flatten during the last half of the projection period.
- Other textile producing countries, with high wages and other production costs—such as Japan, Taiwan, South Korea, and countries in the EU—are not expected to gain appreciably from the shift of textile production out of China.

### **China's Cotton Policy: Global Impacts**

China's cotton policy has changed significantly since 2010, with important consequences for global cotton market. In March 2011, China announced a national floor price for cotton for the first time in more than a decade, and that price was increased in 2012, despite a steep decline in world cotton prices. One result has been a large premium between cotton prices in China compared with the rest of the world, which is shifting world cotton consumption from China to other countries such as Pakistan, Bangladesh, India, and Vietnam.

Three trends are behind the evolution of China's cotton policy and its impact. One is China's growing support for domestic grain producers since 2004, which has helped make grain production more attractive to farmers in China. Another is China's rising wages, which further places cotton—a relatively labor-intensive crop in China—at a disadvantage with respect to grains. The third trend is a downward shift in the price of cotton outside of China relative to other commodities.

China has been increasing its support to farmers since 2004 in part to help redress a growing gap between rural and urban incomes. A strong upward trend in world food commodity prices that began in 2002 increased interest by China's policy makers to support domestic grain production. In 2004, China introduced floor prices for rice, and later extended the policy to wheat and corn. China also introduced production subsidies for grains, recently expanding payments for mechanization and to offset rising fuel costs. Cotton producers have received small subsidies for using superior seed, but have not received the other extensive subsidies.

Increased labor costs also have favored a shift from cotton to grain production. While China's grain production has become more mechanized, cotton production in China is still relatively labor intensive. Moreover, the country's agricultural labor force has declined as workers migrated to higher paying jobs in urban areas.

The shift in China's policy followed a nearly-unprecedented spike in cotton prices in 2010. Reserve stocks held by China's government were virtually exhausted in auctions attempting to limit domestic price increases. Setting a relatively high cotton support price in 2011 protected farmers from a severe contraction in prices, restored expected cotton prices to a 10-to-1 ratio with respect to wheat, and helped to ensure domestic supplies for the textile industry (albeit at inflated prices) and to rebuild national reserve stocks. China's reserve stock management authority also is believed to have purchased nearly 4.6 million bales of foreign cotton for the reserve in 2011/12. Authorities also purchased 45 percent of the domestic crop, adding 18.4 million bales (equal to 18 percent of world consumption) to the reserve.

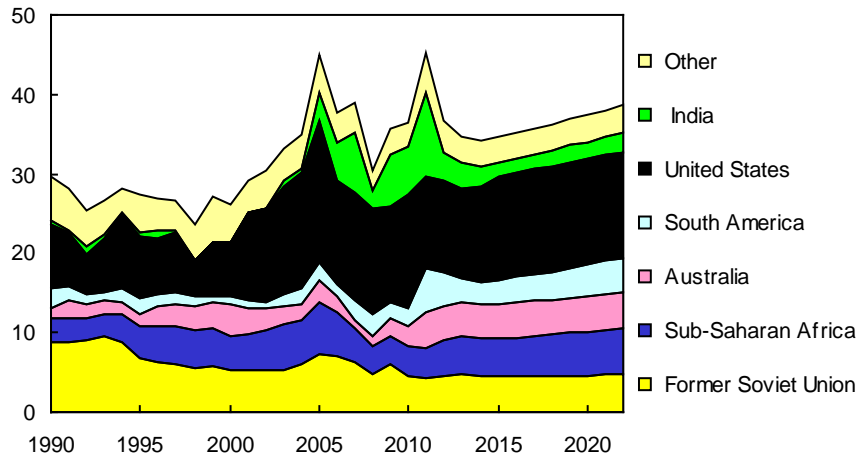
Commensurate with rising production costs, China raised its floor prices for grains and cotton in 2012. But world cotton prices fell to the lowest level since the 2010/11 spike. The price premium for cotton within China relative to the rest of the world rose to 50-70 percent during the first months of the 2012/13 marketing year, compared with the 15-40 percent premium that prevailed during 2005-2010. Lacking access to cotton at competitive prices, China's textile industry increased yarn imports from India, which in turn, sparked increased cotton consumption in India.

China's commitment to sustain its farmers' incomes suggests continued strength in domestic grain prices and subsidies. Maintaining domestic cotton production through price policies under these circumstances suggests continued problems for China's textile industry. China's continued accumulation of cotton in its reserve (an additional 5.2 million tons during the first 5 months of 2012/13) highlights the potential strains on storage space and the potential negative impact on world prices that would result with a reversal of China's reserve stocks policies.

Over the next decade, China's cotton production will become more efficient as the share of output in the western province of Xinjiang grows and Xinjiang's production mechanization continues. However, China's share of world cotton consumption has declined in recent years and is projected to continue the downward trend. The shares of world consumption of other major textile producers are projected to increase.

### Global cotton exports

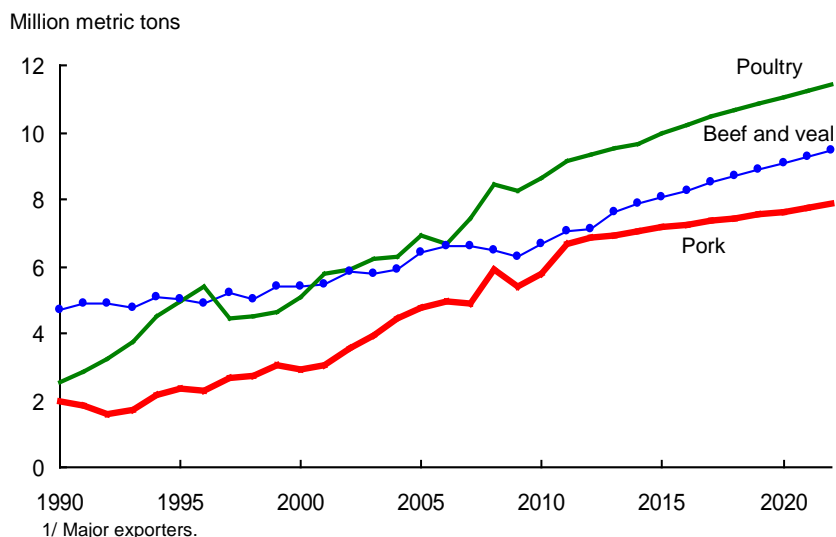
Million bales



Globalization is expected to continue to move raw cotton production to countries with favorable resource endowments and technology. Traditional producers with large land bases suitable for cotton production continue to benefit from post-MFA trade patterns, including the United States, Brazil, and Sub-Saharan Africa, as well as the traditional low-cost producing countries of India and Pakistan. The importance of technology has been highlighted by the impact of India's rapid adoption of genetically modified cotton, nearly all *Bt* cotton.

- The United States is the world's leading cotton exporter throughout the projections. U.S. exports rise slightly to 13.3 million bales by 2022/23. The U.S. share of world exports rises slightly over the next several years but remains slightly below the recent historical average, and declines during the last half of the projection period.
- Brazil's cotton exports are projected to increase by 40 percent between 2013/14 and 2022/23 as the area planted to cotton continues a long-term upward trend. Exports from Brazil rise 1.2 million bales, more than from any other country or region.
- Exports from the 15 countries of the Economic Community of West African States declined during the post-MFA period but are projected to renew growth during the coming decade due to improvements in technical and financial infrastructure, and the adoption of *Bt* cotton. The region's exports are projected to rise 16 percent during the next 10 years and to account for 12 percent of world trade growth. Exports from the other countries in Sub-Saharan Africa declined after 2005 but are also projected to increase in the future.
- Government policies in Central Asian countries of the FSU promoting investment in textiles 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.
- Improved cotton yields in India, largely due to the adoption of *Bt* cotton, have raised India's production and exports in recent years. Yield growth is projected to continue as the gains from *Bt* cotton are further enhanced by improved cultivation practices. The increase in cotton output is expected to enable India to increase textile production with domestically-produced cotton. As a result, projected cotton exports are well below levels of the past half-decade.

## Meat exports 1/



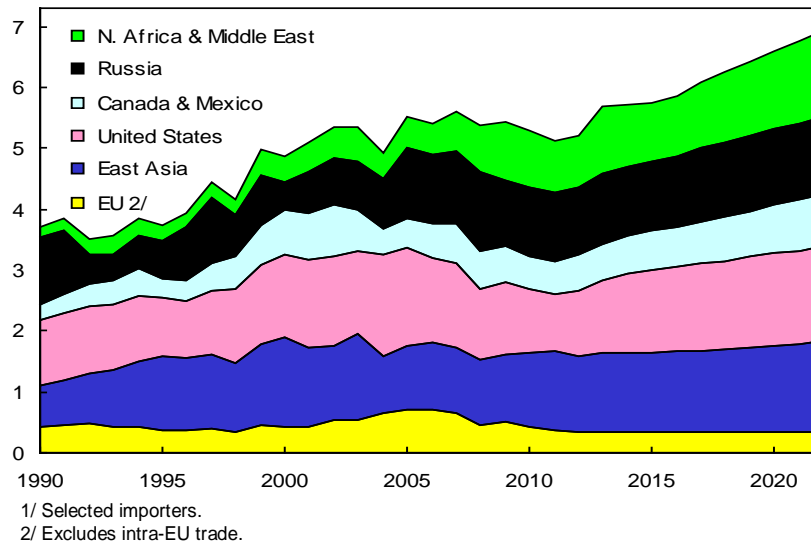
Global per capita meat consumption continues to increase with poultry consumption rising faster than pork or beef consumption. Growth in world meat consumption is projected to increase about 1.8 percent per year during 2013-2022 and meat shipments from major exporters rise nearly 2 percent per year. The projected growth rates of exports from major exporters of beef, pork, and poultry meat are 2.4, 1.4, and 2.0 percent per year, respectively. During this period, exports rise 1.8 million tons for beef, 0.9 million for pork, and 1.9 million for poultry.

World meat trade increases 19 percent in the projections, driven primarily by rising per capita incomes and population growth in developing countries. However, Russia's aggregate meat imports decline, reflecting policies that stimulate domestic meat production and curb imports.

- Beef exports from Asia, mostly from 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 over 40 percent of the increase in world beef exports.
- Australia has generally been the world's second-largest beef exporter, after Brazil. Although its beef herd is in a rebuilding phase, production and exports are projected to grow slowly. 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 during 2006-10 but is now in a rebuilding phase. As a result, Canada's net beef exports are projected to rise slowly.
- Argentina's beef herd is recovering after a sharp contraction following 2005 export restrictions, and exports are expected to rise later in the projection period.
- EU beef exports are projected to decline slightly in the next 10 years.
- Exports from Brazil's expanding pork sector are expected to be competitive in price-sensitive markets such as Russia, China, and Hong Kong. Brazil is expected to continue to be the largest exporter of poultry products due to a combination of competitive production costs and export prices.

## Beef imports 1/

Million metric tons

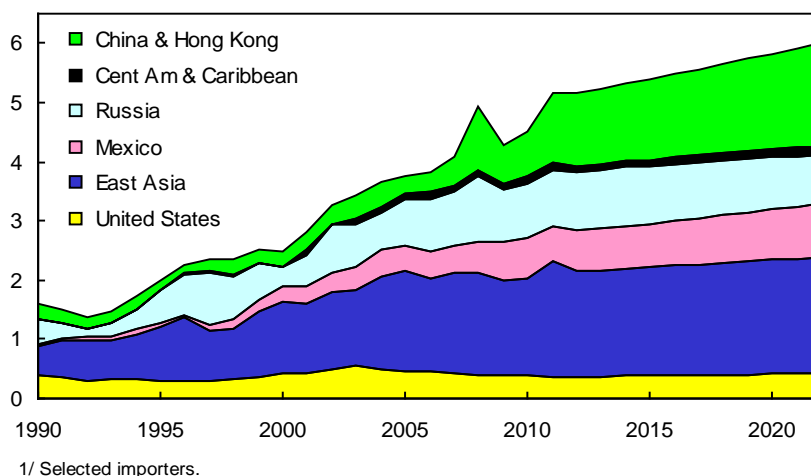


Between 2013 and 2022, imports by major beef importing countries are projected to increase nearly 1.9 million tons (30 percent) and reach 8.1 million tons. Exports of lower priced beef from India and Brazil to a number of low- and middle-income countries account for nearly two-thirds of the projected increase in world beef trade.

- During the next 10 years, Russian beef imports are projected to fluctuate around 1.1 million tons as rising consumer demand is offset by expanding Russian beef production. Russia does remain a market for EU and South American beef exports.
- Imports of grain-fed beef by higher-income countries are projected to rise steadily. U.S. beef exports to these countries are constrained in the early half of the projections as U.S. production recovers. During the last half of the projections, U.S. beef exports rise more rapidly as production expands and exports become more competitive. As more beef demand in East Asian markets is met by U.S. grain-fed beef, exports of grass-fed beef to those markets from Australia and New Zealand are likely to decline, diverting more grass-fed product to the United States.
- U.S. beef imports, primarily of grass-fed, lean beef from Australia and New Zealand for use in ground beef and processed products, rise during the projection period. The United States is projected to be the world's largest beef importer and accounts for 20 percent of the increase in world imports.
- The Middle East, with a relatively fast growing population, and Asia, with high income growth rates, are projected to be growing markets for beef. Together, the two regions account for 58 percent of the increase in world beef trade through 2022.
- 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.

## Pork imports 1/

Million metric tons



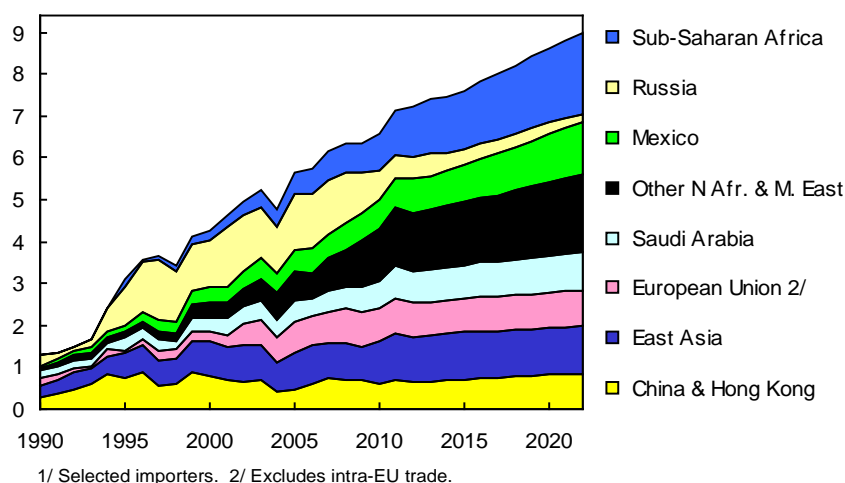
After a sharp 2009 drop in world pork imports that was associated with the global recession, global imports recovered in 2010 and 2011. In the projections for 2013 to 2022, world pork imports are expected to continue to rise, and to increase by 0.84 million tons (16 percent).

- Japan is projected to remain the world's largest pork importer during the coming decade. Nonetheless, with Japan's aging and declining population, its imports are not projected to rise significantly.
- Russia's pork imports are projected to decline steadily during the next 10 years in response to the country's policies to stimulate domestic meat production and reduce reliance on imports. By 2022, Russian pork imports are projected to decline nearly 20 percent to about 0.8 million tons.
- In the projections, 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. Although China continues to export about 0.2 million tons a year, its imports rise to 1.2 million tons a year by 2022.
- Mexican pork imports increase the most of any country in the world, rising 0.22 million tons (32 percent) between 2013 and 2022. Increases in income and population are the primary drivers of Mexico's increasing demand for pork. Mexico accounts for about 26 percent 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 28 percent of the increase in world pork imports during the projection period.
- 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. Although income growth and an expanding population boost demand, the region's need to import most feedstuffs limits growth in pork production.



## Poultry imports 1/

Million metric tons



Poultry meat imports by major importers are projected to increase by 1.6 million tons (21 percent) during the projections period, reaching 9 million tons by 2022. Strong import growth is projected for much of the world except, most notably, for Russia (where policies constrain imports), and Japan.

- Poultry imports by Africa and the Middle East currently account for about 45 percent of imports by the major importers. Income and population growth boosts 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, the region's imports grow more than the rest of the world combined and by 2022 account for 52 percent of world imports. The Middle East accounts for more than half of the region's projected increase in imports. Imports by the Economic Community of West African States grow much more rapidly in percentage terms, but from a small base.
- 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 0.41 million tons (50 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 growth 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 is being reopened.

Table 4. Coarse grains trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
Importers												
Former Soviet Union <sup>1</sup>	1.1	1.1	1.2	1.4	1.5	1.6	1.6	1.7	1.8	1.9	1.9	2.0
Other Europe	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
European Union <sup>2</sup>	7.1	7.1	7.1	6.7	6.3	6.4	6.4	6.4	6.4	6.5	6.6	6.7
Middle East	22.4	19.9	21.9	22.9	23.4	23.7	24.1	24.5	24.8	25.1	25.3	25.6
North Africa	14.7	13.0	14.5	15.2	15.6	15.7	15.9	16.2	16.4	16.5	16.7	16.9
Sub-Saharan Africa <sup>3</sup>	2.5	2.6	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7
Japan	17.7	17.9	18.3	18.4	18.5	18.6	18.6	18.6	18.7	18.7	18.7	18.7
South Korea	7.7	8.1	8.5	8.8	9.0	9.0	9.2	9.4	9.5	9.7	9.8	9.9
Taiwan	4.4	4.5	4.5	4.6	4.6	4.6	4.6	4.7	4.7	4.7	4.7	4.8
China	7.9	4.5	9.3	10.1	10.7	11.9	13.7	15.3	17.0	18.8	20.9	23.0
Other Asia & Oceania	6.5	6.3	7.6	8.7	8.9	9.1	9.5	9.9	10.3	10.7	11.0	11.4
Mexico	12.7	11.4	15.0	15.5	16.5	17.0	17.7	18.3	19.0	19.8	20.6	21.4
Central America & Caribbean	5.2	5.4	5.5	5.5	5.6	5.7	5.7	5.8	5.8	5.9	6.0	6.0
Brazil	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2
Other South America	10.6	10.2	11.0	11.2	11.3	11.5	11.6	11.7	11.8	11.8	11.8	11.8
Other foreign <sup>4</sup>	13.7	-2.3	4.2	4.7	4.9	4.9	4.9	5.0	5.1	5.1	5.2	5.3
United States	3.1	4.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total trade	139.3	116.4	136.1	141.7	144.7	147.6	151.6	155.7	159.8	163.6	167.9	172.4
<i>Exports, million metric tons</i>												
Exporters												
European Union <sup>2</sup>	6.5	4.0	4.8	5.2	5.6	5.8	5.6	5.6	5.7	5.8	5.9	5.8
China	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Argentina	21.9	25.1	25.5	25.6	25.6	25.8	26.1	26.7	26.7	27.1	27.5	27.8
Australia	6.7	5.1	5.5	5.4	5.5	5.6	5.5	5.6	5.6	5.7	5.7	5.8
Canada	3.7	4.2	4.5	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.2	4.1
South Africa	1.8	2.5	2.3	2.0	2.2	2.2	2.4	2.4	2.5	2.5	2.6	2.8
Other Europe	2.4	0.3	1.5	1.6	1.7	1.8	1.9	1.9	2.0	2.1	2.4	2.4
Former Soviet Union <sup>1</sup>	24.4	19.0	20.1	20.7	21.1	22.4	23.9	25.4	26.4	27.4	28.3	29.4
Other foreign	30.8	23.9	23.5	23.2	22.6	22.6	22.9	23.0	24.0	24.3	24.9	26.0
United States	41.0	32.0	48.3	53.1	55.5	56.7	58.6	60.5	62.4	64.3	66.2	68.1
<i>Percent</i>												
U.S. trade share	29.4	27.5	35.5	37.5	38.4	38.4	38.6	38.8	39.0	39.3	39.4	39.5

1/ Covers FSU-12, includes intra-FSU trade.

2/ Covers EU-27, excludes intra-EU trade.

3/ Includes South Africa.

4/ Includes unaccounted, which can be negative.

The projections were completed in November 2012.

Table 5. Corn trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
<b>Importers</b>												
European Union <sup>1</sup>	6.3	6.5	6.5	6.2	5.8	5.8	5.9	5.9	5.9	5.9	6.1	6.2
Former Soviet Union <sup>2</sup>	0.3	0.3	0.4	0.6	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.0
Egypt	7.1	5.5	6.6	7.1	7.4	7.4	7.4	7.5	7.6	7.7	7.8	7.9
Morocco	1.7	1.9	2.1	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.2	2.2
Other North Africa	4.2	4.3	4.4	4.6	4.6	4.6	4.7	4.8	4.8	4.8	4.8	4.9
Iran	3.6	3.5	4.2	4.5	4.5	4.6	4.6	4.7	4.8	4.8	4.8	4.8
Saudi Arabia	2.0	2.1	2.2	2.3	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.9
Turkey	0.7	0.5	0.5	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9
Other Middle East	3.9	4.1	4.2	4.4	4.5	4.5	4.6	4.7	4.7	4.7	4.7	4.8
Japan	14.9	15.0	15.4	15.6	15.7	15.7	15.8	15.8	15.9	15.9	15.9	15.9
South Korea	7.6	8.0	8.5	8.8	8.9	9.0	9.1	9.3	9.5	9.6	9.7	9.8
Taiwan	4.2	4.3	4.3	4.4	4.4	4.4	4.5	4.5	4.6	4.6	4.6	4.6
China	5.2	2.0	6.8	7.4	8.0	9.0	10.8	12.3	13.9	15.6	17.6	19.6
Indonesia	1.5	1.5	2.0	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.5
Malaysia	3.0	3.0	3.1	3.1	3.2	3.2	3.3	3.3	3.4	3.4	3.5	3.5
Other Asia & Oceania	1.9	1.8	2.5	3.3	3.5	3.7	3.9	4.2	4.6	4.8	5.0	5.3
Canada	0.9	0.5	0.6	1.1	1.3	1.3	1.3	1.4	1.5	1.5	1.6	1.7
Mexico	11.2	9.0	10.3	11.2	12.2	12.8	13.4	14.0	14.7	15.4	16.1	16.9
Central America & Caribbean	5.2	5.4	5.5	5.5	5.6	5.6	5.7	5.8	5.8	5.9	5.9	6.0
Brazil	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Other South America	8.7	8.7	9.4	9.5	9.5	9.7	9.7	9.8	9.8	9.8	9.8	9.8
Sub-Saharan Africa <sup>3</sup>	2.0	1.9	2.0	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
Other foreign <sup>4</sup>	13.1	-2.6	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3
United States	0.7	2.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
<b>Total trade</b>	<b>110.8</b>	<b>90.3</b>	<b>106.3</b>	<b>111.4</b>	<b>113.9</b>	<b>116.5</b>	<b>120.1</b>	<b>123.9</b>	<b>127.5</b>	<b>130.9</b>	<b>134.7</b>	<b>138.7</b>
<i>Exports, million metric tons</i>												
<b>Exporters</b>												
European Union <sup>1</sup>	3.2	0.5	1.3	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7
China	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Argentina	16.0	18.5	18.7	18.6	18.5	18.6	18.8	19.2	19.2	19.5	19.8	19.9
Brazil	21.0	16.0	16.0	15.8	15.2	15.1	15.4	15.6	16.7	17.0	17.5	18.6
South Africa	1.8	2.5	2.2	2.0	2.2	2.2	2.4	2.4	2.5	2.5	2.6	2.8
Other Europe	2.4	0.3	1.5	1.6	1.6	1.8	1.9	1.9	2.0	2.1	2.3	2.4
Former Soviet Union <sup>2</sup>	17.3	14.7	15.2	15.6	16.0	17.1	18.1	19.3	19.9	20.6	21.2	21.8
Other foreign	9.8	8.3	7.9	7.9	7.9	7.9	7.9	7.8	7.8	7.8	7.8	7.9
United States	39.2	29.2	43.2	48.3	50.8	52.1	54.0	55.9	57.8	59.7	61.6	63.5
<i>Percent</i>												
<b>U.S. trade share</b>	<b>35.4</b>	<b>32.3</b>	<b>40.6</b>	<b>43.3</b>	<b>44.6</b>	<b>44.7</b>	<b>44.9</b>	<b>45.1</b>	<b>45.3</b>	<b>45.6</b>	<b>45.7</b>	<b>45.8</b>

1/ Covers EU-27, excludes intra-EU trade.

2/ Covers FSU-12, includes intra-FSU trade.

3/ Includes South Africa.

4/ Includes unaccounted, which can be negative.

The projections were completed in November 2012.

Table 6. Barley trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
	<i>Imports, million metric tons</i>											
<i>Importers</i>												
Former Soviet Union <sup>1</sup>	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Japan	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
China	2.5	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.9	3.0	3.2	3.3
Latin America <sup>2</sup>	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2
Saudi Arabia	8.5	7.0	7.7	8.0	8.0	8.1	8.1	8.2	8.3	8.3	8.4	8.4
Iran	1.3	1.0	0.9	0.9	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3
Other Middle East	2.1	1.4	1.7	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0
Morocco	0.6	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Other North Africa	1.1	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.0	1.1	1.1	1.1
Other foreign <sup>3</sup>	0.6	0.5	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
United States	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total trade	20.3	16.9	18.4	19.0	19.6	20.0	20.2	20.5	20.9	21.2	21.6	22.0
	<i>Exports, million metric tons</i>											
<i>Exporters</i>												
European Union <sup>4</sup>	3.1	3.3	3.3	3.5	3.8	4.0	3.8	3.8	3.9	4.0	4.0	3.9
Argentina	3.6	4.0	4.0	4.1	4.2	4.3	4.4	4.4	4.5	4.5	4.6	4.7
Australia	5.2	3.8	4.4	4.4	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.7
Canada	1.3	1.3	1.7	1.9	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.1
Russia	3.5	1.7	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.5
Ukraine	2.5	2.2	2.1	2.1	2.0	2.2	2.5	2.7	2.9	3.1	3.2	3.4
Other Former Soviet Union <sup>5</sup>	0.7	0.2	0.5	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.2	1.4
Turkey	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other foreign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
United States	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<i>Percent</i>											
U.S. trade share	0.9	1.3	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0

1/ Covers FSU-12, includes intra-FSU trade.

2/ Includes Mexico.

3/ Includes unaccounted.

4/ Covers EU-27, excludes intra-EU trade.

5/ Covers FSU-12 except Russia and Ukraine, includes intra-FSU trade.

The projections were completed in November 2012.

Table 7. Sorghum trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<b>Importers</b>	<i>Imports, million metric tons</i>											
Japan	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Mexico	1.3	2.2	4.5	4.1	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.2
North Africa & Middle East	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
South America	1.4	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4
Sub-Saharan Africa <sup>1</sup>	0.4	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Other <sup>2</sup>	0.7	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
<b>Total trade</b>	5.4	6.5	8.7	8.5	8.4	8.3	8.4	8.4	8.5	8.6	8.7	8.7
<b>Exporters</b>	<i>Exports, million metric tons</i>											
Argentina	2.3	2.6	2.7	2.8	2.8	2.9	3.0	3.0	3.0	3.1	3.1	3.2
Australia	1.2	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
Other foreign	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
United States	1.6	2.5	4.8	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
<b>U.S. trade share</b>	<i>Percent</i>											
	29.8	38.8	55.5	54.0	53.0	51.9	51.5	51.3	50.9	50.3	49.8	49.4

1/ Includes South Africa.

2/ EU-27 and the rest of the world. Excludes intra-EU trade. Includes unaccounted.  
The projections were completed in November 2012.

Table 8. Wheat trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
Importers												
Morocco	3.6	4.5	3.6	3.6	3.7	3.8	3.9	3.9	4.0	4.1	4.1	4.2
Egypt	11.7	9.5	10.8	11.0	11.2	11.3	11.3	11.5	11.6	11.8	11.9	12.0
Other North Africa	9.4	8.1	9.4	9.4	9.3	9.3	9.3	9.3	9.4	9.3	9.3	9.4
Saudi Arabia	2.9	2.3	2.3	2.5	2.6	2.8	2.9	3.0	3.1	3.2	3.3	3.4
Iran	0.8	3.0	1.0	1.0	1.1	1.1	1.2	1.3	1.4	1.6	1.7	1.9
Iraq	3.8	3.7	3.9	3.8	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5
Other Middle East	9.5	8.6	9.3	9.5	9.7	10.0	10.2	10.3	10.5	10.7	10.8	10.9
West African Community <sup>1</sup>	6.3	5.9	6.2	6.5	6.7	6.7	7.0	7.2	7.4	7.7	7.9	8.1
Other Sub-Saharan Africa <sup>2</sup>	11.6	9.7	10.4	10.7	11.1	11.5	11.9	12.2	12.5	12.9	13.2	13.6
Mexico	5.0	4.2	4.0	4.0	4.1	4.1	4.2	4.2	4.3	4.3	4.4	4.4
Central America & Caribbean	3.7	3.6	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8
Brazil	7.3	7.0	7.2	7.2	7.3	7.4	7.5	7.5	7.5	7.6	7.6	7.7
Other South America	6.8	6.5	6.6	6.6	6.7	6.8	6.8	6.9	6.9	7.0	7.1	7.1
European Union <sup>3</sup>	7.4	6.0	6.0	5.9	6.1	6.2	6.1	6.1	6.0	6.0	5.9	5.8
Other Europe	1.9	1.8	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9
Former Soviet Union <sup>4</sup>	7.6	6.6	6.4	6.6	6.7	6.7	6.7	6.8	6.9	6.9	7.0	7.0
Japan	6.4	5.9	5.9	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
South Korea	5.2	4.4	4.3	4.3	4.1	4.0	4.0	4.0	4.0	3.9	3.9	3.9
Philippines	4.0	3.2	3.2	3.3	3.3	3.3	3.3	3.4	3.5	3.5	3.6	3.6
Indonesia	6.5	6.6	6.8	7.0	7.2	7.4	7.6	7.7	7.9	8.2	8.4	8.6
China	2.9	2.5	2.5	2.5	2.6	2.6	2.7	2.8	3.0	3.1	3.2	3.2
Bangladesh	2.0	3.0	3.1	3.2	3.4	3.4	3.5	3.7	3.9	4.0	4.2	4.4
Malaysia	1.5	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.7
Thailand	2.6	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0
Vietnam	2.7	2.6	2.2	2.3	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
Pakistan	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Other Asia & Oceania	7.4	6.9	7.6	7.9	8.2	8.5	8.9	9.2	9.5	9.8	10.2	10.6
Other foreign <sup>5</sup>	12.6	-0.3	6.7	6.7	6.8	6.9	6.9	7.0	7.1	7.2	7.3	7.4
United States	3.1	3.5	3.3	3.4	3.5	3.7	3.8	3.8	3.8	3.8	3.8	3.8
Total trade	156.3	132.7	141.5	143.6	146.1	148.6	151.0	153.4	155.9	158.6	161.2	163.7
<i>Exports, million metric tons</i>												
Exporters												
European Union <sup>3</sup>	16.4	17.5	19.8	20.3	21.1	21.7	22.7	23.3	23.6	24.0	24.6	25.2
Canada	17.4	19.0	18.0	18.9	18.2	17.9	18.0	18.0	18.1	18.1	18.2	18.3
Australia	24.7	16.5	18.1	18.7	19.0	19.3	19.6	19.8	20.0	20.2	20.6	21.0
Argentina	12.7	5.5	7.1	7.3	7.1	6.9	6.8	6.8	6.7	6.7	6.6	6.6
Russia	21.6	10.0	15.1	17.9	19.7	20.9	21.1	21.9	23.0	24.2	24.7	25.3
Ukraine	5.4	6.0	8.8	9.1	9.3	9.6	10.1	10.6	11.1	11.5	12.0	12.6
Other Former Soviet Union <sup>6</sup>	12.2	7.6	7.9	8.2	8.9	9.4	9.8	10.1	10.5	10.9	11.3	11.8
Other Europe	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
India	0.9	6.0	5.0	3.2	2.1	1.7	1.4	1.1	0.9	0.7	0.4	0.2
China	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Turkey	3.7	3.5	3.4	3.7	3.8	4.1	4.3	4.5	4.6	4.7	4.9	5.0
Other foreign	11.0	9.6	9.5	9.5	9.6	9.8	9.9	10.0	10.1	10.2	10.3	10.4
United States	28.6	29.9	27.2	25.2	25.3	25.4	25.6	25.6	25.6	25.6	25.6	25.6
<i>Percent</i>												
U.S. trade share	18.3	22.6	19.2	17.5	17.3	17.1	16.9	16.7	16.4	16.1	15.9	15.6

1/ Economic Community of West African States

2/ Includes South Africa.

3/ Covers EU-27, excludes intra-EU trade.

4/ Covers FSU-12, includes intra-FSU trade.

5/ Includes unaccounted, which can be negative.

6/ Covers FSU-12 except Russia and Ukraine, includes intra-FSU trade.

The projections were completed in November 2012.

Table 9. Rice trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
Importers												
Canada	0.35	0.35	0.35	0.36	0.36	0.37	0.37	0.37	0.38	0.38	0.39	0.39
Mexico	0.64	0.73	0.71	0.74	0.76	0.77	0.79	0.81	0.83	0.85	0.87	0.89
Central America/Caribbean	1.49	1.48	1.51	1.54	1.56	1.58	1.61	1.63	1.66	1.70	1.73	1.76
Brazil	0.75	0.75	0.64	0.64	0.64	0.64	0.64	0.64	0.65	0.65	0.65	0.65
Other South America	0.85	0.85	0.53	0.50	0.57	0.59	0.60	0.63	0.66	0.68	0.71	0.74
European Union <sup>1</sup>	1.21	1.40	1.55	1.57	1.58	1.60	1.61	1.62	1.63	1.64	1.64	1.65
Former Soviet Union <sup>2</sup>	0.37	0.41	0.42	0.40	0.40	0.40	0.38	0.36	0.34	0.33	0.31	0.29
Other Europe	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.16
Bangladesh	0.56	0.25	0.55	0.63	0.71	0.79	0.87	0.95	1.03	1.11	1.18	1.25
China	1.62	2.40	1.82	1.80	1.82	1.83	1.84	1.85	1.86	1.87	1.86	1.86
Japan	0.70	0.70	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
South Korea	0.36	0.60	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Indonesia	1.70	1.45	2.50	2.65	2.73	2.87	3.03	3.19	3.39	3.61	3.81	3.96
Malaysia	1.09	1.05	1.10	1.16	1.20	1.24	1.28	1.32	1.35	1.38	1.41	1.43
Philippines	1.50	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50
Other Asia & Oceania	2.68	2.74	2.72	2.80	2.88	2.93	2.98	3.04	3.09	3.14	3.19	3.24
Iraq	1.35	1.35	1.32	1.35	1.39	1.43	1.45	1.49	1.52	1.55	1.57	1.60
Iran	1.90	1.95	1.95	1.97	2.00	2.03	2.06	2.09	2.11	2.13	2.15	2.17
Saudi Arabia	1.15	1.23	1.22	1.22	1.22	1.24	1.26	1.28	1.30	1.32	1.34	1.37
Other N. Africa & M. East	2.56	2.14	2.26	2.31	2.39	2.46	2.52	2.58	2.63	2.69	2.74	2.79
West African Community <sup>3</sup>	8.17	6.32	6.70	6.94	7.20	7.50	7.80	8.10	8.40	8.70	8.97	9.21
Other Sub-Saharan Africa <sup>4</sup>	2.41	2.53	2.56	2.63	2.72	2.83	2.90	3.00	3.10	3.20	3.30	3.40
South Africa	0.95	1.00	1.04	1.05	1.07	1.09	1.10	1.12	1.14	1.15	1.17	1.19
Other foreign <sup>5</sup>	3.27	2.58	2.54	2.54	2.55	2.56	2.57	2.57	2.58	2.58	2.59	2.59
United States	0.61	0.65	0.65	0.66	0.67	0.68	0.68	0.69	0.70	0.71	0.72	0.74
Total imports	38.37	36.52	37.49	38.40	39.48	40.56	41.59	42.68	43.78	44.91	45.95	46.92
<i>Exports, million metric tons</i>												
Exporters												
Australia	0.45	0.50	0.48	0.47	0.47	0.47	0.48	0.49	0.49	0.50	0.50	0.51
Argentina	0.68	0.53	0.63	0.66	0.69	0.70	0.70	0.71	0.72	0.72	0.72	0.73
Other South America	2.65	2.08	2.19	2.24	2.30	2.36	2.41	2.49	2.56	2.62	2.67	2.74
European Union <sup>1</sup>	0.20	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.26
China	0.44	0.50	0.64	0.69	0.69	0.76	0.83	0.87	0.93	0.99	1.05	1.11
India	10.40	7.25	6.83	5.75	5.50	5.75	5.91	6.05	6.25	6.41	6.57	6.75
Pakistan	3.75	4.00	4.13	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	5.00
Thailand	6.50	8.00	8.80	9.80	10.56	10.98	11.35	11.71	12.00	12.36	12.71	12.98
Vietnam	7.20	7.00	7.44	7.65	7.75	7.85	7.95	8.10	8.30	8.50	8.63	8.75
Burma	0.70	0.60	0.68	0.74	0.77	0.77	0.80	0.88	0.94	0.99	1.05	1.10
Cambodia	0.80	0.95	1.02	1.12	1.15	1.16	1.22	1.29	1.35	1.41	1.48	1.55
Egypt	0.60	0.85	0.74	0.70	0.66	0.62	0.59	0.57	0.55	0.52	0.50	0.48
Other foreign	0.78	0.75	0.72	0.72	0.72	0.73	0.74	0.74	0.74	0.74	0.75	0.75
United States	3.22	3.28	2.93	3.39	3.67	3.77	3.87	3.94	4.01	4.08	4.15	4.22
Total exports	38.37	36.52	37.49	38.40	39.48	40.56	41.59	42.68	43.78	44.91	45.95	46.92
<i>Percent</i>												
U.S. trade share	8.4	9.0	7.8	8.8	9.3	9.3	9.3	9.2	9.1	9.1	9.0	9.0

1/ Covers EU-27, excludes intra-EU trade.

2/ Covers FSU-12, includes intra-FSU trade.

3/ Economic Community of West African States.

4/ Excludes South Africa.

5/ Includes unaccounted.

The projections were completed in November 2012.

Table 10. Soybean trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
<b>Importers</b>												
European Union <sup>1</sup>	11.3	11.0	11.7	11.2	11.2	11.2	11.2	11.2	11.3	11.3	11.3	11.3
Japan	2.8	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7
South Korea	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Taiwan	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Mexico	3.4	3.4	3.7	3.8	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5
Former Soviet Union <sup>2</sup>	0.7	0.8	1.1	1.2	1.3	1.4	1.4	1.3	1.3	1.2	1.2	1.1
N. Africa & Middle East	3.5	3.5	3.8	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.6	4.7
China	59.2	63.0	67.6	71.6	75.2	79.0	82.8	86.7	90.6	94.7	98.8	102.9
Malaysia	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Indonesia	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.3
Other	2.5	10.6	8.4	8.7	8.9	9.1	9.4	9.6	9.8	10.0	10.3	10.5
<b>Total imports</b>	<b>89.3</b>	<b>100.9</b>	<b>105.0</b>	<b>109.0</b>	<b>113.2</b>	<b>117.6</b>	<b>121.9</b>	<b>126.2</b>	<b>130.6</b>	<b>135.1</b>	<b>139.7</b>	<b>144.3</b>
<i>Exports, million metric tons</i>												
<b>Exporters</b>												
Argentina	7.4	12.0	10.9	12.2	13.1	13.7	14.2	15.0	15.7	16.2	16.8	17.5
Brazil	36.3	37.4	39.4	42.3	43.8	46.2	48.9	51.3	54.4	57.6	60.8	63.8
Other South America	4.7	7.3	7.8	8.1	8.5	8.9	9.3	9.7	10.1	10.5	10.9	11.3
Ukraine	1.3	1.8	1.9	2.1	2.2	2.4	2.5	2.7	2.8	2.9	3.1	3.2
Other foreign	3.5	3.4	3.9	3.9	4.0	4.1	4.1	4.2	4.3	4.4	4.5	4.6
United States	36.1	38.9	41.2	40.3	41.6	42.5	42.9	43.3	43.3	43.5	43.7	43.8
<b>Total exports</b>	<b>89.3</b>	<b>100.9</b>	<b>105.0</b>	<b>109.0</b>	<b>113.2</b>	<b>117.6</b>	<b>121.9</b>	<b>126.2</b>	<b>130.6</b>	<b>135.1</b>	<b>139.7</b>	<b>144.3</b>
<i>Percent</i>												
U.S. trade share	40.4	38.6	39.3	37.0	36.8	36.1	35.2	34.3	33.1	32.2	31.3	30.4

1/ Covers EU-27, excludes intra-EU trade.

2/ Covers FSU-12, includes intra-FSU trade.

The projections were completed in November 2012.



Table 11. Soybean meal trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
<b>Importers</b>												
European Union <sup>1</sup>	21.2	21.9	23.0	23.7	24.6	24.5	24.4	24.4	24.5	24.6	24.6	24.5
Former Soviet Union <sup>2</sup>	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0
Other Europe	0.6	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
Canada	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3
Japan	2.3	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Southeast Asia	11.2	11.2	11.3	12.0	12.4	12.7	13.1	13.7	14.1	14.6	15.0	15.5
Mexico	1.5	1.6	1.6	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.2
Other Latin America	6.5	6.6	6.9	7.1	7.3	7.6	7.8	8.0	8.2	8.5	8.7	8.9
North Africa & Middle East	7.4	7.3	8.0	8.3	8.5	8.6	8.8	8.9	9.1	9.3	9.4	9.6
Other	6.3	7.7	6.7	6.9	7.1	7.1	7.2	7.3	7.4	7.5	7.7	7.8
<b>Total imports</b>	<b>59.0</b>	<b>61.1</b>	<b>62.4</b>	<b>64.9</b>	<b>66.7</b>	<b>67.5</b>	<b>68.3</b>	<b>69.4</b>	<b>70.7</b>	<b>71.8</b>	<b>72.9</b>	<b>73.9</b>
<i>Exports, million metric tons</i>												
<b>Exporters</b>												
Argentina	26.0	29.8	30.4	32.4	33.6	33.9	34.4	35.3	36.4	37.3	38.2	38.9
Brazil	14.7	14.5	13.8	14.9	15.2	15.5	15.7	15.9	16.2	16.4	16.7	16.9
Other South America	2.4	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.9
China	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
India	4.6	4.3	3.9	3.5	3.5	3.5	3.3	3.1	2.9	2.7	2.5	2.3
European Union <sup>1</sup>	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Other foreign	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
United States	8.8	7.2	8.8	8.6	8.9	9.1	9.3	9.4	9.6	9.7	9.8	10.0
<b>Total exports</b>	<b>59.0</b>	<b>61.1</b>	<b>62.4</b>	<b>64.9</b>	<b>66.7</b>	<b>67.5</b>	<b>68.3</b>	<b>69.4</b>	<b>70.7</b>	<b>71.8</b>	<b>72.9</b>	<b>73.9</b>
<i>Percent</i>												
U.S. trade share	15.0	11.7	14.2	13.3	13.3	13.4	13.6	13.6	13.5	13.5	13.5	13.5

1/ Covers EU-27, excludes intra-EU trade.

2/ Covers FSU-12, includes intra-FSU trade.

The projections were completed in November 2012.

Table 12. Soybean oil trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million metric tons</i>												
<b>Importers</b>												
China	1.5	1.4	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.7	0.6
India	1.2	1.1	1.1	1.4	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4
Other Asia	1.2	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5
Latin America	1.7	1.7	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3
North Africa & Middle East	1.6	1.7	2.0	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.5
European Union <sup>1</sup>	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.3
Other	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
<b>Total imports</b>	<b>8.5</b>	<b>8.5</b>	<b>8.9</b>	<b>9.4</b>	<b>9.6</b>	<b>9.7</b>	<b>9.9</b>	<b>10.1</b>	<b>10.3</b>	<b>10.4</b>	<b>10.6</b>	<b>10.8</b>
<i>Exports, million metric tons</i>												
<b>Exporters</b>												
Argentina	3.8	4.1	4.3	4.8	4.7	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Brazil	1.9	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.4
European Union <sup>1</sup>	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Other foreign	1.5	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.1
United States	0.7	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
<b>Total exports</b>	<b>8.5</b>	<b>8.5</b>	<b>8.9</b>	<b>9.4</b>	<b>9.6</b>	<b>9.7</b>	<b>9.9</b>	<b>10.1</b>	<b>10.3</b>	<b>10.4</b>	<b>10.6</b>	<b>10.8</b>
<i>Percent</i>												
U.S. trade share	7.8	6.4	6.1	5.3	5.7	6.1	6.9	7.7	8.4	9.1	10.1	11.0

1/ Covers EU-27, excludes intra-EU trade.

The projections were completed in November 2012.

Table 13. All cotton trade long-term projections

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<i>Imports, million bales</i>												
<b>Importers</b>												
European Union <sup>1</sup>	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Former Soviet Union <sup>2</sup>	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
Brazil	0.0	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Mexico	1.0	1.3	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4
Japan	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
South Korea	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
China	24.5	11.0	8.0	6.5	6.0	5.5	5.0	5.0	5.0	5.0	5.0	5.0
Indonesia	2.0	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.8	2.8
Thailand	1.3	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.9
Pakistan	1.0	2.4	3.0	3.1	3.3	3.5	3.9	4.1	4.5	4.7	5.0	5.2
India	0.6	1.0	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
Bangladesh	3.1	3.7	3.9	4.2	4.4	4.6	4.8	5.0	5.2	5.5	5.7	6.0
Taiwan	0.9	1.0	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
Other Asia & Oceania	3.1	3.3	3.0	3.1	3.2	3.5	3.9	3.8	4.0	4.0	4.0	4.1
Turkey	2.4	3.5	3.6	3.7	4.0	4.2	4.3	4.3	4.3	4.4	4.4	4.4
Other	2.5	2.5	2.4	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7
<b>Total imports</b>	<b>45.3</b>	<b>36.6</b>	<b>34.6</b>	<b>34.1</b>	<b>34.6</b>	<b>35.1</b>	<b>35.6</b>	<b>36.1</b>	<b>36.9</b>	<b>37.4</b>	<b>38.0</b>	<b>38.6</b>
<i>Exports, million bales</i>												
<b>Exporters</b>												
Former Soviet Union <sup>2</sup>	4.2	4.5	4.7	4.5	4.4	4.5	4.5	4.6	4.6	4.6	4.7	4.7
Australia	4.6	4.2	4.3	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.5	4.5
Argentina	0.4	0.2	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Brazil	4.8	4.0	2.9	2.7	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.1
Other Latin America	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Pakistan	1.2	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
India	10.5	3.5	3.2	2.5	1.8	1.6	1.7	1.8	2.1	2.1	2.3	2.5
Egypt	0.5	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
West African Community <sup>3</sup>	2.1	2.6	2.9	2.8	2.9	3.0	3.0	3.1	3.2	3.2	3.3	3.4
Other Sub-Saharan Africa <sup>4</sup>	1.7	1.9	2.0	1.9	2.0	2.0	2.0	2.1	2.2	2.2	2.3	2.4
Other foreign	3.1	2.7	2.5	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.5
United States	11.7	11.6	11.3	12.1	13.1	13.3	13.3	13.3	13.3	13.3	13.3	13.3
<b>Total exports</b>	<b>45.3</b>	<b>36.6</b>	<b>34.6</b>	<b>34.1</b>	<b>34.6</b>	<b>35.1</b>	<b>35.6</b>	<b>36.1</b>	<b>36.9</b>	<b>37.4</b>	<b>38.0</b>	<b>38.6</b>
<i>Percent</i>												
U.S. trade share	25.9	31.7	32.5	35.3	37.7	37.8	37.4	36.9	36.1	35.6	35.0	34.4

1/ Covers EU-27, excludes intra-EU trade.

2/ Covers FSU-12, includes intra-FSU trade.

3/ Economic Community of West African States.

4/ Includes South Africa.

The projections were completed in November 2012.

Table 14. Beef trade long-term projections

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<i>Imports, thousand metric tons, carcass weight</i>												
Importers												
Japan	745	746	750	745	732	728	728	730	740	749	757	762
South Korea	431	375	405	431	430	445	464	483	504	520	541	569
Taiwan	130	115	125	131	136	140	144	148	151	155	159	162
Philippines	123	105	105	105	104	106	106	107	108	108	108	109
Other Asia	461	538	573	613	637	674	711	746	782	822	866	912
European Union <sup>1</sup>	367	350	350	348	347	345	343	341	340	338	337	336
Russia	1,065	1,070	1,080	1,068	1,073	1,089	1,114	1,126	1,143	1,162	1,178	1,191
Other Europe	67	57	57	58	59	60	61	62	63	64	64	65
Egypt	217	230	230	238	247	263	275	283	289	297	301	311
Other N. Africa & M. East	793	728	761	852	902	954	1,015	1,076	1,117	1,162	1,210	1,259
Mexico	265	300	325	330	340	360	394	428	450	478	508	542
Canada	282	285	290	293	297	300	304	307	311	315	318	322
United States	933	1,017	1,188	1,287	1,366	1,390	1,429	1,447	1,477	1,513	1,531	1,556
Major importers	5,879	5,916	6,239	6,499	6,670	6,854	7,087	7,284	7,475	7,681	7,878	8,098
<i>Exports, thousand metric tons, carcass weight</i>												
Exporters												
Australia	1,410	1,380	1,410	1,416	1,420	1,423	1,426	1,429	1,431	1,433	1,434	1,435
New Zealand	503	521	529	543	548	550	556	559	561	564	569	574
India	1,294	1,680	2,120	2,284	2,410	2,512	2,592	2,654	2,686	2,746	2,793	2,865
Other Asia	128	118	117	110	110	112	115	119	123	127	131	135
European Union <sup>1</sup>	449	310	300	311	249	248	247	247	248	250	252	253
Argentina	213	170	180	200	220	240	260	280	300	320	340	360
Brazil	1,340	1,394	1,450	1,503	1,556	1,606	1,652	1,696	1,741	1,788	1,838	1,887
Canada	426	395	415	427	449	471	484	489	497	506	511	513
United States	1,263	1,120	1,111	1,093	1,081	1,108	1,162	1,224	1,290	1,353	1,416	1,482
Major exporters	7,026	7,088	7,632	7,886	8,042	8,270	8,493	8,697	8,877	9,087	9,283	9,505

1/ Covers EU-27, excludes intra-EU trade.

The projections were completed in November 2012.

Table 15. Pork trade long-term projections

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	<i>Imports, thousand metric tons, carcass weight</i>											
<b>Importers</b>												
Japan	1,254	1,260	1,260	1,271	1,282	1,294	1,305	1,317	1,328	1,342	1,352	1,364
China	758	775	815	851	891	930	977	1,019	1,066	1,115	1,166	1,220
Hong Kong	432	440	445	459	466	477	482	491	498	509	518	528
South Korea	640	500	505	510	515	520	525	530	535	541	546	552
Russia	971	975	1,000	996	980	966	946	922	901	874	844	812
Mexico	594	675	690	710	732	755	778	804	831	857	885	913
Central America/Caribbean	100	94	96	100	104	110	116	122	128	135	142	149
Canada	204	240	237	248	255	261	267	272	278	284	290	297
United States	364	367	363	376	382	387	393	399	405	412	419	426
Major importers	5,317	5,326	5,411	5,521	5,606	5,700	5,789	5,877	5,972	6,069	6,162	6,260
	<i>Exports, thousand metric tons, carcass weight</i>											
<b>Exporters</b>												
Brazil	584	605	645	660	676	692	706	719	733	747	762	778
Canada	1,197	1,250	1,215	1,216	1,223	1,232	1,243	1,255	1,268	1,282	1,296	1,316
Mexico	86	90	110	113	116	119	122	126	129	132	136	139
European Union <sup>1</sup>	2,204	2,280	2,308	2,332	2,349	2,371	2,416	2,460	2,487	2,521	2,551	2,591
China	244	215	200	201	202	202	204	205	207	209	211	213
United States	2,354	2,471	2,470	2,518	2,578	2,634	2,654	2,675	2,719	2,758	2,798	2,828
Major exporters	6,669	6,911	6,948	7,040	7,144	7,250	7,344	7,439	7,543	7,650	7,755	7,864

1/ Covers EU-27, excludes intra-EU trade.

The projections were completed in November 2012.

Table 16. Poultry trade long-term projections<sup>1</sup>

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<i>Imports, thousand metric tons, ready to cook</i>												
<b>Importers</b>												
Russia	531	535	550	414	374	358	345	326	300	272	243	214
European Union <sup>2</sup>	804	821	830	798	801	811	819	828	838	845	853	860
Canada	138	143	147	149	151	153	154	155	157	158	159	160
Mexico	730	800	825	851	899	950	995	1,040	1,092	1,145	1,195	1,240
Central America/Caribbean	311	401	429	453	466	479	486	503	521	543	555	565
Japan	895	855	840	876	877	877	869	866	866	864	860	856
Hong Kong	410	370	380	390	401	410	419	428	437	446	455	463
China	272	281	291	305	317	330	336	346	358	369	379	386
South Korea	131	115	110	120	124	127	127	130	133	137	140	143
Saudi Arabia	785	750	750	781	803	826	839	860	874	887	901	917
Other Middle East	1,270	1,266	1,272	1,326	1,366	1,406	1,447	1,491	1,535	1,580	1,625	1,670
North Africa	130	126	170	153	142	142	146	155	165	176	188	200
West African Community <sup>3</sup>	259	281	300	393	425	459	495	523	559	591	617	640
Other Sub-Saharan Africa	477	519	563	481	499	539	564	595	627	648	671	702
<b>Major importers</b>	<b>7,143</b>	<b>7,263</b>	<b>7,457</b>	<b>7,488</b>	<b>7,645</b>	<b>7,864</b>	<b>8,040</b>	<b>8,246</b>	<b>8,461</b>	<b>8,660</b>	<b>8,841</b>	<b>9,015</b>
<i>Exports, thousand metric tons, ready to cook</i>												
<b>Exporters</b>												
European Union <sup>2</sup>	1,182	1,230	1,275	1,364	1,398	1,388	1,386	1,378	1,369	1,366	1,358	1,349
Brazil	3,584	3,633	3,762	3,829	3,965	4,112	4,238	4,345	4,447	4,548	4,655	4,765
China	423	400	400	384	390	420	446	459	469	480	496	513
Thailand	467	540	585	593	629	664	699	736	776	819	857	895
United States	3,481	3,616	3,513	3,481	3,554	3,639	3,690	3,739	3,788	3,828	3,866	3,899
<b>Major exporters</b>	<b>9,137</b>	<b>9,419</b>	<b>9,535</b>	<b>9,651</b>	<b>9,937</b>	<b>10,223</b>	<b>10,458</b>	<b>10,657</b>	<b>10,848</b>	<b>11,040</b>	<b>11,232</b>	<b>11,420</b>

1/ Broilers and turkeys only.

2/ Covers EU-27, excludes intra-EU trade.

3/ Economic Community of West African States.

The projections were completed in November 2012.

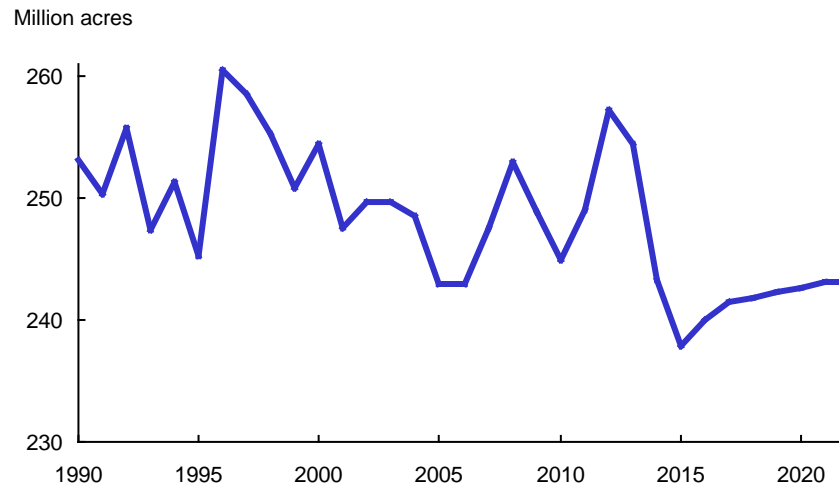
## U.S. Crops

In the short term, the U.S. crops sector responds to continuing high prices for most crops in 2012/13. Planted area for the 8 major field crops in 2013 is projected at more than 254 million acres. While that is down from the large acreage planted in 2012 when favorable spring weather combined with strong economic incentives, 2013 plantings would be the second largest acreage since 2000. 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. Corn-based ethanol production in the United States is projected to rebound from 2012's decline, although the pace of further expansion slows considerably. Nonetheless, the combination of world economic growth, a depreciating dollar, and continued 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. Following the near-term decline in prices and planted acreage, strong demand and rising prices provide economic incentives for increases in plantings beyond 2015.

Acreage enrolled in the Conservation Reserve Program (CRP) is projected to decline below 28 million acres in 2013-14 before rising back to close to 32 million acres by the end of projection period. The projections reflect provisions of the Food, Conservation, and Energy Act of 2008 (the 2008 Farm Act), which is assumed to be extended through the projection period.

**U.S. planted area: Eight major crops 1/**



1/ The eight major crops are corn, sorghum, barley, oats, wheat, rice, upland cotton, and soybeans.

## Weather-adjusted Trend Yields for Corn and Soybeans

Long-term trends in crop yields reflect improvements in yield-enhancing technology, such as new hybrids, as well as improvement in production practices, such as better pest and nutrient management and precision planting, that in turn support greater per-acre plant populations. However, several years of poor weather during the U.S. growing season for corn and soybeans have resulted in below-trend yield outcomes for the last 2-3 years. Thus, assessing the effects of weather on recent yields is important for determining underlying trend yields for these crops. Weather-adjusted yield models were developed for corn and soybeans to provide this information. Results summarized here are based on data available in January 2013. Earlier versions of these models, based on data available in November 2012, were used for the weather-adjusted, U.S. corn and soybean trend yield projections in this report.

### Corn yield model

The corn model is for national yields and is estimated over the past 25 years (1988-2012), thereby including both the 1988 and the 2012 droughts. In addition to a trend variable, the model uses as explanatory variables mid-May planting progress, July weather (precipitation and average temperature), and a June precipitation shortfall measure in selected years. Including those variables helps explain previous yield variations and deviations from trend.

Corn plantings by mid-May are important for yield potential because that allows more of the critical stages of crop development, particularly pollination, to occur earlier, before the most severe heat of the summer. Earlier pollination is also generally associated with less plant stress from moisture shortages. Most of the corn crop develops in July, so weather in that month is included in the model. Finally, while weather in June is important for development of the corn crop (and June typically has lower temperatures and more rain than July), effects of June weather are typically small relative to July weather effects. However, extreme weather deviations from normal in June can have larger impacts, as seen in 2012 and in 1988. To represent that effect, the model uses a measure of the precipitation shortfall from average in years when June precipitation is in the lowest 10 percent tail of its statistical distribution. The mid-May planting progress variable is based on weekly data from USDA's National Agricultural Statistics Service (NASS) and is prorated to May 15 from adjacent weeks' results for years that the statistic was not reported for that date. The weather data is from the National Oceanic and Atmospheric Administration. The planting progress and weather data used are for eight key corn-producing States (Iowa, Illinois, Indiana, Ohio, Missouri, Minnesota, South Dakota, and Nebraska). Those eight States typically rank in the top 10 of corn-producing States and accounted for an average of 76 percent of U.S. corn production over the estimation period. An aggregate measure for the eight States for each of those variables is constructed using harvested corn acres to weight State-specific data.

The effects of mid-May planting progress and July temperatures on corn yield are each linear in the model—for those variables, each unit of change has a constant effect on yield. Similarly, the June precipitation shortfall variable is linear for the years it is nonzero. The effect of July precipitation, however, is nonlinear in the model because the response of corn yields to different amounts of precipitation above and below average is asymmetric. That is, reductions in corn yields when rainfall is below average are larger than gains in corn yields when rainfall is above average. The model uses a squared term for July precipitation to represent that asymmetric effect. The estimated regression equation (shown on the following page) explains over 96 percent of the variation in national corn yields in the estimation period (more than 91 percent of the variation around the equation's trend).

-- Continued

### Weather-adjusted Trend Yields for Corn and Soybeans (*Continued*)

U.S. corn yield equation, using trend and 8-State weighted averages for mid-May planting progress and June and July weather\*

	Intercept	Trend	Mid-May planting progress	July temperature	July precipitation	July precipitation squared	June precipitation shortfall**
Coefficient	228.5	1.952	0.289	-2.283	13.793	-1.522	-9.537
Standard error of coefficient		0.129	0.056	0.443	4.730	0.473	1.667
t-statistic		15.1	5.2	-5.2	2.9	-3.2	-5.7
R-squared		0.964					
Standard error		4.2					
Estimation period		1988-2012					

\* All 8-State aggregates are weighted by harvested corn acres. Eight States are Iowa, Illinois, Nebraska, Minnesota, Indiana, South Dakota, Ohio, and Missouri. Those States were ranked 1-6, 8, and 10 in the United States in terms of 2011 corn production, accounting for 76 percent of the national total.

\*\* June precipitation shortfall equals average precipitation minus actual precipitation when the actual is in the lowest 10 percent tail of its statistical distribution.

### Soybean yield model

A similar approach was used to develop a weather-adjusted trend yield model for soybeans. The model was estimated over the same 25-year period (1988-2012) as for corn. The soybean equation differs, however, by not including a planting progress variable and by using an average of July and August weather variables rather than just July weather. Those differences reflect a wider window for reproduction for soybeans than for corn. Nonetheless, a similar variable for June precipitation shortfall is included to reflect the potential importance of extreme weather situations in that month. Also, the weather variables included are weighted averages for seven States (Iowa, Illinois, Indiana, Ohio, Missouri, Minnesota, and Nebraska), using harvested soybean acres to weight State-specific observations. Those were the top seven soybean producing States over the estimation period, accounting for about 70 percent of U.S. soybean production during those years.

U.S. soybean yield equation using trend and 7-State weighted averages for June, July, and August weather\*

	Intercept	Trend	July-August temperature	July-August average monthly precipitation	July-August average monthly precipitation squared	June precipitation shortfall**
Coefficient	60.1	0.447	-0.514	5.083	-0.619	-1.279
Standard error of coefficient		0.061	0.237	4.447	0.512	0.723
t-statistic		7.3	-2.2	1.1	-1.2	-1.8
R-squared		0.800				
Standard error		2.1				
Estimation period		1988-2012				

\* All 7-State aggregates are weighted by harvested soybean acres. Seven States are Iowa, Illinois, Minnesota, Nebraska, Indiana, Ohio, and Missouri. Those States were ranked 1-7 in the United States in terms of 2011 soybean production, accounting for 67 percent of the national total.

\*\* June precipitation shortfall equals average precipitation minus actual precipitation when the actual is in the lowest 10 percent tail of its statistical distribution.

-- *Continued*



### **Weather-adjusted Trend Yields for Corn and Soybeans (Continued)**

Similar to the model for corn, the effects of July-August temperatures and the June precipitation shortfall variable are linear in the soybean yield model, and the July-August precipitation effect is nonlinear. The estimated regression equation explains 80 percent of the variation in national soybean yields in the estimation period (50 percent of the variation around the equation's trend). Overall, the model's weather variables have lower statistical significance in explaining soybean yields than in the corn yield model, likely reflecting the longer reproductive period for soybeans which makes the timing of favorable weather less critical than for corn.

#### **Implications for 2013 yields and beyond**

Assuming that corn planting progress by the middle of May 2013 is at the average over the past 10 years of 80 percent, that June weather is not extremely dry, and that average weather occurs in July, the model suggests a 2013 corn yield of about 164.3 bushels an acre. However, a weighted average of corn yield estimates for alternative levels of July precipitation (assumed to have a statistically normal distribution) results in a lower mean expected corn yield for 2013 of 163.6 bushels per acre. That reduction reflects the asymmetric response of corn yields to different amounts of rainfall above and below the average. That mean expectation accounts for variation in July precipitation within one standard deviation of its average, covering 68 percent of its statistical distribution. For longer term projections, the adjusted corn yield of 163.6 bushels per acre becomes the 2013 starting point and would be incremented each subsequent year by the 1.95 trend coefficient estimate.<sup>1</sup>

Similarly, with average July-August weather and June weather that is not extremely dry, the soybean model suggests a 2013 yield of 44.6 bushels an acre. The weighted average of soybean yield estimates for alternative levels of July-August precipitation results in a lower mean expected soybean yield for 2013 of 44.5 bushels per acre. That reduction reflects the asymmetric response of soybean yields to different amounts of rainfall in July-August precipitation. The adjustment for soybeans is relatively smaller than the similar adjustment for corn, suggesting less soybean yield variability due to weather than for corn. From the adjusted soybean yield for 2013, longer term projections would be incremented each subsequent year by the 0.45 trend coefficient estimate.<sup>1</sup>

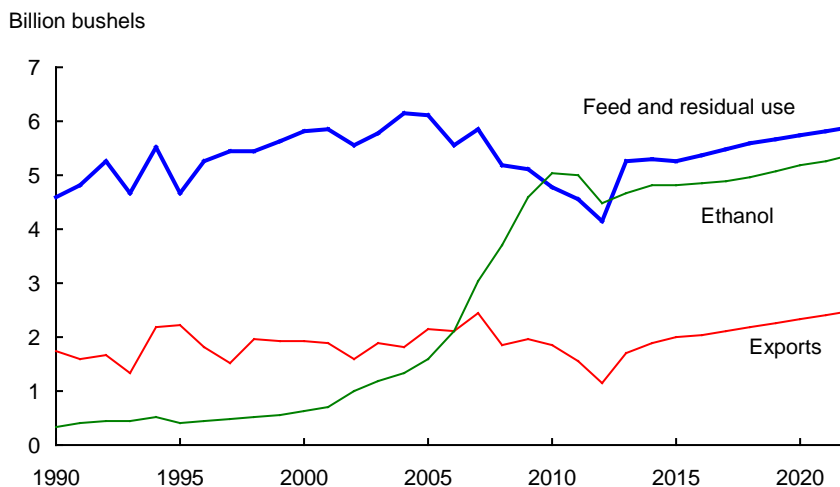
#### **Adjusting for Developments During the 2013 Growing Season**

As the planting and growing seasons for corn and soybeans progress, the yield models can be used to make revisions to the 2013 yield expectations as actual data for mid-May corn planting progress and July and August weather become available. Additionally, the models provide a framework for assessing yield reductions should June weather be extremely dry, such as in 2012 and 1988.

USDA's first survey-based estimates of corn and soybean yields for 2013 will be released by NASS in the August *Crop Production* report.

<sup>1</sup> The long-term corn and soybean yield projections in this report are based on earlier versions of the models presented here that were estimated using data available in November 2012. Those earlier estimations implied 2013 yields for both corn and soybeans that are 0.1 bushels per acre lower than those discussed in this box. Trend coefficients were similar for both estimations.

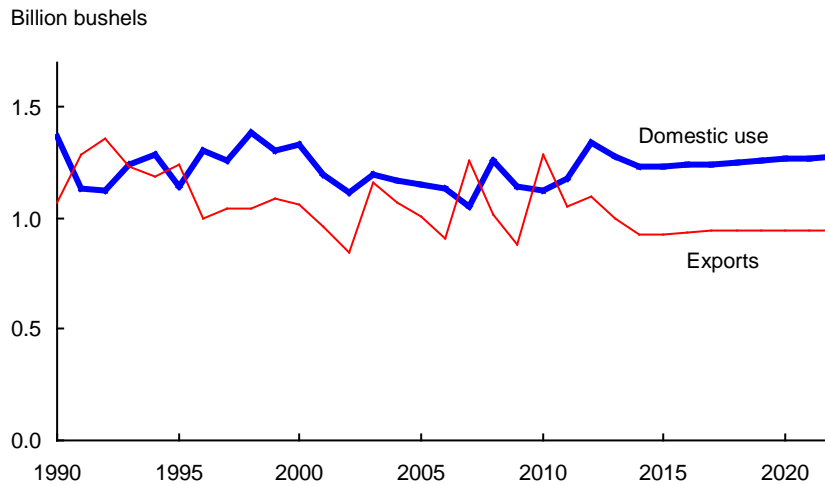
### U.S. corn: Feed and residual use, ethanol, and exports



Lower supplies and higher prices resulting from weather-reduced 2012 U.S. corn production have led to lower domestic use and exports. Corn acreage is projected to remain high in the near term, with normal yields leading to an increase in production and a recovery of corn use. Although corn-based ethanol production is projected to slow significantly, its continued high levels combine with gains in exports and feed use to keep corn use high. Following several years of adjusting markets, increasing producer returns lead to gradually rising corn acreage in a range of 88 million to 92 million acres after 2015. For other feed grains, after near-term adjustments, planted area falls back from recent highs over the rest of the projection period.

- U.S. ethanol production is based almost entirely on corn as the feedstock. Projected increases in corn-based ethanol over the next 10 years are much smaller than occurred in 2005-2010. 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.
- Feed and residual use of corn initially rises from low 2012/13 levels mostly because of the projected increase in corn production (which affects the “residual” component). Following this near-term adjustment, lower corn prices and increasing meat production underlie 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 coproduct of dry mill ethanol production, as the corn-based ethanol expansion moderates.
- Food and industrial use of corn (other than for ethanol production) is projected to rise over the next decade. Use of corn for high fructose corn syrup is supported by growing 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 the increase in population. Starch use of corn, such as in the production of drywall, responds to economic growth and industrial demand, rising faster than population throughout the projection period.
- U.S. corn exports increase sharply from 2012/13 weather-reduced levels and then rise at a slower pace during the rest of 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, which account for about 40 percent of the projected overall growth in global corn imports. The United States remains the world’s largest corn exporter, accounting for an average of about 45 percent of global corn trade over the projection period. However, this trade share is lower than the 1970-2000 average above 70 percent, largely due to the use of corn for ethanol production in the United States.

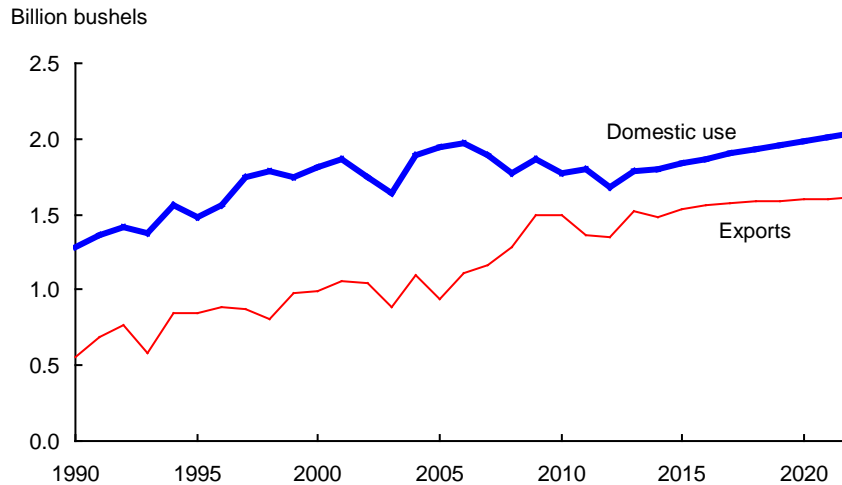
### U.S. wheat: Domestic use and exports



Strong wheat prices and expected net returns boost wheat plantings for 2013. However, with relatively weak overall demand growth projected for wheat, producer returns initially fall and then rise less than returns for other crops in subsequent years. This leads to a decline in wheat plantings to 50 million acres by the end of the projection period, continuing a long-term general downward trend since the early 1980s.

- 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 in 2012/13. 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. wheat exports fall to under 950 million bushels annually for most of the projection period. U.S. wheat trade faces competition from the Black Sea region, whose wheat exports rise from 22 percent in 2013/14 to 30 percent of global trade over the next decade. EU wheat exports grow from a global market share of 14 percent to 15 percent by 2022/23. For the same time period, the U.S. market share declines from 19 percent to 16 percent.

### U.S. soybeans: Domestic use and exports

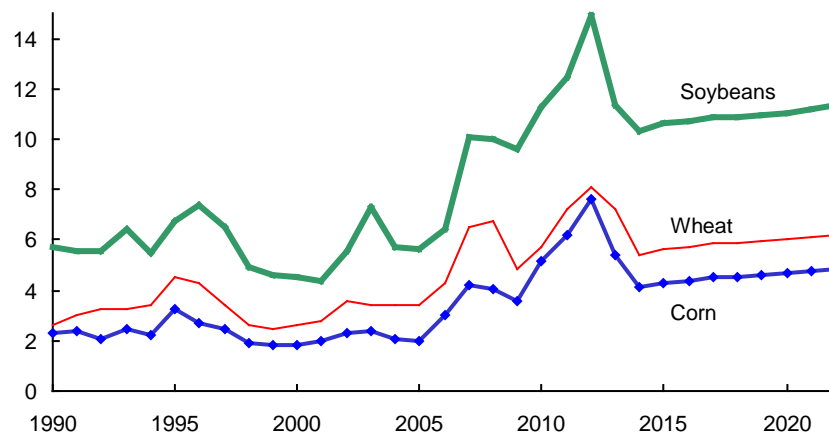


U.S. soybean plantings decline from high levels of 2012 during the initial years of the projections, as prices and producer returns fall. Over the rest of the projection period, growth in both domestic use and export demand lead to increases in prices and returns. Soybean plantings increase somewhat before remaining steady toward the end of the projections.

- 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, soybean crush is projected to follow.
- Strong global demand for soybeans, particularly in China, boosts soybean trade over the projection period—China accounts for almost 90 percent 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 39 percent in 2013/14 to about 30 percent by 2022/23.
- 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. Strong growth in biodiesel production in Argentina, however, limits the country's soybean oil export growth, allowing the U.S. global trade market share to increase. However, Argentina is projected to account for more than half of global trade of soybean meal and captures most of the gain in global soybean meal trade over the next decade.
- Soybean oil used to produce methyl esters (biodiesel) in the United States grows to 6.3 billion pounds by the end of the projection period, representing about 29 percent of total use of U.S. soybean oil and supporting the production of over 800 million gallons of biodiesel. This growth is spurred by the mandate of 1.28 billion gallons of biomass-based diesel use starting in 2013 and by demand for biodiesel to meet a portion of the Renewable Fuel Standard's advanced biofuel mandate. Corn oil coproducts from ethanol plants (including corn oil extracted from distillers grains), other first-use vegetable oils, animal fats, and recycled vegetable oils are also used as feedstocks to produce biodiesel. Growth in the food use of soybean oil slows as projected imports expand for other vegetable oils.

### U.S. farm-level prices: Corn, wheat, and soybeans

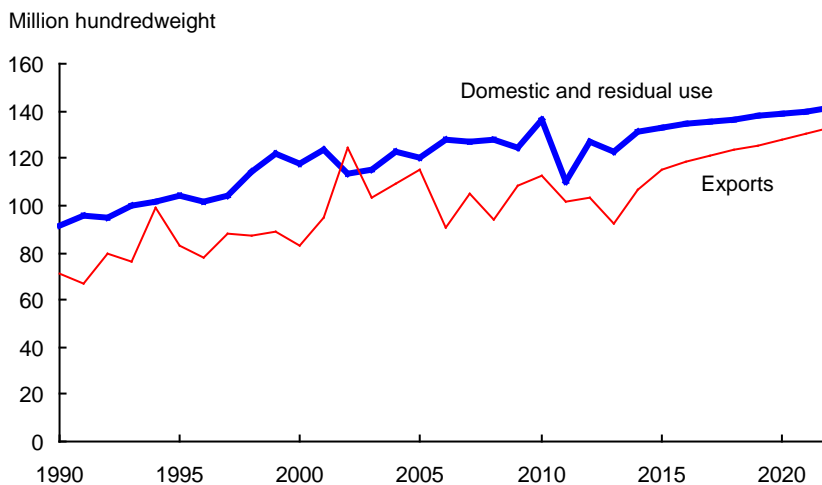
Dollars per bushel



Weather has been an important factor affecting global wheat, corn and, and soybean production over the past several years, leading to increases in grain and oilseed prices since 2009/10. Market responses to these high prices are projected to reduce 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 depreciating U.S. dollar, increasing costs for crude petroleum, and rising biofuel production—underlies these price projections.

- After declining from their current high levels, corn prices are projected to begin increasing again by 2015/16 due to growth in feed use, exports, and demand for corn by ethanol producers.
- Strengthening demand for soybeans and soybean products holds soybean prices high throughout the projection period. Similar to the price projections for corn, after near-term market adjustments reduce soybean prices from recent highs, prices for soybeans rise moderately after 2014/15 through the rest of the projection period.
- Wheat prices also decline through 2014/15 reflecting near-term market adjustments. Subsequent projected price increases for wheat are more moderate than those for corn, reflecting relatively smaller gains in use.

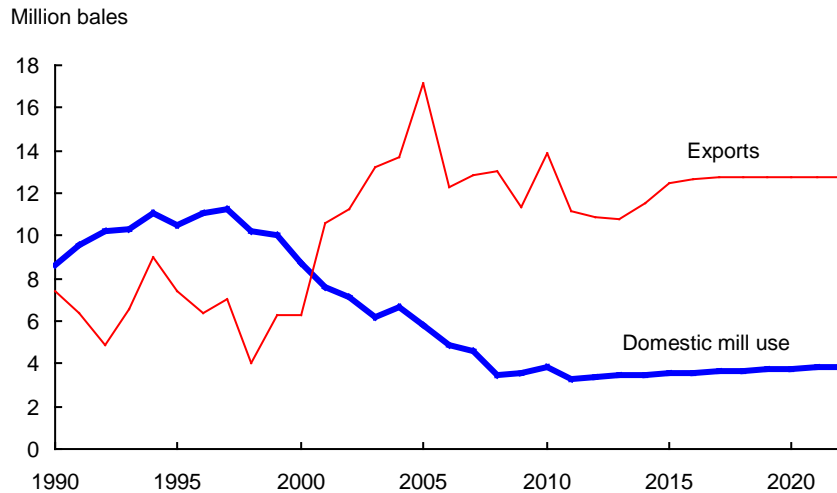
### U.S. rice: Domestic and residual use and exports



Competition from other crops is projected to keep U.S. acreage planted to all rice from increasing in 2013. While a small area increase is projected for medium- and short-grain rice, long-grain rice plantings fall. With lower relative prices for competing crops in subsequent years, rice area rises through the rest of the projection period.

- 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 the bulk of U.S. purchases
- 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 overall expansion of U.S. rice exports. Overall, the U.S. market share of global rice trade holds near 9 percent over most of the projection period.
- After near-term market adjustments, prices for rice are projected to rise after 2014/15. Long-run gains in producer returns after 2014 support rising U.S. rice acreage.

### U.S. upland cotton: Domestic mill use and exports

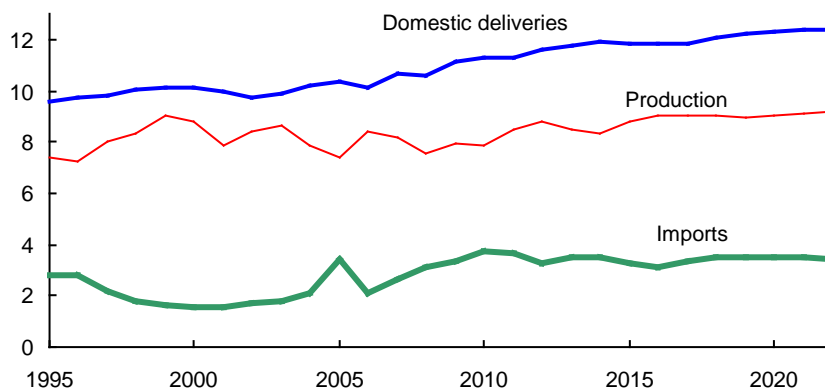


Lower cotton prices following the runup of 2010/11-2011/12 initially lead to a reduction in upland cotton plantings in 2013 as competing crops have higher expected returns. As prices and returns for competing crops decline over the next several years, cotton plantings rise through 2015. However, with cotton yields and cotton prices rising only moderately in subsequent years, producer returns hold stable and decline relative to those of other crops, so upland cotton plantings decline over the rest of the projection period. U.S. mill use of upland cotton is projected to rise moderately in the projections while cotton exports initially rise before leveling off after 2016/17.

- 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, however, domestic mill use is projected to represent about 23 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 over the initial years of the projections from low levels of 2011/12-2013/14, before leveling off after 2016/17. While the U.S. share of global cotton trade initially rises, this share declines later in the projection period. Nonetheless, with a global trade share projected at 32 percent in 2022/23, the United States remains the world's largest exporter of cotton.

### U.S. sugar: Domestic production, use, and imports

Million short tons

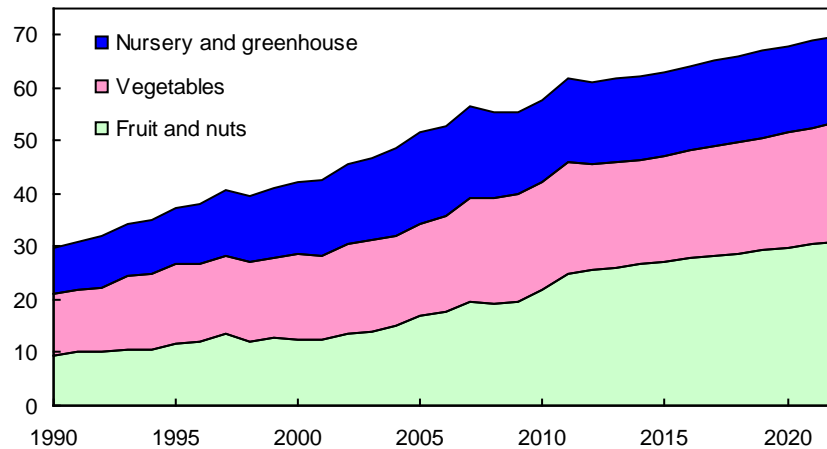


- Moderate growth is projected for U.S. beet and cane sugar production over the next decade. Beet sugar production levels in the first two years of the projections are low, at an annual average of 4.752 million short tons, raw value (STRV) due to lower sugarbeet prices relative to prices for alternative crops. Beet sugar production in 2022/23 is projected at 5.319 million STRV, about 4.20 percent higher than in 2012/13. Cane sugar production in 2022/23 is projected at 3.864 million STRV, about 3.87 percent higher than in 2012/13.
- Over the projection period, sweetener availability (the sum of refined sugar, sugar in net imported products, and high fructose corn syrup (HFCS)) is 119 pounds per capita. There is only limited substitution between sugar and HFCS as a function of relative prices. Sugar deliveries for human use average 11.854 million STRV over the projection period, with annual growth of about 0.7 percent a year.
- Beet sugar production averages 345,000 STRV below its average share of the Overall Allotment Quantity (OAQ) under the sugar marketing allotment program. In no year does beet sugar production exceed its OAQ share. Cane sugar production averages 839,000 STRV below its average OAQ share. Production levels in all cane sugar producing States remain below their OAQ shares.
- Sugar imports from Mexico rose sharply starting in 2008 when duty-free sweetener trade between the United States and Mexico began, and are projected to average 1.516 million STRV over the next decade, representing about 12.8 percent of U.S. domestic sugar consumption. Two conditions in Mexico underlie this projection. First, beverage and food manufacturers in Mexico continue to expand the substitution of lower cost HFCS (except for the first two years of the projection period) for domestic sugar. Second, remunerative prices in Mexico favor modest expansion of sugarcane area and increased sugar production. It is assumed that Mexico will not import sugar from third nations to replenish low sugar supplies caused by large exports to the U.S. market.
- Tariff-rate quota (TRQ) sugar imports from U.S. commitments made to the World Trade Organization (WTO) and to several Free Trade Agreements (FTAs) average 1.444 million STRV. It is assumed that TRQ import levels are not increased during any year from initially established levels consistent with WTO and FTA minimum access commitments.
- There are no sugar loan forfeitures and there are no Commodity Credit Corporation (CCC) purchases of sugar for ethanol in the projections because projected raw cane and refined beet sugar prices remain above the minimum prices to avoid forfeiture.



## Value of U.S. horticultural production

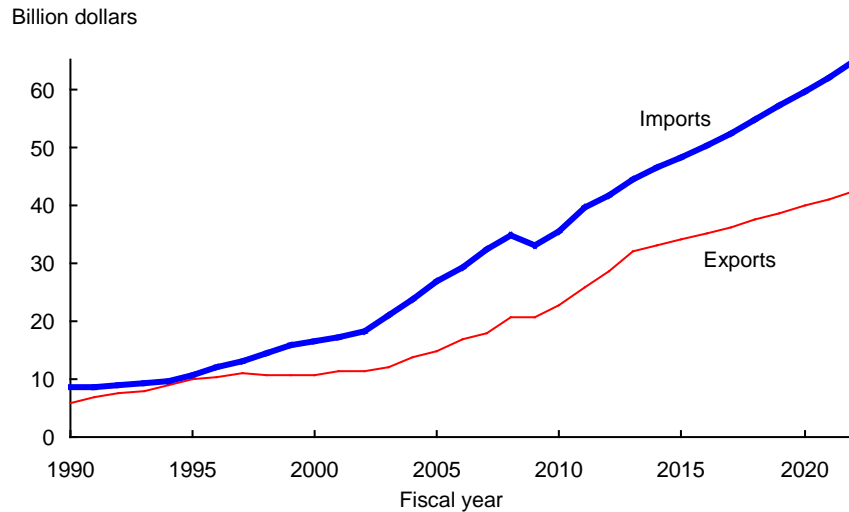
Billion dollars



Farm sales of horticultural crops are projected to grow by 1.4 percent annually over the next decade, reaching \$71 billion in calendar year 2022, up from \$62 billion in 2012.

- The value of farm production of fruit and tree nuts is projected to grow at an annual rate of 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 44 percent. Farm sales value of vegetables and pulses is projected to grow 1.2 percent per year, led by fresh-market vegetables, 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 131 billion pounds in 2022 as fresh-market production averages 1.6-percent growth. Fruit and nut production expands by 0.1 percent per year to 71 billion pounds in 2022 as noncitrus production growth more than offsets citrus production decline.
- Producer prices for vegetables are projected to rise at 0.7 percent per year due to strong fresh-market vegetable production. Producer prices for fresh fruits rise by 1.8 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 287 pounds in 2012 to 295 pounds by 2022, an annual average growth rate of 0.3 percent. Per capita use of vegetables initially drops in 2013 due to a smaller potato crop then levels off to an average 406 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 1.1 percent per year.

### Value of U.S. horticultural trade



The U.S. trade deficit in horticultural crops and products is projected to expand from \$12.4 billion in fiscal year 2012 to \$22.1 billion in fiscal year 2022.

- Imports increasingly supplement domestic production of horticultural crops and products. By 2022, imports are projected to supply 52 percent of domestic fruit and nut use and 24 percent of vegetable use, in terms of farm weight. In 2012, these shares were 44 percent and 19 percent, respectively.
- The export market becomes more important for U.S. horticultural producers. In 2022, exports are projected to be the destination for 27 percent of U.S. fruit and nut production, up from 23 percent in 2012, while 21 percent of vegetable production will be sold in foreign markets, up from 16 percent in 2012.
- The value of U.S. horticultural imports is projected to increase by 4.5 percent annually over the next decade, compared with 8.0 percent on average during the past decade, reaching \$64.5 billion in fiscal year 2022 (fiscal 2022 covers October 2021-September 2022). Fruit and nut imports account for \$21.3 billion, while vegetable imports account for \$15.8 billion.
- Exports of U.S. horticultural products are projected to reach \$42.4 billion in fiscal year 2022. Of this amount, fruit and nuts contribute \$20.8 billion, and vegetables contribute \$8.2 billion.

Table 17. Acreage for major field crops and Conservation Reserve Program (CRP) assumptions, long-term projections

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<i>Million acres</i>												
Planted acreage, eight major crops												
Corn	91.9	96.9	96.0	90.0	86.0	88.0	89.0	90.0	90.5	91.0	91.5	92.0
Sorghum	5.5	6.2	7.0	6.2	6.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Barley	2.6	3.6	3.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Oats	2.5	2.8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Wheat	54.4	55.7	57.5	54.0	51.0	51.0	51.0	50.5	50.5	50.5	50.5	50.0
Rice	2.7	2.7	2.7	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Upland cotton	14.4	12.1	9.3	10.5	11.3	11.0	10.9	10.8	10.8	10.7	10.7	10.6
Soybeans	75.0	77.2	76.0	74.0	75.0	75.5	76.0	76.0	76.0	76.0	76.0	76.0
Total	249.0	257.2	254.4	243.3	237.9	240.0	241.4	241.8	242.3	242.7	243.2	243.1
Harvested acreage, eight major crops												
Corn	84.0	87.7	88.3	82.3	78.3	80.3	81.3	82.3	82.8	83.3	83.8	84.3
Sorghum	3.9	5.0	6.0	5.3	5.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Barley	2.2	3.2	3.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Oats	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Wheat	45.7	49.0	48.5	46.2	43.7	43.7	43.7	43.2	43.2	43.2	43.2	42.8
Rice	2.6	2.7	2.6	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.2
Upland cotton	9.2	10.2	7.9	9.2	9.9	9.7	9.6	9.5	9.5	9.4	9.4	9.3
Soybeans	73.8	75.7	75.1	73.1	74.1	74.6	75.1	75.1	75.1	75.1	75.1	75.1
Total	222.3	234.5	232.4	222.8	217.9	220.0	221.4	221.8	222.4	222.8	223.3	223.3
CRP acreage assumptions, crop allocation based on historical plantings <sup>1</sup>												
Corn	5.4	5.1	4.8	4.8	4.9	5.1	5.3	5.4	5.5	5.5	5.5	5.5
Sorghum	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Barley	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Oats	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Wheat	8.0	7.6	7.1	7.1	7.3	7.5	7.8	8.0	8.2	8.2	8.2	8.2
Cotton	1.2	1.1	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
Soybeans	4.5	4.3	4.0	4.0	4.1	4.3	4.4	4.5	4.6	4.6	4.6	4.6
Subtotal	20.8	19.7	18.3	18.5	19.0	19.6	20.4	20.8	21.2	21.3	21.3	21.3
Other	10.4	9.8	9.2	9.3	9.5	9.8	10.2	10.4	10.6	10.7	10.6	10.6
Total CRP	31.1	29.5	27.5	27.8	28.5	29.4	30.5	31.2	31.8	32.0	31.9	31.9
Total planted plus CRP	280.1	286.7	281.9	271.1	266.4	269.4	271.9	272.9	274.1	274.7	275.2	275.1

1/ CRP crop allocations are based on 2010 planted acreage by State (NASS).

Table 18. U.S. corn long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (million acres):												
Planted acres	91.9	96.9	96.0	90.0	86.0	88.0	89.0	90.0	90.5	91.0	91.5	92.0
Harvested acres	84.0	87.7	88.3	82.3	78.3	80.3	81.3	82.3	82.8	83.3	83.8	84.3
Yield:												
Bushels/harvested acre	147.2	122.3	163.5	165.4	167.4	169.3	171.3	173.2	175.1	177.1	179.0	181.0
Supply and use (million bushels):												
Beginning stocks	1,128	988	647	2,067	2,232	1,817	1,672	1,617	1,627	1,617	1,592	1,547
Production	12,358	10,725	14,435	13,610	13,105	13,595	13,925	14,255	14,500	14,750	15,000	15,260
Imports	29	100	25	25	25	25	25	25	25	25	25	25
Supply	13,515	11,814	15,107	15,702	15,362	15,437	15,622	15,897	16,152	16,392	16,617	16,832
Feed & residual	4,547	4,150	5,250	5,300	5,250	5,375	5,475	5,575	5,650	5,725	5,800	5,875
Food, seed, & industrial	6,437	5,867	6,090	6,270	6,295	6,340	6,405	6,495	6,610	6,725	6,845	6,960
Ethanol and by-products	5,011	4,500	4,675	4,825	4,825	4,850	4,900	4,975	5,075	5,175	5,275	5,375
Domestic use	10,984	10,017	11,340	11,570	11,545	11,715	11,880	12,070	12,260	12,450	12,645	12,835
Exports	1,543	1,150	1,700	1,900	2,000	2,050	2,125	2,200	2,275	2,350	2,425	2,500
Total use	12,527	11,167	13,040	13,470	13,545	13,765	14,005	14,270	14,535	14,800	15,070	15,335
Ending stocks	988	647	2,067	2,232	1,817	1,672	1,617	1,627	1,617	1,592	1,547	1,497
Stocks/use ratio, percent	7.9	5.8	15.9	16.6	13.4	12.1	11.5	11.4	11.1	10.8	10.3	9.8
Price (dollars per bushel):												
Farm price	6.22	7.60	5.40	4.10	4.30	4.40	4.50	4.55	4.60	4.65	4.75	4.85
Variable costs of production (dollars):												
Per acre	335	348	349	349	349	352	358	364	371	377	384	390
Returns over variable costs (dollars per acre):												
Net returns	580	582	534	329	371	393	413	424	435	446	466	487

Note: Marketing year beginning September 1 for corn.

Table 19. U.S. sorghum long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (million acres):												
Planted acres	5.5	6.2	7.0	6.2	6.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Harvested acres	3.9	5.0	6.0	5.3	5.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Yield:												
Bushels/harvested acre	54.6	51.1	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3
Supply and use (million bushels):												
Beginning stocks	27	23	24	56	52	52	49	46	43	40	42	44
Production	214	256	392	346	340	327	327	327	327	327	327	327
Imports	0	0	0	0	0	0	0	0	0	0	0	0
Supply	242	279	416	402	392	379	376	373	370	367	369	371
Feed & residual	71	75	80	80	75	70	70	70	70	65	65	65
Food, seed, & industrial	85	80	90	90	90	90	90	90	90	90	90	90
Domestic use	156	155	170	170	165	160	160	160	160	155	155	155
Exports	63	100	190	180	175	170	170	170	170	170	170	170
Total use	219	255	360	350	340	330	330	330	330	325	325	325
Ending stocks	23	24	56	52	52	49	46	43	40	42	44	46
Stocks/use ratio, percent	10.5	9.4	15.6	14.9	15.3	14.8	13.9	13.0	12.1	12.9	13.5	14.2
Price (dollars per bushel):												
Farm price	5.99	7.20	5.05	3.85	4.00	4.10	4.20	4.25	4.30	4.35	4.45	4.55
Variable costs of production (dollars):												
Per acre	167	170	171	171	171	174	177	180	184	188	191	195
Returns over variable costs (dollars per acre):												
Net returns	160	197	159	81	90	94	97	97	97	96	99	102

Note: Marketing year beginning September 1 for sorghum.

Table 20. U.S. barley long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (million acres):												
Planted acres	2.6	3.6	3.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Harvested acres	2.2	3.2	3.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Yield:												
Bushels/harvested acre	69.6	67.9	68.9	69.5	70.1	70.7	71.3	71.9	72.5	73.1	73.7	74.3
Supply and use (million bushels):												
Beginning stocks	89	60	80	87	83	80	79	79	81	80	80	82
Production	156	220	207	181	182	184	185	187	189	190	192	193
Imports	16	20	20	20	20	20	20	20	20	20	20	20
Supply	261	300	307	288	285	284	284	286	290	290	292	295
Feed & residual	38	55	55	40	40	40	40	40	45	45	45	50
Food, seed, & industrial	155	155	155	155	155	155	155	155	155	155	155	155
Domestic use	193	210	210	195	195	195	195	195	200	200	200	205
Exports	9	10	10	10	10	10	10	10	10	10	10	10
Total use	201	220	220	205	205	205	205	205	210	210	210	215
Ending stocks	60	80	87	83	80	79	79	81	80	80	82	80
Stocks/use ratio, percent	29.9	36.4	39.5	40.5	39.0	38.5	38.5	39.5	38.1	38.1	39.0	37.2
Price (dollars per bushel):												
Farm price	5.35	6.45	5.50	4.15	4.30	4.40	4.45	4.50	4.55	4.60	4.70	4.75
Variable costs of production (dollars):												
Per acre	164	169	169	169	170	172	175	178	182	185	189	193
Returns over variable costs (dollars per acre):												
Net returns	208	269	210	119	132	139	143	145	148	151	158	160

Note: Marketing year beginning June 1 for barley.

Table 21. U.S. oats long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (million acres):												
Planted acres	2.5	2.8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Harvested acres	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Yield:												
Bushels/harvested acre	57.1	61.3	65.8	66.2	66.6	67.0	67.5	67.9	68.3	68.7	69.1	69.5
Supply and use (million bushels):												
Beginning stocks	68	55	50	51	52	53	54	56	57	58	60	57
Production	54	64	66	66	67	67	68	68	68	69	69	70
Imports	94	95	100	100	100	100	100	100	100	100	100	100
Supply	215	214	216	217	219	220	222	224	225	227	229	227
Feed & residual	82	85	85	85	85	85	85	85	85	85	90	90
Food, seed, & industrial	76	76	77	77	78	78	78	79	79	79	79	79
Domestic use	158	161	162	162	163	163	163	164	164	164	169	169
Exports	2	3	3	3	3	3	3	3	3	3	3	3
Total use	160	164	165	165	166	166	166	167	167	167	172	172
Ending stocks	55	50	51	52	53	54	56	57	58	60	57	55
Stocks/use ratio, percent	34.4	30.5	30.9	31.5	31.9	32.5	33.7	34.1	34.7	35.9	33.1	32.0
Price (dollars per bushel):												
Farm price	3.49	3.80	2.80	2.25	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75
Variable costs of production (dollars):												
Per acre	114	116	116	116	117	118	120	123	125	128	130	133
Returns over variable costs (dollars per acre):												
Net returns	86	116	68	33	43	46	49	51	52	54	56	58

Note: Marketing year beginning June 1 for oats.

Table 22. U.S. wheat long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (million acres):												
Planted acres	54.4	55.7	57.5	54.0	51.0	51.0	51.0	50.5	50.5	50.5	50.5	50.0
Harvested acres	45.7	49.0	48.5	46.2	43.7	43.7	43.7	43.2	43.2	43.2	43.2	42.8
Yield:												
Bushels/harvested acre	43.7	46.3	45.2	45.6	45.9	46.3	46.7	47.1	47.4	47.8	48.2	48.6
Supply and use (million bushels):												
Beginning stocks	862	743	704	733	804	778	765	761	745	737	737	745
Production	1,999	2,269	2,190	2,105	2,005	2,025	2,040	2,035	2,050	2,065	2,080	2,080
Imports	112	130	120	125	130	135	140	140	140	140	140	140
Supply	2,974	3,142	3,014	2,963	2,939	2,938	2,945	2,936	2,935	2,942	2,957	2,965
Food	941	950	958	965	972	979	986	993	1,000	1,007	1,014	1,021
Seed	76	73	73	69	69	69	68	68	68	68	68	68
Feed & residual	164	315	250	200	190	190	190	190	190	190	190	190
Domestic use	1,182	1,338	1,281	1,234	1,231	1,238	1,244	1,251	1,258	1,265	1,272	1,279
Exports	1,050	1,100	1,000	925	930	935	940	940	940	940	940	940
Total use	2,231	2,438	2,281	2,159	2,161	2,173	2,184	2,191	2,198	2,205	2,212	2,219
Ending stocks	743	704	733	804	778	765	761	745	737	737	745	746
Stocks/use ratio, percent	33.3	28.9	32.1	37.2	36.0	35.2	34.8	34.0	33.5	33.4	33.7	33.6
Price (dollars per bushel):												
Farm price	7.24	8.10	7.20	5.40	5.65	5.75	5.85	5.90	5.95	6.00	6.10	6.20
Variable costs of production (dollars):												
Per acre	123	126	127	127	127	129	131	133	136	139	141	144
Returns over variable costs (dollars per acre):												
Net returns	194	249	199	120	132	138	142	145	146	148	153	157

Note: Marketing year beginning June 1 for wheat.



Table 23. U.S. soybeans and products long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<b>Soybeans</b>												
Area (million acres):												
Planted	75.0	77.2	76.0	74.0	75.0	75.5	76.0	76.0	76.0	76.0	76.0	76.0
Harvested	73.8	75.7	75.1	73.1	74.1	74.6	75.1	75.1	75.1	75.1	75.1	75.1
Yield: bushels/harvested acre	41.9	39.3	44.4	44.9	45.3	45.8	46.2	46.6	47.1	47.5	48.0	48.4
Supply (million bushels)												
Beginning stocks, September 1	215	169	140	185	197	204	205	215	219	222	226	223
Production	3,094	2,971	3,335	3,280	3,360	3,415	3,470	3,505	3,535	3,570	3,600	3,635
Imports	16	20	15	15	15	15	15	15	15	15	15	15
Total supply	3,325	3,160	3,490	3,480	3,572	3,634	3,690	3,735	3,769	3,807	3,841	3,873
Disposition (million bushels)												
Crush	1,703	1,560	1,655	1,665	1,700	1,730	1,760	1,785	1,815	1,840	1,870	1,895
Seed and residual	91	115	135	137	138	139	140	141	141	142	142	143
Exports	1,362	1,345	1,515	1,480	1,530	1,560	1,575	1,590	1,590	1,600	1,605	1,610
Total disposition	3,155	3,021	3,305	3,282	3,368	3,429	3,475	3,516	3,546	3,582	3,617	3,648
Carryover stocks, August 31												
Total ending stocks	169	140	185	197	204	205	215	219	222	226	223	226
Stocks/use ratio, percent	5.4	4.6	5.6	6.0	6.1	6.0	6.2	6.2	6.3	6.3	6.2	6.2
Price (dollars per bushel)												
Soybean price, farm	12.50	14.90	11.35	10.35	10.65	10.75	10.85	10.90	10.95	11.05	11.20	11.35
Variable costs of production (dollars):												
Per acre	139	145	147	148	149	150	152	155	157	159	162	164
Returns over variable costs (dollars per acre):												
Net returns	385	440	357	317	333	342	349	353	359	365	376	385
<b>Soybean oil (million pounds)</b>												
Beginning stocks, October 1	2,425	2,540	1,520	1,555	1,530	1,555	1,630	1,700	1,710	1,770	1,820	1,915
Production	19,740	17,830	18,935	19,065	19,480	19,845	20,205	20,510	20,875	21,180	21,540	21,850
Imports	149	350	200	160	170	180	190	200	210	220	230	240
Total supply	22,314	20,720	20,655	20,780	21,180	21,580	22,025	22,410	22,795	23,170	23,590	24,005
Domestic disappearance	18,310	18,000	17,900	18,150	18,425	18,650	18,825	19,000	19,125	19,250	19,325	19,400
Biodiesel <sup>1</sup>												
Food, feed, and other industrial	13,410	13,100	12,900	12,900	12,925	12,950	12,975	13,000	13,025	13,050	13,075	13,100
Exports	1,464	1,200	1,200	1,100	1,200	1,300	1,500	1,700	1,900	2,100	2,350	2,600
Total demand	19,774	19,200	19,100	19,250	19,625	19,950	20,325	20,700	21,025	21,350	21,675	22,000
Ending stocks, September 30	2,540	1,520	1,555	1,530	1,555	1,630	1,700	1,710	1,770	1,820	1,915	2,005
Soybean oil price (dollars per lb)	0.519	0.530	0.510	0.510	0.510	0.515	0.518	0.520	0.525	0.530	0.535	0.540
<b>Soybean meal (thousand short tons)</b>												
Beginning stocks, October 1	350	300	300	300	300	300	300	300	300	300	300	300
Production	41,025	37,150	39,335	39,535	40,385	41,085	41,760	42,435	43,060	43,710	44,360	45,010
Imports	216	250	165	165	165	165	165	165	165	165	165	165
Total supply	41,591	37,700	39,800	40,000	40,850	41,550	42,225	42,900	43,525	44,175	44,825	45,475
Domestic disappearance	31,550	29,500	29,750	30,200	30,750	31,250	31,725	32,200	32,675	33,175	33,675	34,175
Exports	9,741	7,900	9,750	9,500	9,800	10,000	10,200	10,400	10,550	10,700	10,850	11,000
Total demand	41,291	37,400	39,500	39,700	40,550	41,250	41,925	42,600	43,225	43,875	44,525	45,175
Ending stocks, September 30	300	300	300	300	300	300	300	300	300	300	300	300
Soybean meal price (dollars per ton)	393.53	470.00	315.00	260.00	262.00	265.00	269.00	270.50	271.50	274.00	278.50	283.00
Crushing yields (pounds per bushel)												
Soybean oil	11.59	11.43	11.44	11.45	11.46	11.47	11.48	11.49	11.50	11.51	11.52	11.53
Soybean meal	48.18	47.64	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
Crush margin (dollars per bushel)	3.00	2.35	1.97	1.66	1.42	1.45	1.48	1.50	1.54	1.56	1.58	1.60

Note: Marketing year beginning September 1 for soybeans; October 1 for soybean oil and soybean meal.

1/ History based on data reported by the U.S. Department of Energy, Energy Information Administration.

Table 24a. U.S. rice long-term projections, total rice, rough basis

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (thousand acres):												
Planted	2,689	2,699	2,650	3,090	3,125	3,150	3,165	3,180	3,195	3,205	3,210	3,215
Harvested	2,618	2,677	2,621	3,056	3,091	3,116	3,130	3,145	3,160	3,170	3,175	3,180
Yield:												
Pounds/harvested acre	7,067	7,417	7,318	7,320	7,389	7,462	7,530	7,603	7,674	7,741	7,805	7,871
Supply and use (million hundredweight):												
Beginning stocks	48.5	41.1	30.1	27.5	34.3	35.9	37.2	37.7	38.6	40.0	41.1	41.4
Production	185.0	198.5	191.8	223.7	228.4	232.5	235.7	239.1	242.5	245.4	247.8	250.3
Imports	19.4	20.5	20.6	20.7	21.0	21.3	21.5	21.8	22.1	22.4	22.7	23.4
Total supply	252.8	260.1	242.5	271.9	283.7	289.7	294.4	298.6	303.3	307.8	311.6	315.0
Domestic use and residual	110.2	127.0	123.0	131.1	132.7	134.3	135.4	136.5	137.6	138.8	140.0	141.2
Exports	101.6	103.0	92.0	106.5	115.1	118.2	121.3	123.5	125.7	127.9	130.2	132.5
Total use	211.8	230.0	215.0	237.6	247.8	252.5	256.7	260.0	263.3	266.7	270.2	273.7
Ending stocks	41.1	30.1	27.5	34.3	35.9	37.2	37.7	38.6	40.0	41.1	41.4	41.0
Stocks/use ratio, percent	19.4	13.1	12.8	14.4	14.5	14.7	14.7	14.9	15.2	15.4	15.3	15.0
Price (dollars per hundredweight):												
Average farm price	14.30	15.00	15.20	14.80	15.10	15.30	15.60	15.80	16.10	16.30	16.60	16.90
Variable costs of production (dollars):												
Per acre	546	562	566	568	571	577	587	597	608	619	630	642
Returns over variable costs (dollars per acre):												
Net returns	465	551	546	516	545	564	588	604	627	643	665	689

Note: Marketing year beginning August 1 for rice.

Table 24b. U.S. rice long-term projections, long-grain rice, rough basis

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (thousand acres):												
Planted	1,794	1,989	1,900	2,325	2,350	2,370	2,380	2,390	2,400	2,405	2,410	2,415
Harvested	1,740	1,973	1,877	2,297	2,322	2,342	2,351	2,361	2,371	2,376	2,381	2,386
Yield:												
Pounds/harvested acre	6,691	7,088	7,015	7,056	7,138	7,221	7,300	7,379	7,459	7,533	7,608	7,683
Supply and use (million hundredweight):												
Beginning stocks	35.6	24.3	15.1	13.8	20.9	22.3	23.2	23.4	23.8	24.6	25.1	25.3
Production	116.4	139.8	131.7	162.1	165.7	169.1	171.6	174.2	176.9	179.0	181.1	183.3
Imports	16.9	18.0	18.0	18.0	18.2	18.4	18.5	18.7	18.9	19.1	19.3	19.5
Total supply	169.0	182.1	164.8	193.9	204.8	209.7	213.4	216.3	219.6	222.7	225.5	228.1
Domestic use & residual	77.9	95.0	91.0	99.0	100.5	102.0	103.0	104.0	105.0	106.1	107.2	108.3
Exports	66.8	72.0	60.0	74.0	82.0	84.5	87.0	88.5	90.0	91.5	93.0	94.5
Total use	144.8	167.0	151.0	173.0	182.5	186.5	190.0	192.5	195.0	197.6	200.2	202.8
Ending stocks	24.3	15.1	13.8	20.9	22.3	23.2	23.4	23.8	24.6	25.1	25.3	25.3
Stocks/use ratio, percent	16.8	9.0	9.1	12.1	12.2	12.5	12.3	12.4	12.6	12.7	12.7	12.5
Price (dollars per hundredweight):												
Average farm price	13.40	14.20	14.70	14.00	14.20	14.50	14.70	15.00	15.20	15.50	15.70	16.00

Note: Marketing year beginning August 1 for rice.

Table 24c. U.S. rice long-term projections, medium- and short-grain rice, rough basis

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (thousand acres):												
Planted	895	710	750	765	775	780	785	790	795	800	800	800
Harvested	878	704	744	759	769	774	779	784	789	794	794	794
Yield:												
Pounds/harvested acre	7,812	8,339	8,075	8,114	8,153	8,194	8,234	8,275	8,316	8,357	8,399	8,440
Supply and use (million hundredweight):												
Beginning stocks	10.1	14.7	12.9	11.6	11.3	11.5	11.8	12.2	12.7	13.2	13.8	13.9
Production	68.6	58.7	60.1	61.6	62.7	63.4	64.1	64.9	65.6	66.4	66.7	67.0
Imports	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5
Total supply	81.7	75.9	75.6	75.9	76.8	77.8	78.9	80.2	81.5	82.9	83.9	84.4
Domestic use & residual	32.2	32.0	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9
Exports	34.8	31.0	32.0	32.5	33.1	33.7	34.3	35.0	35.7	36.4	37.2	38.0
Total use	67.0	63.0	64.0	64.6	65.3	66.0	66.7	67.5	68.3	69.1	70.0	70.9
Ending stocks	14.7	12.9	11.6	11.3	11.5	11.8	12.2	12.7	13.2	13.8	13.9	13.5
Stocks/use ratio, percent	21.9	20.5	18.1	17.5	17.6	17.9	18.3	18.8	19.3	20.0	19.9	19.0
Price (dollars per hundredweight):												
Average farm price	16.50	17.00	16.50	16.70	17.00	17.30	17.50	17.80	18.00	18.30	18.60	18.90

Note: Marketing year beginning August 1 for rice.

Table 25. U.S. upland cotton long-term projections

Item	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Area (million acres):												
Planted acres	14.4	12.1	9.3	10.5	11.3	11.0	10.9	10.8	10.8	10.7	10.7	10.6
Harvested acres	9.2	10.2	7.9	9.2	9.9	9.7	9.6	9.5	9.5	9.4	9.4	9.3
Yield:												
Pounds/harvested acre	772	790	800	805	810	815	820	825	830	835	840	845
Supply and use (thousand bales):												
Beginning stocks	2,572	3,081	5,624	4,644	5,064	5,734	5,954	5,974	5,844	5,764	5,634	5,554
Production	14,722	16,790	13,200	15,400	16,700	16,500	16,400	16,300	16,400	16,400	16,500	16,400
Imports	13	5	5	5	5	5	5	5	5	5	5	5
Supply	17,307	19,876	18,829	20,049	21,769	22,239	22,359	22,279	22,249	22,169	22,139	21,959
Domestic use	3,278	3,375	3,425	3,475	3,525	3,575	3,625	3,675	3,725	3,775	3,825	3,875
Exports	11,120	10,875	10,750	11,500	12,500	12,700	12,750	12,750	12,750	12,750	12,750	12,750
Total use	14,398	14,250	14,175	14,975	16,025	16,275	16,375	16,425	16,475	16,525	16,575	16,625
Ending stocks	3,081	5,624	4,644	5,064	5,734	5,954	5,974	5,844	5,764	5,634	5,554	5,324
Stocks/use ratio, percent	21.4	39.5	32.8	33.8	35.8	36.6	36.5	35.6	35.0	34.1	33.5	32.0
Price (dollars per pound):												
Farm price	0.883	0.680	0.680	0.685	0.690	0.695	0.700	0.705	0.710	0.715	0.720	0.725
Variable costs of production (dollars):												
Per acre	480	525	540	544	549	555	564	574	585	595	606	617
Returns over variable costs (dollars per acre):												
Net returns	366	184	157	155	161	164	165	165	165	164	165	165

Note: Marketing year beginning August 1 for upland cotton.

Table 26. U.S. sugar long-term projections

Item	Units	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<b>Sugarbeets</b>													
Planted area	1,000 acres	1,233	1,244	1,137	1,097	1,169	1,209	1,201	1,177	1,160	1,152	1,152	1,155
Harvested area	1,000 acres	1,213	1,215	1,095	1,058	1,126	1,165	1,157	1,134	1,117	1,110	1,110	1,113
Yield	Tons/acre	23.8	29.3	26.3	26.5	26.6	26.7	26.8	26.9	27.0	27.1	27.2	27.3
Production	Mil. s. tons	28.8	35.6	28.9	28.0	30.0	31.1	31.0	30.5	30.2	30.1	30.2	30.4
<b>Sugarcane</b>													
Harvested area	1,000 acres	828	849	834	834	840	845	842	839	837	836	838	840
Yield	Tons/acre	33.7	35.7	35.8	35.9	36.0	36.2	36.4	36.6	36.8	36.9	37.1	37.3
Production	Mil. s. tons	27.9	30.4	29.9	29.9	30.3	30.6	30.6	30.7	30.8	30.9	31.1	31.3
<b>Supply:</b>													
Beginning stocks	1,000 s. tons	1,378	2,007	2,216	2,136	1,818	1,738	1,817	2,041	2,186	2,197	2,121	2,035
Production	1,000 s. tons	8,482	8,825	8,461	8,360	8,759	9,016	9,042	8,995	8,983	9,017	9,092	9,183
Beet sugar	1,000 s. tons	4,894	5,105	4,808	4,695	5,048	5,265	5,281	5,224	5,197	5,212	5,259	5,319
Cane sugar	1,000 s. tons	3,587	3,720	3,653	3,664	3,711	3,751	3,762	3,772	3,786	3,806	3,833	3,864
Total imports	1,000 s. tons	3,632	3,249	3,513	3,516	3,288	3,137	3,328	3,478	3,517	3,497	3,469	3,462
TRQ imports	1,000 s. tons	1,883	1,289	1,328	1,451	1,454	1,460	1,463	1,397	1,470	1,472	1,473	1,474
Imports from Mexico	1,000 s. tons	1,071	1,500	1,725	1,605	1,374	1,217	1,405	1,621	1,586	1,566	1,536	1,528
Other imports	1,000 s. tons	677	460	460	460	460	460	460	460	460	460	460	460
Total supply	1,000 s. tons	13,492	14,081	14,191	14,012	13,865	13,890	14,187	14,514	14,686	14,712	14,682	14,680
<b>Use:</b>													
Exports	1,000 s. tons	269	275	275	275	275	275	275	275	275	275	275	275
Domestic deliveries	1,000 s. tons	11,313	11,590	11,779	11,919	11,852	11,798	11,871	12,060	12,214	12,316	12,372	12,406
Miscellaneous	1,000 s. tons	-98	0	0	0	0	0	0	0	0	0	0	0
Total use	1,000 s. tons	11,485	11,865	12,054	12,194	12,127	12,073	12,146	12,335	12,489	12,591	12,647	12,681
CCC surplus disbursements <sup>1</sup>	1,000 s. tons	0	0	0	0	0	0	0	0	0	0	0	0
Ending stocks	1,000 s. tons	2,007	2,216	2,136	1,818	1,738	1,817	2,041	2,186	2,197	2,121	2,035	1,999
<b>Raw sugar price:</b>													
New York (No. 16)	Cents/lb.	27.93	22.12	24.05	29.76	33.05	28.64	25.83	24.71	24.92	26.19	27.96	28.43
Raw sugar loan rate	Cents/lb.	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75
Beet sugar loan rate	Cents/lb.	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09
<b>Grower prices:</b>													
Sugarbeets	Dol./ton	67.80	58.38	54.89	59.65	65.96	66.31	62.04	59.23	58.42	59.32	61.31	62.95
Sugarcane	Dol./ton	47.10	39.38	40.66	45.50	48.38	45.46	43.03	41.97	42.10	43.19	44.72	45.23

Note: Marketing year beginning October 1 for sugar.

<sup>1</sup>/CCC is the Commodity Credit Corporation, U.S. Department of Agriculture.

Table 27. Horticultural crops long-term supply and use projections, calendar years

Item	Unit	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Production area<sup>1</sup></b>													
Fruit, nuts, and vegetables	1,000 acres	9,788	10,770	10,611	10,624	10,643	10,664	10,694	10,726	10,759	10,794	10,831	10,869
Fruit and tree nuts	1,000 acres	4,037	4,017	4,012	4,008	4,005	3,995	3,987	3,978	3,970	3,962	3,955	3,947
Vegetables	1,000 acres	5,751	6,753	6,599	6,615	6,638	6,669	6,707	6,748	6,789	6,832	6,876	6,922
<b>Supply</b>													
<b>Production, farm weight</b>													
Fruit and nuts	Mil. lbs.	71,020	69,664	69,650	69,733	69,822	69,916	70,016	70,121	70,233	70,349	70,472	70,600
Citrus	Mil. lbs.	23,596	23,474	23,148	22,917	22,687	22,460	22,236	22,014	21,793	21,575	21,360	21,146
Noncitrus	Mil. lbs.	42,256	40,823	41,027	41,232	41,438	41,646	41,854	42,063	42,273	42,485	42,697	42,911
Tree nuts	Mil. lbs.	5,168	5,367	5,475	5,585	5,696	5,810	5,926	6,045	6,166	6,289	6,415	6,543
Vegetables <sup>2</sup>	Mil. lbs.	117,006	125,100	123,866	124,665	125,473	126,279	127,093	127,915	128,734	129,562	130,397	131,239
Fresh market	Mil. lbs.	41,305	41,399	45,614	45,914	46,218	46,516	46,818	47,123	47,422	47,725	48,030	48,338
Processing	Mil. lbs.	36,598	39,631	37,519	37,744	37,970	38,198	38,427	38,658	38,890	39,123	39,358	39,594
Potatoes	Mil. lbs.	36,016	39,149	36,017	36,198	36,379	36,560	36,743	36,927	37,112	37,297	37,484	37,671
Pulses	Mil. lbs.	3,088	4,921	4,716	4,810	4,906	5,004	5,104	5,206	5,311	5,417	5,525	5,636
Total fruit, nuts, vegetables	Mil. lbs.	188,026	194,764	193,516	194,399	195,295	196,195	197,109	198,036	198,967	199,911	200,869	201,839
<b>Imports, farm weight</b>													
Fruit, nuts, and vegetables	Mil. lbs.	62,646	64,966	66,906	68,929	71,014	73,162	75,376	77,658	80,009	82,432	84,929	87,502
Fruit and tree nuts	Mil. lbs.	39,871	41,235	42,392	43,581	44,804	46,061	47,353	48,682	50,048	51,452	52,896	54,380
Vegetables	Mil. lbs.	22,776	23,732	24,515	25,348	26,210	27,101	28,023	28,976	29,961	30,979	32,033	33,122
<b>Use</b>													
<b>Exports, farm weight</b>													
Fruit, nuts, and vegetables	Mil. lbs.	35,101	36,497	37,391	38,310	39,255	40,226	41,224	42,250	43,306	44,391	45,506	46,654
Fruit and tree nuts	Mil. lbs.	15,737	16,156	16,440	16,731	17,028	17,332	17,643	17,962	18,289	18,623	18,966	19,317
Vegetables	Mil. lbs.	19,364	20,341	20,951	21,580	22,227	22,894	23,581	24,288	25,017	25,767	26,540	27,337
<b>Domestic use<sup>3</sup></b>													
Fruit, nuts, and vegetables	Mil. lbs.	215,571	223,233	223,031	225,018	227,054	229,132	231,261	233,443	235,670	237,952	240,291	242,687
Fruit and tree nuts	Mil. lbs.	95,153	94,742	95,601	96,584	97,598	98,645	99,726	100,841	101,992	103,178	104,402	105,663
Vegetables	Mil. lbs.	120,418	128,491	127,429	128,434	129,456	130,487	131,535	132,602	133,679	134,774	135,889	137,024
<b>Farm sales value<sup>4</sup></b>													
Fruit and nuts	\$ Mil.	24,908	25,567	26,092	26,628	27,166	27,716	28,277	28,809	29,352	29,906	30,470	31,046
Citrus	\$ Mil.	3,241	3,443	3,495	3,547	3,591	3,636	3,682	3,719	3,756	3,793	3,831	3,870
Noncitrus	\$ Mil.	14,814	15,100	15,398	15,701	16,010	16,326	16,648	16,944	17,246	17,554	17,867	18,185
Tree nuts	\$ Mil.	6,853	7,024	7,200	7,380	7,564	7,753	7,947	8,146	8,350	8,558	8,772	8,992
Vegetables	\$ Mil.	21,165	19,872	19,778	19,693	20,337	20,357	20,683	21,002	21,326	21,655	22,002	22,356
Fresh market	\$ Mil.	14,425	12,270	12,448	12,629	12,809	12,992	13,178	13,367	13,558	13,752	13,949	14,149
Processing	\$ Mil.	1,880	1,948	1,974	2,001	2,027	2,054	2,081	2,109	2,137	2,166	2,195	2,224
Potatoes	\$ Mil.	3,759	3,571	3,588	3,624	3,679	3,734	3,790	3,847	3,904	3,963	4,022	4,083
Pulses	\$ Mil.	1,101	2,084	1,768	1,439	1,522	1,577	1,633	1,679	1,726	1,774	1,836	1,900
Nursery and greenhouse <sup>5</sup>	\$ Mil.	15,598	15,676	15,755	15,834	15,913	15,992	16,072	16,153	16,233	16,315	16,396	16,478
Other horticulture crops <sup>6</sup>	\$ Mil.	812	836	861	887	909	932	955	974	994	1,013	1,034	1,054
Total horticulture crops	\$ Mil.	62,483	61,951	62,486	63,041	64,025	64,997	65,987	66,938	67,905	68,888	69,903	70,935
<b>Producer prices<sup>7</sup></b>													
Fresh fruits	2008=100	95.8	96.8	98.9	100.7	102.6	104.6	106.5	108.3	110.1	111.9	113.8	115.6
Citrus	2008=100	102.0	110.1	113.4	116.3	118.9	121.5	124.3	126.8	129.4	132.0	134.7	137.4
Noncitrus	2008=100	93.1	95.1	96.5	98.0	99.4	100.8	102.3	103.6	104.9	106.3	107.6	109.0
Tree nuts	2008=100	130.0	138.3	138.9	139.6	140.3	141.0	141.7	142.4	143.1	143.8	144.5	145.2
Vegetables	2008=100	113.2	90.8	91.3	90.3	91.3	92.2	93.0	93.9	94.7	95.6	96.5	97.4
Fresh vegetables	2008=100	111.3	85.0	78.3	78.9	79.5	80.1	80.8	81.4	82.0	82.7	83.3	83.9
Potatoes (fresh)	2008=100	98.1	77.3	84.4	84.9	85.7	86.6	87.4	88.3	89.1	90.0	91.0	91.9
Pulses (dried)	2008=100	104.9	124.5	110.3	88.0	91.2	92.7	94.1	94.9	95.6	96.3	97.7	99.2
Fruit, nuts, and vegetables	2008=100	108.1	98.0	99.6	100.1	101.5	102.9	104.3	105.6	107.0	108.3	109.7	111.1

1/ Bearing acreage for fruit and nuts; harvested area for vegetables. Fruits include melons. 2/ Utilized production is used for potatoes. Pulses include edible dry beans and peas, lentils, and other peas. Excludes melons. 3/ In farm or fresh weight units. 4/ Production values are used for fruits and nuts, and for processing vegetables. Farm cash receipts are used for other vegetables and horticulture crops. 5/ Includes floral crops, greenhouse vegetables such as tomatoes, cucumbers, colored peppers, and fruit and vegetable transplants. 6/ Includes honey, maple syrup, mustard, hops, mint oils, taro, ginger root, and coffee from Hawaii. 7/ Producer price indexes for farm commodities from the U.S. Bureau of Labor Statistics. Prices for fresh fruits include melons.

Data sources: USDA, National Agricultural Statistics Service; Foreign Agricultural Service; Economic Research Service; U.S. Department of Labor, Bureau of Labor Statistics.

Table 28. Horticultural crops long-term export and import projections, fiscal years

Item	Unit	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Exports</b>													
<b>Fruit and nuts</b>													
Fresh fruits	\$ Mil.	4,392	4,842	5,392	5,541	5,694	5,851	6,013	6,178	6,349	6,524	6,704	6,889
Citrus	\$ Mil.	1,036	1,009	1,426	1,438	1,449	1,459	1,468	1,477	1,484	1,491	1,497	1,502
Noncitrus	\$ Mil.	3,356	3,833	3,966	4,103	4,245	4,392	4,544	4,702	4,865	5,033	5,207	5,388
Processed fruits	\$ Mil.	2,826	2,881	3,316	3,375	3,434	3,495	3,556	3,617	3,680	3,743	3,806	3,871
Fruit juices	\$ Mil.	1,327	1,291	1,324	1,357	1,391	1,426	1,462	1,499	1,537	1,576	1,616	1,656
Tree nuts	\$ Mil.	5,147	6,106	7,000	7,288	7,588	7,900	8,225	8,564	8,916	9,283	9,666	10,063
Total fruit and nuts	\$ Mil.	12,364	13,830	15,707	16,203	16,716	17,246	17,794	18,360	18,945	19,551	20,176	20,823
<b>Vegetables</b>													
Fresh	\$ Mil.	2,251	2,154	2,208	2,264	2,321	2,379	2,439	2,500	2,563	2,628	2,694	2,762
Processed <sup>1</sup>	\$ Mil.	3,483	3,959	4,084	4,213	4,346	4,484	4,625	4,771	4,922	5,077	5,237	5,403
Total vegetables	\$ Mil.	5,734	6,113	6,293	6,477	6,667	6,863	7,064	7,272	7,485	7,705	7,932	8,165
<b>Other horticulture</b>													
Nursery and greenhouse	\$ Mil.	353	358	363	368	373	378	383	389	394	399	405	411
Essential oils	\$ Mil.	1,478	1,582	1,647	1,716	1,787	1,860	1,937	2,018	2,101	2,188	2,278	2,373
Wine	\$ Mil.	1,264	1,321	1,373	1,426	1,482	1,539	1,599	1,661	1,726	1,793	1,862	1,935
Beer	\$ Mil.	349	349	360	370	382	393	405	418	430	443	457	471
Other <sup>2</sup>	\$ Mil.	4,368	5,091	6,257	6,450	6,648	6,853	7,063	7,280	7,504	7,735	7,973	8,218
Total horticulture	\$ Mil.	25,911	28,644	32,000	33,010	34,054	35,132	36,246	37,397	38,586	39,814	41,083	42,395
Fresh produce <sup>3</sup>	\$ Mil.	6,643	6,996	7,600	7,804	8,014	8,230	8,452	8,679	8,912	9,152	9,398	9,651
Processed produce <sup>3</sup>	\$ Mil.	6,309	6,840	7,400	7,588	7,781	7,978	8,181	8,389	8,602	8,820	9,044	9,274
<b>Imports</b>													
<b>Fruit and nuts</b>													
Fresh fruits	\$ Mil.	7,125	7,618	8,000	8,331	8,675	9,034	9,408	9,797	10,202	10,624	11,064	11,521
Citrus	\$ Mil.	525	516	604	627	651	677	703	730	759	788	819	850
Noncitrus	\$ Mil.	6,600	7,101	7,396	7,704	8,024	8,358	8,705	9,067	9,444	9,836	10,245	10,671
Processed fruits	\$ Mil.	4,263	4,358	4,500	4,703	4,916	5,138	5,370	5,613	5,866	6,131	6,408	6,698
Fruit juices	\$ Mil.	1,840	1,762	1,824	1,888	1,954	2,022	2,093	2,166	2,242	2,320	2,401	2,485
Tree nuts	\$ Mil.	1,714	1,801	2,000	2,100	2,206	2,316	2,433	2,555	2,683	2,818	2,959	3,107
Total fruit and nuts	\$ Mil.	13,102	13,777	14,500	15,135	15,797	16,489	17,211	17,965	18,752	19,573	20,431	21,327
<b>Vegetables</b>													
Fresh	\$ Mil.	5,722	5,831	6,200	6,480	6,772	7,077	7,396	7,730	8,078	8,442	8,823	9,221
Processed <sup>1</sup>	\$ Mil.	3,915	4,202	4,600	4,787	4,981	5,184	5,394	5,613	5,841	6,079	6,326	6,583
Total vegetables	\$ Mil.	9,637	10,033	10,800	11,266	11,753	12,261	12,790	13,343	13,920	14,521	15,149	15,804
<b>Other horticulture</b>													
Nursery and greenhouse	\$ Mil.	1,522	1,624	1,700	1,724	1,748	1,773	1,798	1,823	1,849	1,875	1,902	1,929
Essential oils	\$ Mil.	2,534	2,569	2,700	2,825	2,956	3,092	3,235	3,385	3,541	3,705	3,877	4,056
Wine	\$ Mil.	4,777	5,084	5,400	5,650	5,912	6,185	6,472	6,772	7,085	7,413	7,756	8,116
Beer	\$ Mil.	3,512	3,722	4,000	4,129	4,262	4,399	4,541	4,687	4,838	4,994	5,155	5,321
Other <sup>2</sup>	\$ Mil.	4,321	4,749	5,300	5,548	5,807	6,078	6,362	6,659	6,970	7,295	7,636	7,992
Total horticulture	\$ Mil.	39,405	41,557	44,400	46,276	48,234	50,277	52,409	54,633	56,955	59,377	61,906	64,544
Fresh produce <sup>3</sup>	\$ Mil.	12,848	13,448	14,200	14,810	15,447	16,111	16,804	17,527	18,281	19,067	19,887	20,742
Processed produce <sup>3</sup>	\$ Mil.	8,178	8,560	9,100	9,490	9,897	10,322	10,764	11,226	11,708	12,210	12,734	13,281

1/ Includes dry edible beans, peas, lentils, and potatoes. 2/ Includes hops, ginseng, sauces, condiments, mixed food, yeast, starches, and other products that contain horticulture ingredients. 3/ Includes fruits and vegetables only.

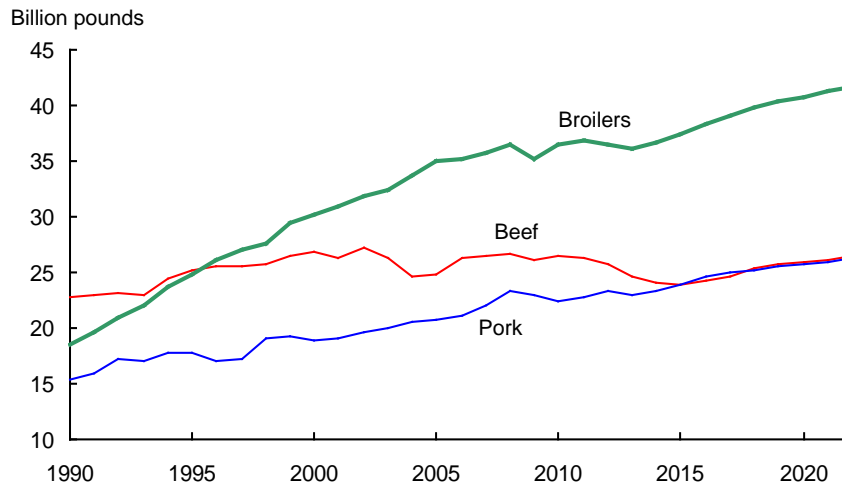
Exports are free alongside ship (FAS) value at U.S. port of exportation. Imports are customs value at U.S. port of entry.

Data source: U.S. Department of Commerce, Bureau of the Census.

## U.S. Livestock

High feed prices, the economic recession, and drought in the Southern Plains of the United States (which extended through much of the middle of the country in 2012) have combined to reduce producer returns and lower production incentives in the livestock sector over the past several years. As a result, total U.S. red meat and poultry production is projected to continue to decline in 2013, with per capita consumption of red meat and poultry falling below 200 pounds for the first time since 1990. Over the rest of the projection period, higher net returns and improved forage supplies lead to expansion of meat and poultry production.

**U.S. red meat and poultry production**

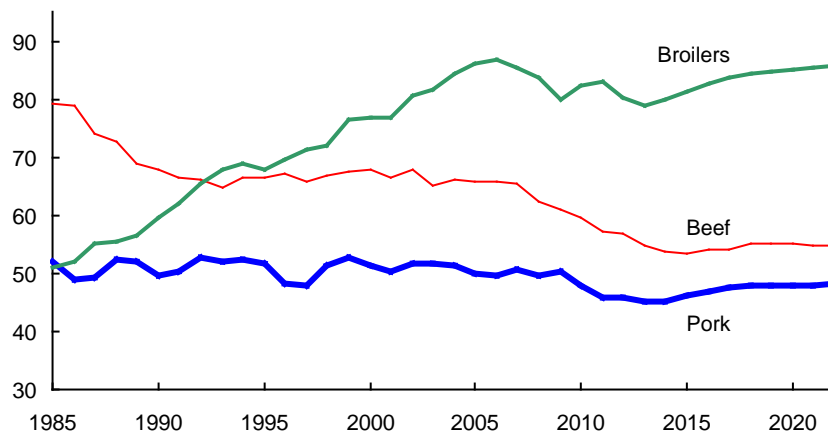


- Despite improved returns for cow-calf operators in 2011 and 2012, drought over the past two years will prevent producers from expanding beef cow inventories until 2014. Lower beef cow inventories and expected heifer retention are expected to lead to declines in beef production through 2015. Production then rises in the remainder of the projection period as returns support herd expansion. Beef cow numbers rise from about 30 million head at the beginning of 2014 to 33 million in the last several years of the projection period. The total cattle inventory drops to 89 million head at the beginning of 2014 before expanding to about 94 million at the end of the projection period. 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 will also be supported by productivity gains in the breeding herd and increased slaughter weights.
- After declining in 2012 and 2013, poultry production rises through the end of 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 bird numbers and higher average weights at slaughter. Increased demand is expected to strengthen broiler prices, although poultry will face competition from increasing red meat production from 2015 forward.



### U.S. per capita meat consumption

Pounds per capita, retail weight

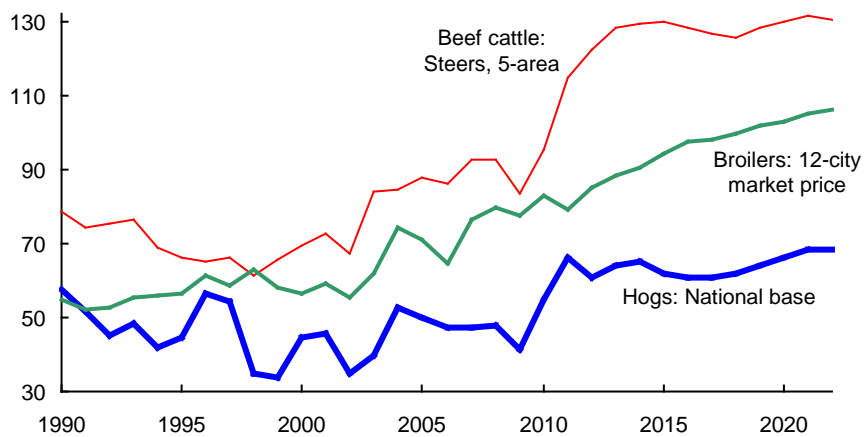


In the near term, declines in overall meat production result in higher consumer prices and lower per capita consumption in the United States. Annual average consumption of red meats and poultry falls from over 221 pounds per capita in 2004-07 to less than 198 pounds in 2013, the first time per capita consumption will be below 200 pounds since 1990. As production increases over the remainder of the projection period, per capita consumption of red meats and poultry increases but reaches only about 209 pounds by 2022.

- Per capita beef consumption declines through 2015, before rising moderately over much of the remainder of the projection period. The near-term decline reflects reductions in beef production through 2015. As beef production increases in subsequent years, per capita consumption generally grows.
- Per capita pork consumption remained flat in 2012 reflecting a 2 percent rise in production and a large increase in U.S. pork exports. A gradual increase in per capita pork consumption is projected after 2013 as production continues to rise and export gains moderate.
- After declining in 2012, poultry production is projected to grow through the rest of the decade. Per capita consumption rises through the end of the projection period and, in contrast to red meats, surpasses levels of the past decade.

### Nominal U.S. livestock prices

Dollars per hundredweight

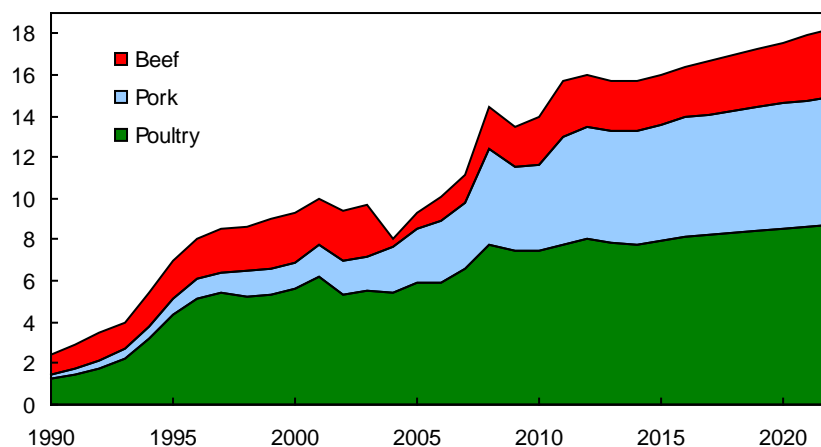


During the initial years of the projection period, prices in the livestock sector reflect reductions in total meat and poultry production in recent years. After increasing through 2015, beef cattle prices decline for several years as production expands starting in 2016. Hog prices rise in the near term but then decline in 2015-16 as red meat production increases.

Over the remainder of the projection period, livestock prices rise, reflecting a moderate pace of production expansion combined with increasing domestic use and export demand.

## U.S. meat exports

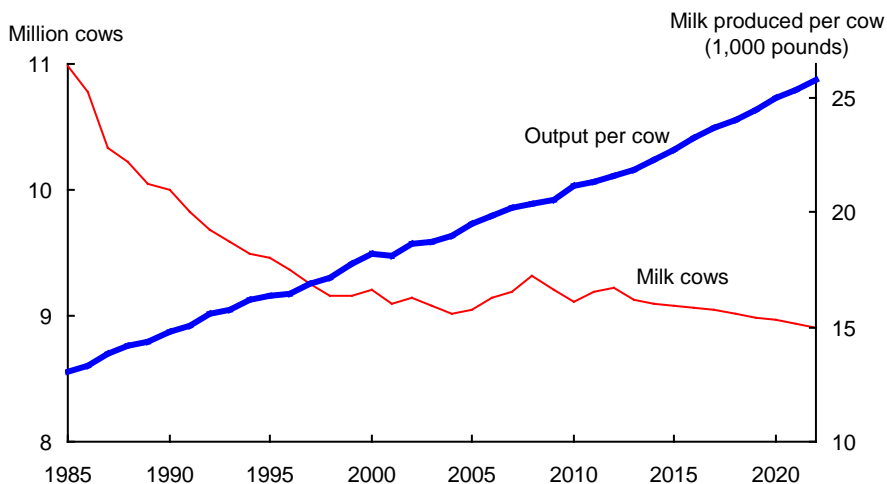
Billion pounds



The projected rise in U.S. meat and poultry exports over the next decade reflects steady global economic growth, a further depreciation of the U.S. dollar, and the continued 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. Beef exports by major beef exporting countries—Australia and Canada—increase as herds are rebuilt.
- 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. As more beef demand in East Asian markets is met by U.S. grain-fed beef, exports of grass-fed beef to those markets from Australia and New Zealand are likely to decline, diverting more grass-fed product to the United States.
- Production efficiency in the U.S. pork sector enhances the sector's international competitiveness. Longer term U.S. pork export gains will be determined by costs of production in the United States relative to competitors' costs. Production costs tend to be lower in countries such as Brazil that have established or are developing integrated pork industries. However, Brazilian pork producers' ability to export to some markets is limited because some countries do not recognize Brazil as free of foot-and-mouth disease (FMD). Thus, Pacific Rim nations and Mexico remain key markets for long-term growth of U.S. pork exports, while Brazil's pork exports expand to other South American markets, China, and Hong Kong. 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 from 2013 through the rest of 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 to the EU. As noted for pork, Russia is assumed to also support its domestic poultry industry with investment and trade policies.

### U.S. dairy herd and milk production per cow



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 decrease after 2012.

- Following increases in 2005-08 and again in 2011 and 2012, milk cow numbers are projected to resume a more typical long-term path of year-to-year declines in 2013-22.
- 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 somewhat 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 the major dairy exporting countries are expected to lag growth in global import demand.
- After declining in 2012-15, 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.

Table 29. Per capita meat consumption, retail weight

Item	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	<i>Pounds</i>											
Beef	57.3	56.8	54.8	53.8	53.4	54.0	54.0	55.1	55.1	55.2	54.7	54.8
Veal	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
Pork	45.7	45.7	45.0	45.2	46.1	47.0	47.6	47.8	47.8	47.8	47.8	48.1
Lamb and mutton	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Total red meat	104.3	103.7	101.0	100.3	100.7	102.2	102.7	104.0	104.0	104.1	103.6	104.0
Broilers	82.9	80.3	79.0	80.0	81.2	82.5	83.5	84.3	84.8	85.0	85.4	85.6
Other chicken	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4
Turkeys	16.1	16.3	16.0	16.4	16.7	17.0	17.3	17.4	17.4	17.5	17.6	17.6
Total poultry	100.4	98.0	96.4	97.7	99.3	100.8	102.1	103.0	103.6	103.8	104.3	104.6
Red meat & poultry	204.7	201.7	197.3	198.0	199.9	203.0	204.8	207.1	207.6	207.9	207.9	208.6

Table 30. Beef long-term projections

Item	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Beginning stocks	Mil. lbs.	585	600	540	550	550	550	550	550	550	550	550	550
Commercial production	Mil. lbs.	26,195	25,587	24,520	23,995	23,774	24,249	24,470	25,311	25,614	25,915	25,990	26,347
Change from previous year	Percent	-0.4	-2.3	-4.2	-2.1	-0.9	2.0	0.9	3.4	1.2	1.2	0.3	1.4
Farm production	Mil. lbs.	96	96	96	96	96	96	96	96	96	96	96	96
Total production	Mil. lbs.	26,291	25,683	24,616	24,091	23,870	24,345	24,566	25,407	25,710	26,011	26,086	26,443
Imports	Mil. lbs.	2,057	2,242	2,620	2,837	3,013	3,064	3,151	3,189	3,257	3,335	3,375	3,431
Total supply	Mil. lbs.	28,933	28,525	27,776	27,478	27,433	27,959	28,267	29,146	29,517	29,896	30,011	30,424
Exports	Mil. lbs.	2,785	2,469	2,450	2,409	2,383	2,443	2,562	2,699	2,843	2,982	3,122	3,267
Ending stocks	Mil. lbs.	600	540	550	550	550	550	550	550	550	550	550	550
Total consumption	Mil. lbs.	25,548	25,516	24,776	24,519	24,500	24,966	25,155	25,897	26,124	26,364	26,339	26,607
Per capita, carcass weight	Pounds	81.9	81.2	78.3	76.9	76.3	77.1	77.1	78.7	78.8	78.9	78.2	78.3
Per capita, retail weight	Pounds	57.3	56.8	54.8	53.8	53.4	54.0	54.0	55.1	55.1	55.2	54.7	54.8
Change from previous year	Percent	-3.8	-0.8	-3.6	-1.8	-0.8	1.1	0.0	2.1	0.1	0.1	-0.9	0.2
Prices:													
Beef cattle, farm	\$/cwt	113.25	121.16	126.60	127.88	128.36	127.04	124.96	123.89	127.04	128.19	130.14	128.97
Calves, farm	\$/cwt	141.59	163.90	165.40	169.13	173.65	174.34	167.86	163.47	165.08	165.52	168.23	171.47
Steers, 5-area	\$/cwt	114.73	122.47	128.00	129.29	129.78	128.44	126.34	125.26	128.45	129.61	131.58	130.40
Yearling steers, Oklahoma City	\$/cwt	133.74	145.54	147.25	150.57	154.59	155.20	149.44	145.53	146.97	147.36	149.77	152.65
Feed price ratio:													
Beef cattle-corn	Ratio	21.9	19.5	16.7	23.7	31.3	29.5	28.4	27.5	27.9	27.9	28.0	27.2
Cattle inventory	1,000 head	92,682	90,769	89,700	89,000	90,651	91,782	92,555	93,448	93,808	94,016	94,491	94,815
Beef cow inventory	1,000 head	30,850	29,883	29,785	29,500	29,593	30,193	31,088	32,220	32,619	32,995	33,304	33,473
Total cow inventory	1,000 head	39,999	39,112	38,900	39,000	38,644	39,213	40,083	41,190	41,569	41,931	42,224	42,378

Table 31. Pork long-term projections

Item	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Beginning stocks	Mil. lbs.	541	542	675	650	650	650	650	650	650	650	650	650
Commercial production	Mil. lbs.	22,758	23,258	22,940	23,283	23,905	24,557	24,986	25,258	25,488	25,756	25,995	26,340
Change from previous year	Percent	1.4	2.2	-1.4	1.5	2.7	2.7	1.7	1.1	0.9	1.1	0.9	1.3
Farm production	Mil. lbs.	17	17	17	19	19	19	19	19	19	19	19	19
Total production	Mil. lbs.	22,775	23,275	22,957	23,302	23,924	24,576	25,005	25,277	25,507	25,775	26,014	26,359
Imports	Mil. lbs.	803	806	800	830	842	854	867	880	894	908	923	938
Total supply	Mil. lbs.	24,119	24,623	24,432	24,782	25,416	26,080	26,522	26,807	27,051	27,333	27,587	27,947
Exports	Mil. lbs.	5,189	5,448	5,445	5,551	5,682	5,806	5,850	5,898	5,994	6,080	6,169	6,235
Ending stocks	Mil. lbs.	542	675	650	650	650	650	650	650	650	650	650	650
Total consumption	Mil. lbs.	18,388	18,500	18,337	18,581	19,084	19,624	20,022	20,259	20,407	20,603	20,768	21,062
Per capita, carcass weight	Pounds	58.9	58.9	57.9	58.3	59.4	60.6	61.3	61.6	61.5	61.6	61.6	62.0
Per capita, retail weight	Pounds	45.7	45.7	45.0	45.2	46.1	47.0	47.6	47.8	47.8	47.8	47.8	48.1
Change from previous year	Percent	-4.2	-0.1	-1.6	0.6	1.9	2.0	1.2	0.4	-0.1	0.2	0.0	0.6
Prices:													
Hogs, farm	\$/cwt	66.47	63.47	67.19	67.85	63.81	62.11	62.52	63.43	65.55	67.94	69.97	70.22
National base, live equivalent	\$/cwt	66.11	60.73	64.25	65.24	61.95	60.60	61.00	61.88	63.95	66.28	68.26	68.50
Feed price ratio:													
Hog-corn	Ratio	12.8	10.2	8.8	12.6	15.6	14.4	14.2	14.1	14.4	14.8	15.0	14.8
Hog inventory,													
December 1, previous year	1,000 head	64,925	66,361	65,200	65,916	67,582	69,330	70,478	71,207	71,821	72,541	73,181	74,103

Table 32. Young chicken long-term projections

Item	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Beginning stocks	Mil. lbs.	773	590	600	600	600	600	600	600	600	600	600	600
Federally inspected slaughter	Mil. lbs.	37,201	36,889	36,445	37,039	37,860	38,756	39,504	40,165	40,736	41,158	41,665	42,101
Change from previous year	Percent	0.8	-0.8	-1.2	1.6	2.2	2.4	1.9	1.7	1.4	1.0	1.2	1.0
Production	Mil. lbs.	36,803	36,494	36,055	36,643	37,455	38,341	39,081	39,735	40,300	40,717	41,219	41,650
Total supply	Mil. lbs.	37,683	37,194	36,767	37,349	38,162	39,050	39,792	40,446	41,012	41,430	41,933	42,365
Change from previous year	Percent	1.2	-1.3	-1.1	1.6	2.2	2.3	1.9	1.6	1.4	1.0	1.2	1.0
Exports	Mil. lbs.	6,971	7,195	7,050	7,035	7,190	7,371	7,479	7,580	7,682	7,763	7,842	7,907
Ending stocks	Mil. lbs.	590	600	600	600	600	600	600	600	600	600	600	600
Consumption	Mil. lbs.	30,121	29,399	29,117	29,714	30,372	31,079	31,713	32,266	32,730	33,067	33,491	33,858
Per capita, carcass weight	Pounds	96.5	93.5	92.0	93.2	94.5	96.0	97.2	98.1	98.7	98.9	99.4	99.7
Per capita, retail weight	Pounds	82.9	80.3	79.0	80.0	81.2	82.5	83.5	84.3	84.8	85.0	85.4	85.6
Change from previous year	Percent	0.8	-3.1	-1.7	1.3	1.5	1.5	1.2	0.9	0.6	0.2	0.5	0.3
Prices:													
Broilers, farm	Cents/lb.	46.7	51.0	52.9	53.2	55.7	57.4	57.9	58.7	59.9	60.7	61.9	62.7
12-city market price	Cents/lb.	79.0	85.2	88.5	90.2	94.4	97.3	98.1	99.5	101.6	102.9	104.9	106.2
Feed price ratio:													
Broiler-feed <sup>1</sup>	Ratio	3.5	3.4	2.9	3.9	4.8	4.8	4.8	4.8	4.9	4.9	4.9	4.9

1/ Broiler feed price based on 58 percent corn price and 42 percent soybean price, as used by USDA, National Agricultural Statistics Service.

Table 33. Turkey long-term projections

Item	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Beginning stocks	Mil. lbs.	192	211	250	225	210	210	210	210	210	210	210	210
Federally inspected slaughter	Mil. lbs.	5,791	5,981	5,790	5,894	6,067	6,216	6,346	6,451	6,503	6,571	6,653	6,730
Change from previous year	Percent	2.6	3.3	-3.2	1.8	2.9	2.5	2.1	1.7	0.8	1.0	1.2	1.2
Production	Mil. lbs.	5,715	5,903	5,714	5,818	5,988	6,135	6,263	6,367	6,419	6,486	6,567	6,642
Total supply	Mil. lbs.	5,928	6,136	5,984	6,065	6,221	6,368	6,496	6,601	6,652	6,719	6,800	6,876
Change from previous year	Percent	1.2	3.5	-2.5	1.4	2.6	2.4	2.0	1.6	0.8	1.0	1.2	1.1
Exports	Mil. lbs.	703	777	690	635	640	646	651	657	663	669	676	682
Ending stocks	Mil. lbs.	211	250	225	210	210	210	210	210	210	210	210	210
Consumption	Mil. lbs.	5,015	5,109	5,069	5,220	5,371	5,513	5,635	5,734	5,779	5,840	5,915	5,984
Per capita	Pounds	16.1	16.3	16.0	16.4	16.7	17.0	17.3	17.4	17.4	17.5	17.6	17.6
Change from previous year	Percent	-2.0	1.2	-1.5	2.2	2.1	1.9	1.4	0.9	0.0	0.3	0.5	0.4

## Prices:

Turkey, farm	Cents/lb.	67.9	71.7	71.2	71.0	68.5	66.6	65.9	64.8	66.1	67.8	69.2	69.4
Hen turkeys, National	Cents/lb.	102.0	105.8	105.0	104.6	101.0	98.2	97.2	95.6	97.4	100.0	102.1	102.3

## Feed price ratio:

Turkey-feed <sup>1</sup>	Ratio	5.7	5.1	4.3	5.6	6.5	6.1	6.0	5.8	5.8	6.0	6.0	5.9
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1/ Turkey feed price based on 51 percent corn price, 28 percent soybean price, and 21 percent wheat price, as used by USDA, National Agricultural Statistics Service.

Table 34. Egg long-term projections

Item	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Beginning stocks	Mil. doz.	19	28	26	26	20	20	20	20	20	20	20	20
Production	Mil. doz.	7,655	7,693	7,610	7,602	7,640	7,702	7,763	7,833	7,904	7,975	8,038	8,103
Change from previous year	Percent	0.3	0.5	-1.1	-0.1	0.5	0.8	0.8	0.9	0.9	0.9	0.8	0.8
Imports	Mil. doz.	21	20	24	24	24	24	24	24	24	24	24	24
Total supply	Mil. doz.	7,695	7,741	7,660	7,652	7,684	7,746	7,807	7,877	7,948	8,019	8,082	8,147
Change from previous year	Percent	0.5	0.6	-1.0	-0.1	0.4	0.8	0.8	0.9	0.9	0.9	0.8	0.8
Hatching use	Mil. doz.	952	935	930	935	949	964	979	991	1,002	1,010	1,019	1,027
Exports	Mil. doz.	276	298	256	259	262	265	268	271	274	277	280	283
Ending stocks	Mil. doz.	28	26	26	20	20	20	20	20	20	20	20	20
Consumption	Mil. doz.	6,439	6,481	6,448	6,439	6,454	6,496	6,540	6,595	6,652	6,711	6,764	6,817
Per capita	Number	247.6	247.5	244.4	242.3	241.1	240.8	240.5	240.6	240.7	240.9	240.9	240.9
Change from previous year	Percent	0.0	-0.1	-1.2	-0.9	-0.5	-0.1	-0.1	0.0	0.1	0.1	0.0	0.0

## Prices:

Eggs, farm	Cents/doz.	97.5	99.6	98.8	102.1	106.2	109.6	111.2	112.9	114.5	116.2	118.3	120.4
New York, Grade A large	Cents/doz.	115.3	117.8	116.8	123.0	128.0	132.0	134.0	136.0	138.0	140.0	142.5	145.0

## Feed price ratio:

Egg-feed <sup>1</sup>	Ratio	8.4	7.4	6.0	8.5	10.7	10.7	10.7	10.7	10.8	10.8	10.9	10.9
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1/ Egg feed price based on 75 percent corn price and 25 percent soybean price, as used by USDA, National Agricultural Statistics Service.

Table 35. Dairy long-term projections

Item	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Milk production and marketings:													
Number of cows	1,000	9,194	9,225	9,125	9,090	9,075	9,065	9,045	9,020	8,990	8,965	8,935	8,910
Milk per cow	Pounds	21,346	21,640	21,880	22,270	22,755	23,310	23,675	24,080	24,500	25,000	25,375	25,830
Milk production	Bil. lbs.	196.2	199.7	199.7	202.4	206.5	211.3	214.1	217.2	220.3	224.1	226.7	230.1
Farm use	Bil. lbs.	1.0	1.0	1.0	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6
Marketings	Bil. lbs.	195.3	198.7	198.7	201.6	205.7	210.5	213.4	216.5	219.6	223.5	226.1	229.5
Supply and use, milkfat basis:													
Beginning commercial stocks	Bil. lbs.	10.8	10.9	11.1	11.0	11.2	11.4	11.4	11.3	11.3	11.2	11.2	11.2
Marketings	Bil. lbs.	195.3	198.7	198.7	201.6	205.7	210.5	213.4	216.5	219.6	223.5	226.1	229.5
Imports	Bil. lbs.	3.5	3.8	3.8	3.9	3.9	3.8	3.7	3.6	3.5	3.3	3.2	3.1
Commercial supply	Bil. lbs.	209.6	213.4	213.6	216.5	220.8	225.7	228.5	231.4	234.4	238.0	240.5	243.8
Domestic commercial use	Bil. lbs.	189.2	193.2	193.8	195.6	198.6	202.2	204.6	207.1	209.8	212.9	214.9	217.5
Commercial exports	Bil. lbs.	9.4	9.1	8.8	9.7	10.8	12.1	12.6	13.0	13.4	13.9	14.4	15.1
Ending commercial stocks	Bil. lbs.	10.9	11.1	11.0	11.2	11.4	11.4	11.3	11.3	11.2	11.2	11.2	11.2
Total utilization	Bil. lbs.	209.6	213.4	213.6	216.5	220.8	225.7	228.5	231.4	234.4	238.0	240.5	243.8
CCC net removals	Bil. lbs.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supply and use, skim solids basis:													
Beginning commercial stocks	Bil. lbs.	12.2	11.8	10.9	11.5	12.0	12.2	12.2	12.3	12.3	12.4	12.4	12.5
Marketings	Bil. lbs.	195.3	198.7	198.7	201.6	205.7	210.5	213.4	216.5	219.6	223.5	226.1	229.5
Imports	Bil. lbs.	5.3	5.8	5.4	5.5	5.5	5.4	5.4	5.3	5.3	5.2	5.2	5.1
Commercial supply	Bil. lbs.	212.7	216.3	215.0	218.6	223.2	228.1	231.0	234.1	237.2	241.1	243.7	247.1
Domestic commercial use	Bil. lbs.	168.3	171.7	170.6	172.2	175.3	177.8	179.2	181.0	182.5	185.0	186.0	187.4
Commercial exports	Bil. lbs.	32.5	33.7	32.8	34.4	35.7	38.1	39.5	40.8	42.3	43.7	45.2	47.2
Ending commercial stocks	Bil. lbs.	11.8	10.9	11.5	12.0	12.2	12.2	12.3	12.3	12.4	12.4	12.5	12.5
Total utilization	Bil. lbs.	212.7	216.3	215.0	218.6	223.2	228.1	231.0	234.1	237.2	241.1	243.7	247.1
CCC net removals	Bil. lbs.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prices:													
All milk	\$/cwt	20.14	18.55	19.55	19.35	19.30	19.50	19.65	19.95	20.15	20.40	20.55	20.80
Cheese	\$/lb.	1.82	1.73	1.78	1.75	1.75	1.78	1.80	1.83	1.86	1.89	1.91	1.93
Butter	\$/lb.	1.95	1.62	1.67	1.75	1.72	1.70	1.72	1.74	1.76	1.77	1.79	1.79
Nonfat dry milk	\$/lb.	1.55	1.32	1.46	1.49	1.49	1.49	1.51	1.53	1.55	1.57	1.58	1.60
Dry whey	\$/lb.	0.53	0.59	0.61	0.61	0.61	0.62	0.61	0.62	0.62	0.62	0.62	0.63

Dairy projections were completed in November 2012.

CCC is the Commodity Credit Corporation, U.S. Department of Agriculture.

Totals may not add due to rounding.

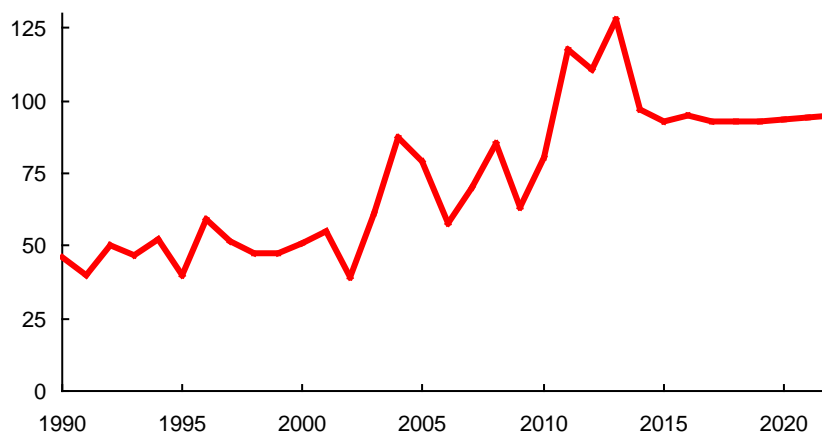


## U.S. Agricultural Sector Aggregate Indicators Farm Income, U.S. Trade Value, Food Prices, and Food Expenditures

High commodity prices are projected to lead to record values of U.S. agricultural exports and U.S. net farm income in 2013. Grain and oilseed prices along with export values and farm cash receipts are then projected to decline in 2014-15, but grow over the rest of the projection period as a return to steady domestic and international economic growth, a weaker 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. U.S. retail food prices are projected to rise faster than the overall rate of inflation in 2013 in part due to effects of the 2012 U.S. drought on farm commodity prices. For the remainder of the projection period, consumer food price increases average somewhat less than the general inflation rate, largely reflecting higher livestock production which limits consumer meat price increases.

### U.S. net farm income

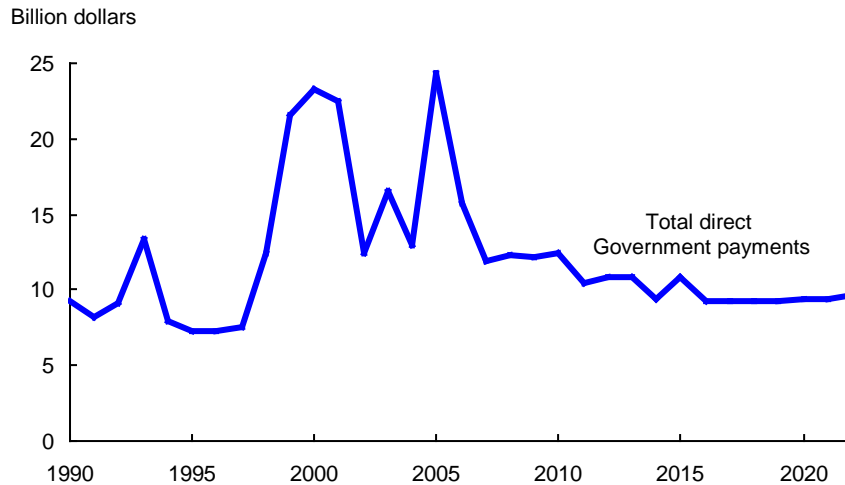
Billion dollars



Net farm income is projected to reach record levels in 2013, reflecting the runup in prices for many agricultural commodities, due in part to the 2012 U.S. drought, as well as large crop insurance indemnities paid to the sector. While income declines from the 2013 record through 2015, it remains well above the average of the previous decade (2001 to 2010).

- Strengthening global food demand, a weaker dollar, and continuing biofuel demand are major factors underlying projections of rising cash receipts after 2015.
- Lower Government payments and rising farm production expenses after 2015 offset most of the gains in cash receipts and other sources of farm income.

## Direct Government payments

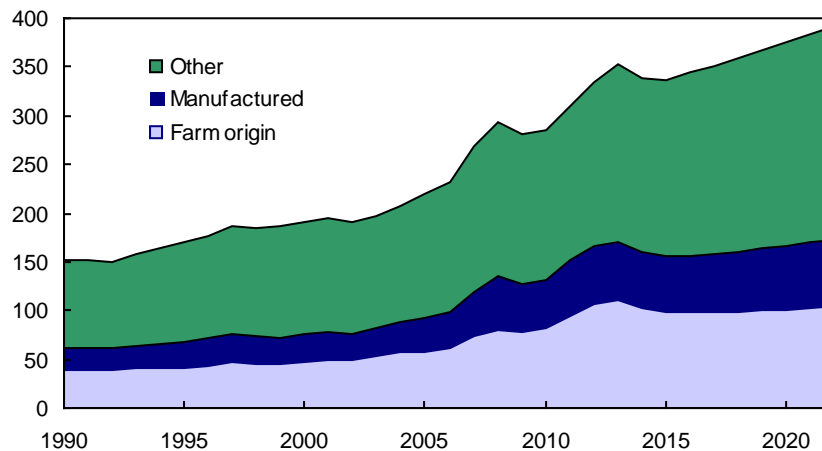


Direct Government payments to farmers average about \$9.7 billion over the next decade, below the average of \$16 billion in 2000-10. The Conservation Reserve Program (CRP) and fixed direct payments are the largest Government payments to the agricultural sector throughout the projection period, although payments under the Average Crop Revenue Election (ACRE) program jump to \$1.8 billion in 2015 following the decline in commodity prices from recent highs.

- High crop prices have made arable land more valuable, so rental rates for land in the CRP have risen. As a result, CRP payments are projected to rise from about \$2.0 billion in 2013 to \$2.6 billion in 2022.
- Fixed direct payments are projected at nearly \$5 billion annually.
- As commodity prices decline from recent high levels, payments under the ACRE program associated with 2014 crops and paid in 2015 are projected to rise to \$1.8 billion. However, with relatively low enrollment in the ACRE program and projected stability in longer run commodity prices, projections of ACRE payments average less than \$40 million annually over 2016-22.
- With high prices, Government payments have a smaller role in the agricultural sector's income. Government payments, which represented more than 8 percent of gross cash income in 2005, are 2 to 3 percent during the projection period. As a result, the sector relies more on the market for its income.

## U.S. farm production expenses

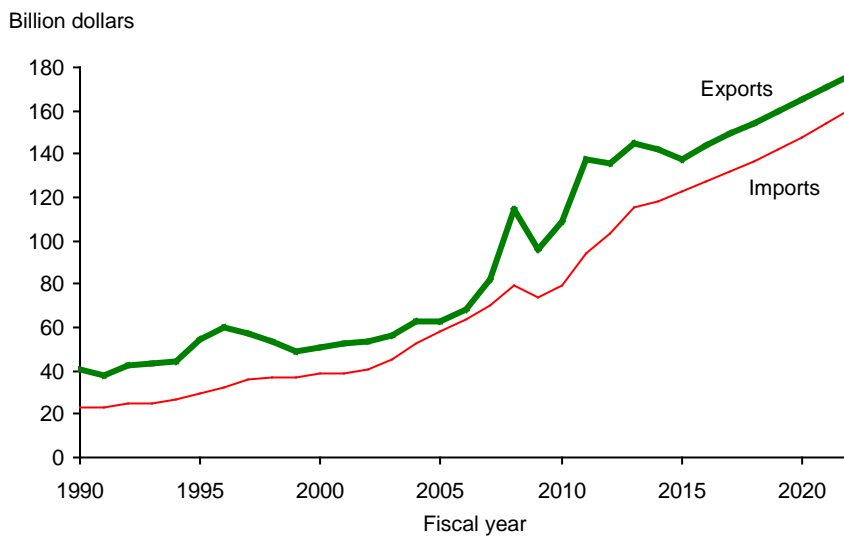
Billion dollars



Total farm production expenses are projected to fall in 2014-15 from high levels in 2013 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 2022. While interest expenses and some energy-related costs rise faster than the general inflation rate, expenses for farm-origin inputs, particularly feed and livestock, are up less than the general inflation rate. Other nonfarm-origin expenses increase at near the overall rate of inflation.

- Interest costs rise faster than the general inflation rate over the projection period, due to increasing debt level as well as interest rates rising from the low rates of recent years.
- Production expenses for fuel and oil also rise faster than the general inflation rate after 2015, largely reflecting increases in crude oil prices. Reductions in planted acreage in 2014 and 2015 initially lower fertilizer expenses in this period, but these costs rise faster than inflation later in the projection period.

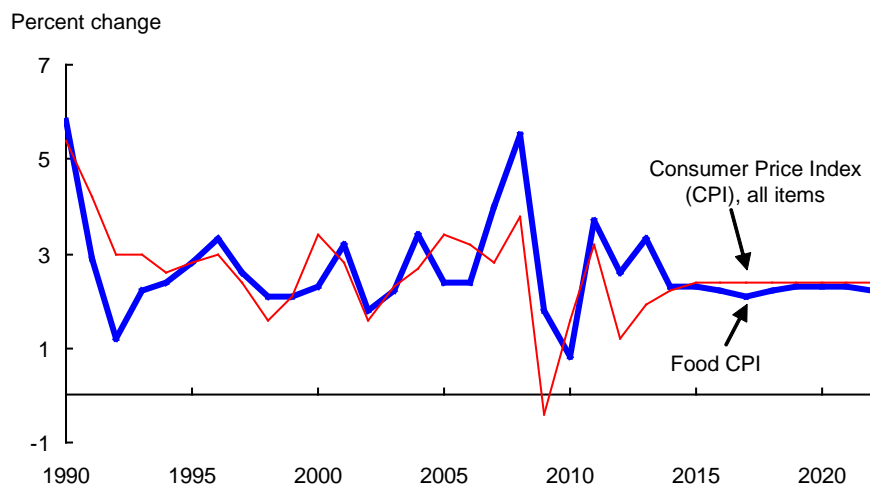
### U.S. agricultural trade value



After increasing in fiscal 2013, the value of U.S. agricultural exports declines for 2 years 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 weaker U.S. dollar. Domestic economic growth boosts demand for U.S. agricultural imports. (Fiscal years are October 1 through September 30 and are named after the second calendar year that they span. For example, fiscal year 2013 runs from October 1, 2012 through September 30, 2013.)

- The value of U.S. agricultural exports is projected to reach \$145 billion in 2013, a record that largely reflects high commodity prices. With prices for many crops projected to fall over the following 2 years, export values decline. 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 strong commodity prices and gains in export values. Furthermore, the continuing depreciation of the U.S. dollar remains an important factor underlying projected gains in U.S. exports.
- The share of U.S. agricultural exports represented by high-value products (HVP) is projected to grow and exceed 70 percent by the end of the projection period. Much of the growth in HVP exports is for animal products and horticultural products.
- U.S. agricultural import values rise throughout the projection period and exceed \$160 billion by 2022. 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 40 percent of the overall increase in agricultural imports in the projection period.
- The agricultural trade balance is expected to continue declining for several years from the record surplus of almost \$43 billion in 2011, falling below \$15 billion in 2015. The surplus then averages about \$17 billion over the rest of the projection period.

### U.S. food inflation



U.S. retail food price increases have exceeded the general inflation rate over the past several years, reflecting higher food commodity prices and energy costs combined with stronger post-recessionary food demand.

- Overall food price inflation in 2013 is expected to remain above the general rate of inflation, in part due to effects of the 2012 U.S. drought on commodity prices. The transmission of commodity price changes to retail prices typically takes several months, so much of the drought's impact is expected to occur in 2013. The drought reduced production and raised prices for corn and soybeans (and soybean meal), which affect retail food prices for meats due to production impacts of higher feed prices. Inflation should be above the historical average for food categories such as cereals and bakery products as well.
- For the remainder of the projection period, consumer food price increases average less than the general inflation rate. This moderation largely reflects livestock production increases, which facilitate gains in per capita meat consumption and limit retail meat price increases.
- Retail prices for food away from home largely reflect the overall rate of inflation. As the U.S. economy continues to rebound, income gains will support growth in food consumption away from home. Nonetheless, competition in the fast-food and foodservice industries tends to moderate away-from-home price increases.
- Food expenditures for meals away from home are projected to rise faster than expenditures for food at home, thus accounting for a growing share of total food spending.

Table 36. Farm receipts, expenses, and income, long-term projections

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	<i>Billion dollars</i>											
Cash receipts:												
Crops	208.3	218.9	216.5	197.8	188.0	192.8	197.8	201.6	204.9	208.4	212.5	217.2
Livestock and products	166.0	170.7	174.6	175.2	175.7	178.7	178.8	181.8	186.0	189.5	192.9	195.3
All commodities	374.3	389.5	391.1	373.0	363.6	371.5	376.6	383.4	390.9	397.8	405.4	412.5
Farm-related income	26.1	31.3	36.2	28.5	26.8	27.1	27.5	27.9	28.2	28.6	29.0	29.4
Government payments	10.4	10.8	10.9	9.4	10.9	9.3	9.2	9.3	9.3	9.4	9.4	9.6
Gross cash income	410.8	431.7	438.1	410.9	401.3	407.9	413.3	420.6	428.5	435.9	443.9	451.4
Cash expenses	276.1	297.9	316.0	299.8	296.9	303.7	310.4	317.6	325.2	331.7	339.2	346.0
Net cash income	134.7	133.8	122.1	111.1	104.4	104.2	102.9	103.0	103.2	104.2	104.6	105.4
Value of inventory change	-5.2	-11.7	16.5	-2.7	0.7	3.4	2.5	2.5	1.7	1.6	1.7	1.5
Non-money income	22.8	24.5	25.2	26.4	27.0	27.7	28.6	29.5	30.5	31.4	32.4	33.3
Gross farm income	428.5	444.5	479.9	434.7	429.0	439.0	444.4	452.6	460.7	468.9	478.0	486.2
Noncash expenses	22.0	23.0	23.3	24.8	26.0	26.7	27.3	28.1	28.8	29.6	30.4	31.1
Operator dwelling expenses	12.5	12.9	12.9	13.2	13.3	13.4	13.6	13.7	13.9	14.0	14.2	14.3
Total production expenses	310.6	333.8	352.3	337.8	336.2	343.8	351.3	359.4	368.0	375.4	383.8	391.5
Net farm income	117.9	110.7	127.6	96.9	92.7	95.2	93.1	93.2	92.7	93.5	94.2	94.7

The projections were completed in December 2012.

Table 37. Summary of U.S. agricultural trade long-term projections, fiscal years

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<i>Billion dollars</i>												
Agricultural exports (value):												
Livestock, poultry, and dairy	27.3	29.8	29.8	30.8	31.8	33.3	34.7	36.2	38.0	39.7	41.6	43.3
Livestock products	17.3	18.5	18.7	19.2	19.5	20.1	20.9	21.8	23.0	24.2	25.4	26.4
Dairy products	4.5	5.2	5.0	5.3	5.7	6.2	6.6	7.0	7.3	7.7	8.0	8.5
Poultry products	5.5	6.2	6.1	6.3	6.6	7.0	7.2	7.4	7.7	7.9	8.2	8.4
Grains and feeds	38.0	33.4	37.1	35.6	30.7	32.9	34.1	35.7	36.9	38.2	39.6	41.2
Coarse grains	14.0	11.7	11.6	12.4	10.4	11.4	11.9	12.6	13.1	13.7	14.3	15.0
Feeds and fodder	6.4	6.9	7.3	7.6	8.0	8.3	8.7	9.1	9.5	9.9	10.4	10.8
Oilseeds and products	29.2	28.6	31.4	27.6	25.0	26.4	27.2	27.9	28.5	29.0	29.6	30.4
Soybeans and products	25.4	24.5	27.0	23.1	20.3	21.6	22.2	22.8	23.3	23.5	24.1	24.6
Horticultural products <sup>1</sup>	25.9	28.6	32.0	33.0	34.1	35.1	36.2	37.4	38.6	39.8	41.1	42.4
Fruits and vegetables, fresh	6.6	7.0	7.6	7.8	8.0	8.2	8.5	8.7	8.9	9.2	9.4	9.7
Fruits and vegetables, processed	6.3	6.8	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0	9.3
Tree nuts, whole and processed	5.1	6.1	7.0	7.3	7.6	7.9	8.2	8.6	8.9	9.3	9.7	10.1
Cotton	8.8	6.6	4.6	4.5	4.9	5.4	5.5	5.6	5.6	5.6	5.7	5.7
Sugar and tropical products	5.5	6.2	7.3	7.6	8.1	8.4	8.6	8.7	9.1	9.4	9.7	10.1
Other exports <sup>2</sup>	2.6	2.5	2.8	2.8	2.9	3.0	3.0	3.1	3.1	3.2	3.3	3.3
<b>Total agricultural exports</b>	<b>137.4</b>	<b>135.8</b>	<b>145.0</b>	<b>142.1</b>	<b>137.4</b>	<b>144.4</b>	<b>149.3</b>	<b>154.5</b>	<b>159.8</b>	<b>165.0</b>	<b>170.5</b>	<b>176.4</b>
Major bulk products <sup>3</sup>	57.9	49.5	53.5	48.6	42.2	45.3	46.7	48.1	49.1	50.0	51.1	52.4
High-value product exports <sup>4</sup>	79.5	86.3	91.5	93.5	95.2	99.1	102.6	106.4	110.7	115.0	119.4	124.0
High-value product share	57.9%	63.6%	63.1%	65.8%	69.3%	68.6%	68.7%	68.9%	69.2%	69.7%	70.1%	70.3%
<i>Million metric tons</i>												
Agricultural exports (volume):												
Bulk commodity exports	131.3	111.9	110.0	108.5	119.7	127.3	130.3	133.4	135.9	138.1	140.5	142.9
<i>Billion dollars</i>												
Agricultural imports (value):												
Livestock and dairy products	11.8	13.3	14.2	15.1	15.8	16.2	16.7	17.2	17.8	18.4	19.0	19.5
Livestock and meats	8.6	9.7	10.3	11.1	11.6	11.9	12.3	12.6	13.1	13.5	13.9	14.3
Dairy products	2.7	3.0	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0	4.1	4.2
Grains and feeds	8.4	9.5	11.6	10.7	10.6	11.1	11.7	12.2	12.7	13.3	13.8	14.4
Grain products	5.4	5.7	6.2	6.5	6.8	7.1	7.5	7.8	8.2	8.6	9.0	9.5
Oilseeds and products	7.7	8.7	10.0	9.1	9.0	9.4	9.9	10.4	10.8	11.3	11.8	12.4
Vegetable oils	5.6	5.8	6.1	6.4	6.7	7.1	7.4	7.8	8.2	8.6	9.0	9.5
Horticultural products	39.4	41.6	44.4	46.3	48.2	50.3	52.4	54.6	57.0	59.4	61.9	64.5
Fruits and vegetables, fresh	12.8	13.4	14.2	14.8	15.4	16.1	16.8	17.5	18.3	19.1	19.9	20.7
Fruits and vegetables, processed	8.2	8.6	9.1	9.5	9.9	10.3	10.8	11.2	11.7	12.2	12.7	13.3
Wine and beer	8.3	8.8	9.4	9.8	10.2	10.6	11.0	11.5	11.9	12.4	12.9	13.4
Sugar and tropical products	25.6	28.3	32.3	34.2	36.5	38.1	38.4	39.6	41.1	42.7	44.5	46.5
Sugar and related products	5.1	5.2	5.5	6.2	7.4	7.6	6.7	6.5	6.6	6.7	7.0	7.4
Cocoa, coffee, and products	12.0	11.9	12.8	13.3	13.8	14.3	14.9	15.5	16.1	16.7	17.3	18.0
Other imports <sup>5</sup>	1.6	2.1	2.5	2.6	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1
<b>Total agricultural imports</b>	<b>94.5</b>	<b>103.4</b>	<b>115.0</b>	<b>117.8</b>	<b>122.8</b>	<b>127.8</b>	<b>131.8</b>	<b>136.8</b>	<b>142.2</b>	<b>148.0</b>	<b>154.1</b>	<b>160.5</b>
<b>Net agricultural trade balance</b>	<b>42.9</b>	<b>32.4</b>	<b>30.0</b>	<b>24.3</b>	<b>14.6</b>	<b>16.6</b>	<b>17.5</b>	<b>17.7</b>	<b>17.6</b>	<b>17.0</b>	<b>16.4</b>	<b>15.9</b>

Sources: U.S. Department of Agriculture and Bureau of Census, U.S. Department of Commerce.

U.S. trade value projections were completed in December 2012. For updates of the nearby year forecasts, see USDA's *Outlook for U.S. Agricultural Trade* report, published in February, May, August, and November.

1/ Includes wine, beer, essential oils, nursery crops, hops, and mint. 2/ Includes unmanufactured tobacco, planting seeds, and nonalcoholic beverages. 3/ Includes bulk grains, soybeans, cotton, and tobacco. 4/ High-value product (HVP) exports is calculated as total exports less bulk commodities. HVP's include semiprocessed and processed grains and oilseeds, animals and animal products, horticultural products, and sugar and tropical products. 5/ Includes planting seeds, tobacco, and cotton.

Table 38. Consumer food price indexes and food expenditures, long-term projections

CPI category	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Consumer price indexes <i>1982-84=100</i>												
All food	227.842	233.777	241.4	247.0	252.6	258.2	263.6	269.4	275.6	281.9	288.4	294.8
Food away from home	231.401	237.986	245.1	251.5	257.8	264.0	270.1	276.3	282.9	289.7	296.7	303.8
Food at home	226.201	231.774	239.8	244.9	250.0	255.3	260.4	265.9	271.9	278.0	284.2	290.2
Meats	224.439	231.981	240.2	244.8	247.6	250.2	253.0	256.6	262.9	268.4	274.2	277.7
Beef and veal	247.377	263.089	272.3	277.0	281.1	283.5	285.2	287.9	295.0	300.1	306.1	308.9
Pork	206.053	206.612	214.1	218.3	218.7	221.0	225.1	229.9	236.1	242.7	249.0	253.4
Other meats	207.310	210.862	217.9	222.6	225.8	229.1	233.0	237.1	241.6	246.3	250.9	255.1
Poultry	209.916	221.381	229.1	233.8	241.5	248.0	252.4	257.4	263.3	268.4	274.4	279.7
Fish and seafood	260.493	266.652	274.7	282.4	290.3	298.4	306.8	315.4	324.2	333.3	342.6	352.2
Eggs	210.492	217.141	224.5	233.5	241.5	249.5	253.8	258.1	262.4	266.7	271.9	277.2
Dairy products	212.745	217.270	226.0	228.8	232.5	237.3	241.2	246.7	251.3	256.5	261.3	266.7
Fats and oils	219.163	232.579	238.5	243.4	248.9	254.8	260.5	266.9	273.2	279.7	286.2	293.1
Fruits and vegetables	284.662	282.827	292.4	299.3	306.1	312.9	319.9	326.9	334.1	341.4	348.7	356.4
Sugar and sweets	207.832	214.670	219.3	223.8	231.5	238.4	243.3	246.3	249.7	253.8	259.6	266.6
Cereals and bakery products	260.311	267.682	276.4	280.1	284.7	291.7	298.5	305.4	312.4	319.5	326.8	334.6
Nonalcoholic beverages	166.790	168.606	173.3	177.6	182.0	186.6	191.3	196.1	201.0	206.0	211.2	216.5
Other foods	209.292	216.611	225.3	232.6	239.1	244.6	250.2	256.0	261.9	267.9	274.0	280.4
Food expenditures: <i>Billion dollars</i>												
All food	1,317.8	1,376.7	1,439.4	1,493.0	1,548.2	1,607.4	1,664.9	1,726.1	1,790.6	1,857.6	1,927.2	1,998.3
Food at home	676.6	699.9	729.2	750.0	771.7	796.7	819.3	844.2	870.0	896.4	923.6	950.6
Food away from home	641.2	676.8	710.2	743.0	776.5	810.7	845.6	881.9	920.6	961.2	1,003.6	1,047.7
Changes in consumer food prices: <i>Percent</i>												
All food	3.7	2.6	3.3	2.3	2.3	2.2	2.1	2.2	2.3	2.3	2.3	2.2
Food away from home	2.3	2.8	3.0	2.6	2.5	2.4	2.3	2.3	2.4	2.4	2.4	2.4
Food at home	4.8	2.5	3.5	2.1	2.1	2.1	2.0	2.1	2.3	2.2	2.2	2.1
Meats	8.8	3.4	3.5	1.9	1.1	1.1	1.1	1.4	2.5	2.1	2.2	1.3
Beef and veal	10.2	6.4	3.5	1.7	1.5	0.9	0.6	0.9	2.5	1.7	2.0	0.9
Pork	8.5	0.3	3.6	2.0	0.2	1.1	1.9	2.1	2.7	2.8	2.6	1.8
Other meats	6.4	1.7	3.3	2.2	1.4	1.5	1.7	1.8	1.9	1.9	1.9	1.7
Poultry	2.9	5.5	3.5	2.1	3.3	2.7	1.8	2.0	2.3	1.9	2.2	1.9
Fish and seafood	7.1	2.4	3.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Eggs	9.2	3.2	3.4	4.0	3.4	3.3	1.7	1.7	1.7	1.6	1.9	1.9
Dairy products	6.8	2.1	4.0	1.2	1.6	2.1	1.6	2.3	1.9	2.1	1.9	2.1
Fats and oils	9.3	6.1	2.5	2.1	2.3	2.4	2.2	2.5	2.4	2.4	2.3	2.4
Fruits and vegetables	4.1	-0.6	3.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.2
Sugar and sweets	3.3	3.3	2.2	2.1	3.4	3.0	2.1	1.2	1.4	1.6	2.3	2.7
Cereals and bakery products	3.9	2.8	3.3	1.3	1.6	2.5	2.3	2.3	2.3	2.3	2.3	2.4
Nonalcoholic beverages	3.2	1.1	2.8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Other foods	2.3	3.5	4.0	3.2	2.8	2.3	2.3	2.3	2.3	2.3	2.3	2.3



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