

USDA Agricultural Projections to 2021

Interagency Agricultural Projections Committee

Introduction and Projections Overview

This report provides longrun projections for the agricultural sector through 2021. 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 current law are assumed to remain in effect through the projection period, including 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. 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 external 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 2011 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 2011 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2011.

Prospects for the agricultural sector in the near term reflect market adjustments to the supply-and-demand conditions underlying record high prices for many farm commodities in recent years. In response, global agricultural production of most major crops increases in 2012. Total U.S. red meat and poultry production is projected to fall in 2012 and 2013 in response to reduced producer returns over much of the past several years. Meat production then increases in response to improved returns.

Longrun developments for global agriculture reflect a return to steady world economic growth and continued demand for biofuels, particularly in the United States and the European Union (EU). These factors combine to support longer run increases in consumption, trade, and prices of agricultural products. Thus, following near-term reductions from record levels reached in 2011, the values of U.S. agricultural exports and net farm income each rise over the rest of the decade. After increasing faster than the general inflation rate in 2011 and 2012, U.S. retail food price increases average less than the overall rate of inflation over the remainder of the projections, largely reflecting production increases in the livestock sector that limit consumer meat price increases.

Key Assumptions and Implications

Major assumptions underlying the projections and selected implications include:

Economic Growth

- U.S. and world economic growth reflect movements back to longrun steady gains in the aftermath of the global financial crisis and economic recession. However, the macroeconomic assumptions reflect a dichotomy between a slow transition back toward relatively weaker longrun sustainable growth in developed countries (particularly Japan and the EU) and stronger growth in developing countries. As a result, developing countries become a larger part of the world economy.
- Global economic growth is assumed at a 3.3-percent average rate for 2011-2021. High growth rates in China, India, and other emerging markets among the developing countries underpin world macroeconomic gains.
- 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 a rapidly aging population. Growth in the EU will be limited by the ongoing Eurozone crisis.
- The U.S. economy is projected to grow at an average rate of about 2.5 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. Employment gains are projected to be slow, with high rates of unemployment lasting for a number of years.
- In the longer run, the return to 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 2021, up from 79 percent in 2000.
- 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, are dominated by younger population cohorts who consume larger quantities of food of increasingly diverse types.

The Value of the U.S. Dollar

- The U.S. dollar is projected 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. Although not assumed for these projections, a worsening of the Eurozone sovereign debt crisis would weaken the euro further and slow the depreciation of the dollar.
- 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

- Crude oil prices are assumed to increase over the next decade as global economic activity improves, rising 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.
- Increases in crude oil prices raise production costs in the agricultural sector.

U.S. Agricultural Policy

- Provisions of current law, particularly the 2008 Farm Act, are assumed to remain in effect through the projection period.
- Acreage enrolled in the Conservation Reserve Program (CRP) is projected to decline to under 30 million acres over the next several years before rising back to close to its legislated maximum of 32 million acres throughout the remainder of the projections.
- With high prices for many crops, price-dependent marketing loan and counter-cyclical program benefits have become less important in total Government payments to the U.S. agricultural sector. The CRP and fixed direct payments are the largest payments to the sector throughout the projection period. Overall, Government payments have a smaller role and the sector relies on the market for more of its income.

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. Similarly, the \$1-per-gallon tax credit for blending biodiesel expired at the end of 2011. The projections assume that these provisions are not reinstated.
- High levels of domestic corn-based ethanol production continue over the next decade, with about 36 percent of total corn use projected to go to ethanol production. However, gains are smaller than have occurred in recent years. The projected slower expansion reflects only moderate near-term growth in overall U.S. gasoline consumption followed by declines

later in the decade, limited potential for further market penetration of ethanol into the E10 (10-percent ethanol blend) market, constraints 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 under the Renewable Fuel Standard of the Energy Independence and Security Act of 2007 has risen to 1 billion gallons for 2012 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. 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 global growth for overall meat consumption averages more than 2 percent annually over the next decade, with per capita consumption increasing for each major type of meat (beef, pork, and poultry).
- The projections assume that policies will continue to be used in Russia to stimulate domestic pork and poultry production and to reduce 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 2011.
- Domestic agricultural and trade policies in individual foreign countries are assumed to continue to evolve along their current paths, based on the consensus judgment of USDA's regional and commodity analysts. In particular, long-term economic and trade reforms in many developing countries are assumed to continue.
- The Canadian Wheat Board is assumed to continue to function as in the past.

International Biofuels

- Global demand for biofuel feedstocks is projected to continue growing. 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. Increases in output are also expected from many smaller producers. Continued expansion is largely due to biofuel policies, mainly use mandates and tax incentives.
- 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 and Russia. EU wheat provides much of the feedstock for ethanol expansion in the EU in the early years, while growth in corn used as an ethanol feedstock is more rapid toward the end of the projections. The EU also increases imports of biofuels throughout the projection period, particularly biodiesel from Argentina and ethanol from Brazil.

- Argentina and Brazil remain the world’s dominant biofuels exporters—Argentina specializing in biodiesel and Brazil in ethanol. Exports from these countries grow rapidly during the early years of the projections but slow in the later years as both countries increase their domestic use of biofuels.

Prices

- Prices for major crops are projected to decline in the near term as global production responds to recent high prices. Nonetheless, after near-term price declines, long-term growth in global demand for agricultural products, in combination with the continued presence of U.S. ethanol demand for corn and EU biodiesel demand for vegetable oils, holds prices for corn, oilseeds, and many other crops at historically high levels.
- Prices in the livestock sector during the initial years of the projection period reflect reductions in total meat and poultry production. These reductions are in response to the squeezed producer returns over much of the past several years due to high grain and soybean meal prices, the economic recession, and, for cattle, drought in the Southern Plains. As feed costs fall from recent highs and meat demand strengthens, improved livestock-sector net returns provide economic incentives for expansion. Thus, after increasing through 2013, beef cattle prices decline for several years as production expands starting in 2014. Hog prices remain relatively flat 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 rise, reflecting a moderate pace of production expansion combined with increasing domestic use and export demand.
- Farm income reached a record high level in 2011 largely reflecting high commodity prices. Although projected to initially decline as commodity prices retreat, strengthening global food demand and sustained biofuel demand keep net farm income historically high over the projection period.
- U.S. retail food prices rose faster than the general inflation rate in 2011 and are projected to do so again in 2012. Over the remainder of the projection period, food price increases average less than the general inflation rate, largely reflecting livestock production increases that facilitate gains in per capita meat consumption and limit retail meat price increases. As the domestic economy rebounds 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.