

USDA Agricultural Projections to 2025

Interagency Agricultural Projections Committee

Introduction and Projections Overview

This report provides longrun projections for the agricultural sector to 2025. Major forces and uncertainties affecting future agricultural markets are discussed, such as prospects for long-term global economic growth and population trends. Projections cover production and consumption for agricultural commodities, global agricultural trade and U.S. exports, commodity prices, and aggregate indicators of the sector, such as farm income.

The projections are a conditional scenario based on specific assumptions about the macroeconomy, agricultural and trade policies, the weather, and international developments. The report assumes that there are no domestic or external shocks that would affect global agricultural markets. Normal weather with trend crop production yields is generally assumed. Provisions of the Agricultural Act of 2014 are assumed to 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 assumptions and circumstances. 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 conditions.

The projections in this report were prepared during October through December 2015 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 2015 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2015.

Over the next several years, the agricultural sector will continue to adjust to lower prices for most farm commodities and reduced energy prices. Reduced prices for crude oil and natural gas have decreased agricultural production costs—costs for fuel and fertilizer have fallen the most. Nonetheless, production response to lower crop prices in the near term will result in reduced planted acreage. In the livestock sector, lower feed costs will provide economic incentives for expansion.

Developments for global agriculture and U.S. trade reflect weaker income growth in developing countries and a strong U.S. dollar in the near term, with steady world economic growth and continued global demand for biofuel feedstocks in the longer term. Those factors combine to support longer run increases in consumption, trade, and prices of agricultural products. Global trade competition will continue to be strong and the higher valued U.S. dollar will constrain growth in U.S. agricultural exports somewhat. Nonetheless, the United States remains competitive in global agricultural markets.

Reflecting these near-term market adjustments and longer term prospects, U.S. export values decline in 2015-16 and farm cash receipts fall in 2015-17 before both grow over the rest of the projection period. Although farm production expenses also increase after 2017, net farm income, which has fallen sharply from its 2013 record, generally increases over the projection period.

Key Assumptions and Implications

Major assumptions underlying the projections and selected implications include:

Macroeconomic Overview

- Global macroeconomic conditions reflect relatively sluggish economic growth in developing countries, a strong dollar, and low oil prices in the near term, with stronger developing country growth, a somewhat weaker dollar, and rising oil prices in the longer term.

Economic Growth

- Global real economic growth is assumed to average 3.1 percent annually over the next decade, slightly below the long-term trend prior to the 2008 financial crisis. Strong growth is expected in the United States, and most other developed countries are expected to experience somewhat improved growth relative to recent years. In contrast, a growth slowdown is expected in developing countries. This is particularly notable in China.
- Despite the expected slowdown, the strongest growth in the world remains in developing countries. Although China's economy slows, average annual growth still exceeds 5 percent. India is expected to remain among the world's fastest growing economies, with average growth over 8 percent. Strong economic growth is also anticipated for Africa, the Middle East, and other countries in Asia over the projection period. Importantly, several Latin American countries face severe economic challenges that will be a considerable drag on growth, particularly in the beginning of the projection period.
- Developed countries are assumed to have relatively weak longrun real growth, especially in Japan and the European Union (EU). Japan's economy continues the slow growth the country has had since the 1990s. Growth in the EU will be constrained by structural rigidities, including inflexible labor laws and an expensive social security system.
- U.S. economic growth is expected to be strong relative to the rest of the developed world, averaging about 2.5 percent over the next decade. Nonetheless, with stronger growth in developing economies, the U.S. share of global gross domestic product (GDP) falls over the projection period.
- Low oil prices and geopolitical conflicts, among other factors, pushed the former Soviet Union region into recession in 2015, which is expected to continue in 2016. Growth prospects for the region then are assumed to improve over the rest of the projection period, although economic gains remain smaller than the average over 2000-15.
- 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 growth in food consumption and feed use are particularly responsive to income gains in those countries, with movement away from traditional staple foods and increased diversification of diets.

Population

- 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 2001-10.
- Population growth rates in most developing countries are projected to slow, although they remain above those in the rest of the world. As a consequence, the share of world population accounted for by developing countries continues to rise, accounting for 83 percent in 2025.
- Population gains in developing countries along with economic growth 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, with economic growth, urbanizing more rapidly, factors that generally lead to the expansion and diversification of food consumption.

Value of the U.S. Dollar

- Following a 10-year depreciation from 2002 to 2011, the U.S. dollar has appreciated, with a sharp increase in 2015. Further appreciation is projected through 2017. Although some depreciation is projected over the remainder of the projection period, the dollar is assumed to remain stronger than its 2011-14 lows.
- The strong U.S. dollar is expected to constrain growth in U.S. agricultural exports over the projection period—a stronger dollar increases the relative price of U.S. exports. Although trade competition will continue to be strong, the United States is projected to remain competitive in global agricultural markets. Export gains contribute to long-term increases in cash receipts for U.S. farmers.

Energy Prices

- Crude oil prices fell sharply beginning in mid-2014 as global crude oil production exceeded consumption and led to growing oil surpluses. As global economic activity improves, crude oil prices are assumed to increase from their recent lows at rates higher than the general inflation rate. Nonetheless, the U.S. nominal refiner acquisition cost for crude oil imports rises to only about \$80 per barrel at the end of the projection period.
- Lower oil and natural gas prices have decreased agricultural production costs, with costs for fuel and fertilizer falling the most.

U.S. Agricultural Policy

- The Agricultural Act of 2014 is assumed to be in effect through the projection period.
- Acreage enrolled in the Conservation Reserve Program (CRP) is assumed at levels slightly below its legislated maximum of 24 million acres under the 2014 Farm Act.

- Recent reductions in crop prices lead to higher direct Government payments to farmers in 2015 through 2017, mostly reflecting payments under the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs of the 2014 Farm Act. Beyond 2017, direct Government payments are lower and below the average of 2001-10. Payments under the CRP, ARC, and PLC programs are the largest Government payments to the U.S. agricultural sector over the projection period.

U.S. Biofuels

- Biofuel projections were completed before the final rule for the renewable fuel standards for 2014, 2015, and 2016 and the biomass-based diesel volume for 2017 were announced by the U.S. Environmental Protection Agency (EPA) on November 30, 2015. Projections are based on EPA's proposed rule for these requirements from May 29, 2015.
- Ethanol production in the United States is projected to fall over the next decade. Almost all U.S. production of ethanol uses corn as a feedstock. Even with the U.S. ethanol production decline, demand for corn to produce ethanol continues to have a strong presence in the sector. While the share of U.S. corn expected to go to U.S. ethanol production falls, it accounts for over a third of total U.S. corn use throughout the projection period.
- Projected declines in overall gasoline consumption in the United States and the 10-percent ethanol "blend wall" are assumed to constrain domestic ethanol production over the next decade. Most gasoline in the United States continues to be a 10-percent ethanol blend (E10). Infrastructural and other constraints severely limit growth in the E15 (15-percent ethanol blend) market. The E85 (85-percent ethanol blend) market remains very small. Moderate gains are projected for U.S. ethanol exports, but these are not large enough to offset declining ethanol use in the domestic market.
- The projections assume that a tax credit for blending biodiesel (previously, \$1-per-gallon) is not available.
- The biomass-based diesel use volume requirement, as administered by the EPA, was increased to 1.28 billion gallons for 2013 and was proposed by EPA to rise to 1.9 billion gallons by 2017 (subsequently increased to 2.0 billion gallons in EPA's November 30, 2015 final rule). Projections assume this volume requirement to remain at the proposed-rule level throughout the remainder of the projection period. However, some production of biodiesel and renewable diesel above the biomass-based diesel volume requirement is assumed to meet a portion of the nonspecific advanced biofuel requirement.
- Soybean oil used to produce methyl esters (biodiesel) in the United States is projected to support the production of almost 800 million gallons of biodiesel annually in the second half of the projection period. Other feedstocks used to produce biomass-based diesel include corn oil extracted from distillers grains, other first-use vegetable oils, animal fats, and recycled vegetable oils.

International Policy

- Agricultural trade projections assume trade agreements, sanitary and phytosanitary restrictions, and domestic policies in place in November 2015.
- The projections do not reflect potential effects of new policies implemented more recently in Argentina. These policies include reducing or removing export taxes on various agricultural commodities, eliminating the export permit system for grains and oilseeds, and lifting currency controls. These policy changes are likely to affect the agricultural sector in the country as well as global agricultural markets.
- The ban Russia imposed on agricultural imports from Western countries (such as the EU, United States, and Canada) is assumed to last through August 2016. However, the projections assume that Russia will continue to use policies to stimulate its domestic meat production and to limit its reliance on imports.

International Biofuels

- Global production of biofuel is projected to continue to increase during the next decade, although at a slower pace than over the last half decade. This slowdown in part reflects lower crude oil prices. As a result, demand for biofuel feedstocks is also projected to grow more slowly.
- The largest biofuel producers include the United States, Brazil, the EU, and China. Canada is projected to be the world's largest importer of biofuels over the next decade, with most Canadian biofuel imports coming from the United States. Argentina, Brazil, and the United States are the largest biofuel exporters.

Prices

- Prices for most crops have fallen from recent highs as U.S. and global production responded to the high prices. As adjustments to the resulting lower prices occur, the projections indicate that nominal prices will bottom out and then rise moderately, reflecting long-term growth in global demand for agricultural products and continued biofuel feedstock demand. As a result, crop prices remain above pre-2007 levels.
- Reduced feed costs over the past several years have improved livestock-sector net returns, providing economic incentives for expansion. Additionally, U.S. turkey production and egg production rebound from 2015 reductions that were largely due to effects of highly pathogenic avian influenza (HPAI). Thus, nominal prices for beef cattle, hogs, broilers, turkeys, and eggs are projected to decline through most of the next decade as production rises. Nominal farm-level milk prices decline in 2015-18 as lower feed costs encourage increased production. Milk prices then rise faster than the overall rate of inflation for the rest of the projection period, largely reflecting strong growth in U.S. dairy product exports.
- Lower farm commodity prices result in reductions in U.S. export values 2015-16 and farm cash receipts in 2015-17, with both then growing over the rest of the projection period. Although farm production expenses also increase after 2017, higher cash receipts mean net farm income generally increases over the rest of the projection period.