

Executive Summary

The United States has been the world's leading exporter of corn, soybeans, and wheat for the past 40 years, but Argentina and Brazil have made great inroads in recent years. Since 1990, Argentina and Brazil have sharply increased agricultural output and have gained global market share for several major commodities, particularly soybeans, often at the expense of the United States.

- ◆ *Since 1990, soybean production has more than doubled in Argentina and Brazil. Argentina's wheat and corn production is up 75 and 105 percent, and Brazil's corn production has increased by 40 percent.* In contrast, soybean and corn production in the United States have expanded by about 42 and 25 percent during the same period, while wheat production has declined.
- ◆ *Soybean production in Argentina and Brazil has expanded faster than domestic use, contributing to rising exports and growth in global market share.* Combined soybean-and-product exports (in soybean equivalents) for the two countries is expected to account for nearly 50 percent of world trade in 2001, up from 40 percent during 1989-91, and easily surpassing the United States' 35-percent share. During the same period, Argentina's average shares of global corn and wheat trade have more than doubled to 13 and 10 percent, respectively. Even more striking is the dramatic reversal in Brazil's corn trade, switching from average net imports of almost 1 million tons per year during the 1990s to projected net exports of nearly 3.7 million tons in 2000/01.

The dramatic growth in production and trade has caused policymakers and market participants to consider its origins, sustainability, and potential for future expansion. Increased South American supplies have no doubt contributed to the low international commodity prices of recent years, which have squeezed market returns to U.S. producers and prompted large government payments. South American field crop output will clearly have an ongoing influence on U.S. farm exports, prices, incomes, budgetary outlays, and program options.

This report presents research by the Economic Research Service (ERS) on the factors underlying the recent surge in agricultural production in Argentina and Brazil, and evaluates the prospects for future area and yield growth. Among its findings:

- ◆ *Economic and political reforms undertaken by Argentina and Brazil during the early and mid-1990s underpinned their surge in agricultural output.* The reforms contributed to greater market orientation and a more stable macroeconomic environment for investment and decisionmaking. Previously, both countries had long histories of economic instability involving hyperinflation, overvalued exchange rates, and frequent currency realignments. The agricultural sectors of both countries were also subject to pervasive policy intervention that ultimately promoted other sectors at the expense of agriculture. Export taxes and quotas were used extensively to dampen internal prices and encourage domestic processing, while high tariffs and import controls on agricultural inputs promoted "import substitution" programs benefiting domestic industries.
- ◆ *The economic and policy reforms and improved transportation and marketing infrastructures in Argentina and Brazil have lowered production and marketing costs and enhanced transmission of international market signals.* With liberal-

ized trade and strengthened market signals, imports and use of agricultural inputs and technology increased markedly throughout the 1990s. The improved investment climate and reduced border controls also ushered in foreign direct investment, which increased competitiveness and efficiency in the agricultural sectors of both countries.

- ◆ *Strong international commodity prices of the mid-1990s provided a powerful incentive to invest in agriculture and expand production.* A period of high crop prices shortly after the initiation of economic and policy reforms enabled Argentine and Brazilian farmers to take advantage of the increased market orientation.
- ◆ *Improved crop varieties and cultural practices suitable to the soils and tropical conditions of central Brazil helped large-scale mechanized agriculture expand into Brazil's vast, undeveloped interior regions.* Brazil's national research network—EMBRAPA—successfully adapted temperate-zone plant varieties (particularly soybeans) to the tropical conditions of its vast interior savannas, while retaining high-yield potential. Previously, the acidic soils and humid, tropical climate posed severe barriers to the development of commercial agriculture in Brazil's interior.
- ◆ *With their abundant land and good climate, Argentina and Brazil are naturally low-cost producers of soybeans and other crops.* Total farm-level costs per bushel of soybeans (in 1998/99) were 20 to 25 percent lower in Brazil and Argentina than in the United States. U.S. producers had the lowest variable costs of production, but this advantage was more than offset by higher land costs. Lower production costs have provided a strong competitive edge in international markets for Argentine and Brazilian soybeans, but this advantage is partially offset by higher transportation and marketing costs to export destinations.

ERS research into potential growth of Argentina's and Brazil's agricultural production suggests:

- ◆ *Brazil, and to a lesser extent Argentina, still enjoys tremendous potential to expand area devoted to agricultural production.* Brazil contains the world's largest remaining tract of virgin land—an estimated 547 million hectares remain as virgin scrub land or rainforest. As much as one-fourth of this land is *cerrado*—a savannalike flatland readily convertible to agricultural activity. In addition, both Argentina and Brazil have huge areas under permanent pasture—an estimated 142.5 and 185 million hectares, respectively—that support “grass-fed” cattle industries. Part of this pasture land could be converted to grain and oilseed production under the right market signals.
- ◆ *In Brazil, infrastructure development will remain critical to the pace at which land resources are brought into productive use.* Transportation costs in Brazil still represent a very large portion of the export price compared with the United States. Brazil's transportation infrastructure and port facilities are still deficient and costly, and will require substantial financial investment to support significant agricultural output growth. The average distance to ports from Brazil's Center-West is over 1,000 kilometers, and Brazil still relies predominantly on expensive overland truck transportation to move most bulk commodities. Several major projects are underway to connect the interior with major ports serving oceangoing vessels on the Amazon and on the east coast. Their completion will likely lower internal transportation and input costs and raise farmgate prices for Brazilian farmers.

- ◆ *The evolution of livestock-field crop tradeoffs is likely to drive developments in Argentina's agricultural sector.* Argentina is the world's leading per capita beef-consuming country, but the consumption rate has declined over the past 15 years. Nearly 90 percent of Argentina's beef production is entirely grass fed, but in the future, greater targeting of high-valued international meat markets (where "grain-finished" beef is preferred) could create incentives to free pasture for increased field crop production. However, the prevalence of foot-and-mouth disease (FMD) in South American animal populations continues to plague red meat exports.
- ◆ *Argentina and Brazil have significant potential to increase yields for several field crops, particularly corn.* Argentina's corn yields rose nearly 50 percent between 1990/91 and 2000/01, but are still only two-thirds of average U.S. yields. Gradually increasing fertilizer use helps explain much of Argentina's recent corn yield increases, and the strong presence of multinational corporations is promoting new agricultural technology there. In Brazil, cropland expansion in the Center-West is expected to raise national average yields. Crop yields for soybeans and cotton in the Center-West are already equivalent to average yields in the United States, and research is underway to improve corn and upland rice yields. Large farm sizes, the rapid adoption of new technologies, and innovative management practices have contributed to high yields in the Center-West, and helped to produce acceptable returns, even with low international commodity prices.
- ◆ *Brazil is projected to be the world's leading importer of wheat, starting in 2000/01 at 7.2 million tons and extending throughout USDA's baseline projection to 2010.* Brazil's wheat production has dropped since production subsidies and some import barriers were removed in the early 1990s. In contrast to soybeans, corn, and more recently cotton, Brazil's predominantly tropical setting has prevented the expansion of most small grain production beyond the southernmost States. Continued population and gross domestic product (GDP) growth are expected to bolster demand for wheat products well into the future.
- ◆ *An estimated 20 percent of Argentina's 2001 corn crop and 90 percent of its soybean crop were planted to biotech varieties, as producers have sought to capture the significant cost savings associated with biotech crops.* Given Argentina's adoption rates of biotech corn and soybean varieties, and a lack of sufficient storage capacity under the identity preservation (IP) system, the additional costs incurred in implementing an IP system would likely limit Argentina's potential to capture a market niche for nonbiotech corn or soybeans.
- ◆ *In Brazil, the Government currently prohibits commercial planting of genetically modified crops.* However, the strong incentive to benefit from the cost savings available to biotech soybeans likely contributes to significant illicit use of biotech seeds in Brazil's South. The share of biotech soybean plantings in the South has been estimated by various trade sources at between 20 to 40 percent. The situation is quite different in the isolated Center-West region, which can make a much stronger claim to biotech-free status for its soybeans.
- ◆ *Argentina and Brazil face several potential bottlenecks to growth.* These include large public and agricultural sector debt in both countries, poorly functioning domestic credit institutions, and high interest rates that limit the amount of credit available to all but large-scale agricultural producers.