Center for Agricultural Policy and Trade Studies
North Dakota State University

NEWSLETTER

Issue 03-6 November 2003

Changes in the World Soybean Market: Increased Competition from Brazil and Argentina

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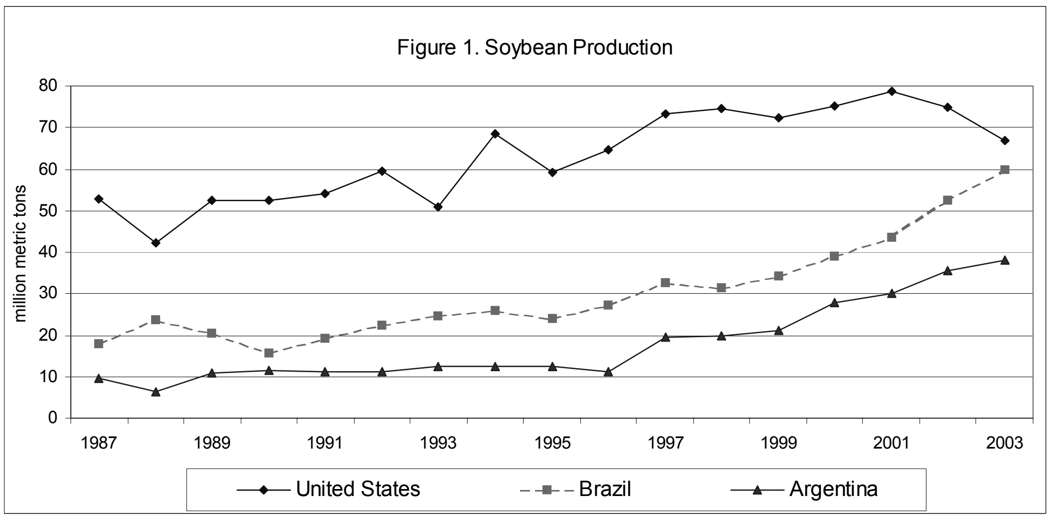
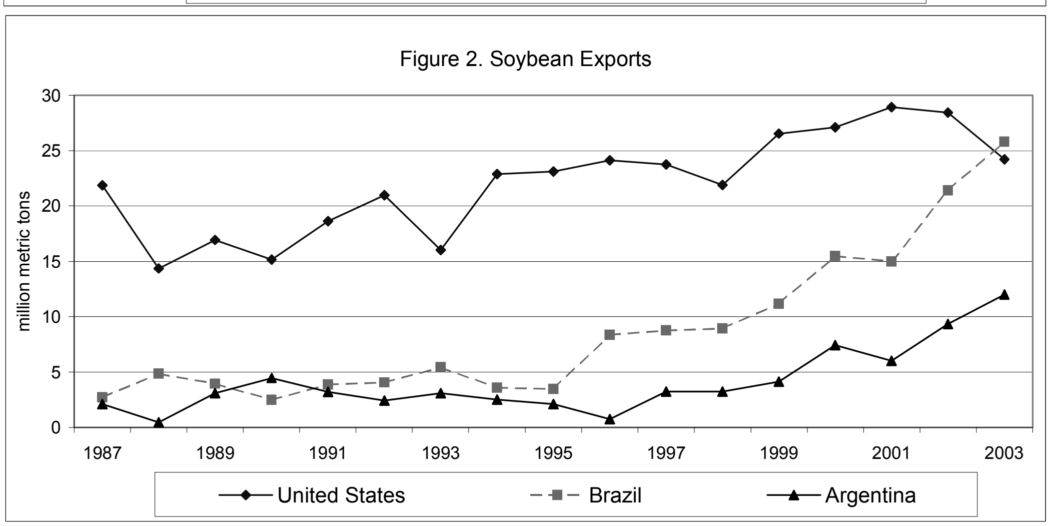
Increased competition from Brazil and Argentina is a major issue for U.S. soybean producers. The United States, Brazil, Argentina, and China account for almost 90 percent of world soybean production. The United States has been and continues to be the top producer of soybeans, but Brazilian production has nearly matched U.S. levels. Production in Brazil and Argentina combined has more than tripled since 1990 (Figure 1). The increase in production in these two countries and the potential for further increase is a major issue for the world soybean market. Brazil has a substantial amount of arable land that is potentially available for future field crop expansion, although the ability to put land into soybean production is currently constrained by Brazil's transportation system.

The United States, Brazil, and Argentina constitute almost 90 percent of the soybean export market. As production in these countries has increased faster than consumption, exports have increased. From 1987 to 1995, Brazilian soybean exports averaged 3.9 million metric tons (mmt) per year. Since 1995, exports have increased each year, reaching 21.5 mmt in 2002/03. USDA estimates show that Brazil's exports will increase to 25.8 mmt for 2003/04, surpassing U.S. exports for the first time (Figure 2).

Chinese soybean imports are another important issue in the world soybean market. Since 1999, China has been the number one importer of soybeans. The next largest importers are the Netherlands, Japan, Germany, Mexico, and Spain. China has historically been a major producer and consumer of soybeans. However, until recent years, the country has not been a significant soybean importer. While production in China has been gradually increasing, Chinese soybean consumption has tripled over the last decade. Since production has not been able to keep up with increased demand, Chinese imports increased substantially to 21 mmt in 2002.





Source: PS&D Database, Foreign Agricultural Service, USDA

Yield and Acreage Changes

The U.S. soybean harvest area increased 26 percent from 57.5 million acres in the early 1990s to 72.5 million acres recently. During this same ten-year period, soybean harvest acreage increased by 62 percent in Brazil and 138 percent in

Argentina. Brazil's soybean area harvested increased from 24.8 million acres in the early 1990s to 40.1 million acres, while the harvest area increased in Argentina from 11.9 to 28.3 million acres. Soybean yields have also increased over the last decade. Yields in the United States increased from 35.3 bu/acre in the early 1990s to 38.5 bu/acre, while yields in Brazil and Argentina have increased more substantially, from 28.5 to 41.2 bu/acre in Brazil and from 35.0 to 40.3 bu/acre in Argentina.

Results of a simple econometric analysis, using data from 1961 to 2002, show that U.S. soybean acreage was moving in an upward trend of about 2.1 million acres per year prior to 1980 and 344 thousand acres per year since 1980. Over the 1961-2002 period, Brazil's soybean acreage has been moving upward at a trend of 926 thousand acres per year, though the trend has accelerated in recent years. The trend in Argentina has been an 8.6 percent increase in acres harvested per year, or about 2 million acres in recent years. Soybean yields have been increasing the fastest in Brazil and Argentina, at about 0.54 bushels per acre each year, while U.S. yields have lagged behind, increasing 0.39 bushels per acre per year.

The model is used to project future production. If these trends continued, U.S. soybean production would increase to 83 mmt in 2010, while production in Brazil and Argentina would increase to 76 mmt and 74 mmt, respectively. Upward trends, however, eventually have to slow due to decreases in available land to convert to oilseed production. It is unlikely that Argentina will continue to increase acreage by 8.6 percent each year. By contrast, Brazil has an abundance of land that is available for soybean production. The likelihood that Brazil will continue to increase soybean production at a significant rate depends largely on the development of their transportation system. Government policies also play a role in determining production trends.

Competitiveness of U.S. Soybean and Soybean Product Exports

U.S. market share for exports of soybeans and soybean meal has decreased, while Brazilian and Argentine market shares have increased. Argentina continues to be the dominant exporter of soybean and sunflower oils. Studies have found that lower land costs in Brazil and Argentina give producers in these countries a competitive advantage over U.S. producers. These studies have also found, though, that lower transportation and marketing costs in the United States partially offset the production cost disadvantage, but producers in Brazil and Argentina may still have the advantage. In a study conducted at NDSU, George Flaskerud found that costs of production for the 2003 harvest are lower in Mato Grosso, Brazil than in North Dakota and Iowa, even when freight costs are considered. He calculated total cost per bushel, including freight cost to Rotterdam, as $4.57 in Mato Grosso, $5.76 in North Dakota, and $7.21 in Iowa. Costs are higher in North Dakota than Mato Grosso primarily because of higher land and machinery expenses and lower yields. Production cost is highest in Iowa because the state has the highest land costs.

Since China is the largest and fastest growing market for soybeans, the ability of the United States to compete with Brazil in this country is critically important. In recent years, the United States held close to 50 percent market share in China, and Brazil held about a quarter of the market. As China's soybean imports doubled from 10.4 mmt in 2001/02 to 21.4 mmt in 2002/03, U.S. soybean exports to the country reached a high of 7.5 mmt, which is more than a quarter of all U.S. soybean exports. However, U.S. market share in China dropped to 38 percent, while Brazil's market share increased to 36 percent.

Changing Demand by Major Importing Countries

Although there are many importing countries in the international market, several major importing countries are becoming increasingly important. Demand in these countries has influenced the market dramatically. India and China are the two largest countries among these importers of oilseeds and oils. Both countries have a large population, so the demand for vegetable oils and proteins is high. In contrast to some countries, such as Japan, that have stable imports, imports by China and India have been changing in recent years. These changes mainly come from shifting domestic policies on production and trade.

For example, China's grain policy now focuses on maintaining self-sufficiency in corn and food grains, while liberalizing trade in soybeans. Policymakers' favorable treatment of food grains and corn will erode soybean production and promote imports of soybeans and bean products. Self-sufficiency programs will likely be the main long-term policies in many large countries. Some of the large developing countries have attached great importance to an increase in the domestic production of oilseeds. For instance, India's production of oilseeds increased tremendously during the 1990s as a response to a self-sufficiency policy implemented in 1987. Vegetable oils and fats are usually considered essential consumer goods, and imports of seeds or oil are necessary in order to avoid social and political conflicts when domestic production is insufficient.

Changing trade policies in the major importing countries affect international trade. For example, China's domestic policy has been under pressure to protect its domestic crushing industry. Because both meals and oils are by-products from crushing oilseeds, there is a dynamic relationship among oilseeds, meals, and oils with regard to international trade. In 1995, China lifted their value-added tax on soybean meal to encourage growth in their livestock sector, and as a result, imports of soybean meal rose. However, to protect the crushing industry, China re-imposed the value-added tax on soybean meal in 1999. This policy led to a rapid increase in soybean imports and a decline in imports of oils and meals. With regards to genetically modified crops, Chinese regulations temporarily halted its soybean imports in the spring of 2002. In summary, future policy changes in China and other importing countries would affect future demand.

For more information, see the forthcoming Agribusiness & Applied Economics Report by Jeremy Mattson, Changyou Sun, and Won Koo.

North Korea in Crisis: Food Production, Economics and Security

The Center for Agricultural Policy and Trade Studies, in cooperation with the Korea Economic Institute of America and NDSU's College of Arts, Humanities, and Social Sciences, organized a conference held on September 26, 2003, on the campus of NDSU. The purpose of the conference was to examine the crisis in North Korea, with discussion focusing on agricultural, economic, and political issues, as well as the country's nuclear program. Representative Earl Pomeroy gave the keynote address. He commented that the crisis in North Korea is one of the most important issues in international affairs. Pomeroy said there are three options for the United States: 1) impose a very tough set of sanctions while hoping for regime change, 2) pursue a policy of containment, engagement, and multi-national negotiation, or 3) resign oneself to North Korea's nuclear program and try to stop proliferation. Pomeroy stated his preference for meaningful engagement and negotiation.

Edward Reed, of the University of Wisconsin, discussed the food insecurity crisis in North Korea. North Korea does not engage in trade; the country does not import food. At one time, the country was able to produce enough food domestically, but North Korean production has been declining since the mid-1980s. The country now depends on international aid and is unable to meet minimum nutritional needs. Reed remarked that the food production decline in North Korea has been caused by an ecological system that has been stretched to the breaking point, the closing of industries supplying farm inputs, unprecedented natural disasters in the mid-1990s, the command style planning system, and the flawed incentive structure. The result has been malnutrition. Kathi Zellweger, Director of International Cooperation for Caritas-Hong Kong, said that international aid is somewhat stabilizing food shortages, and there have been some changes in agricultural practices, but food remains a big issue. She said the problem is not just the size of the harvest, but also getting food to people. Zellweger said that keeping the food distribution ration at a high enough level will be very key to social change.

Glenn Baek, foreign affairs analyst for the Bureau of Intelligence and Research in the U.S. Department of State, expressed his view that North Korea basically has two choices: eliminate their nuclear program and restore their economy, or continue their nuclear program and destroy their economy. North Korea is trying to reform economically while maintaining their military and their nuclear program. Baek said that this cannot be maintained. They have the money to import food, but they use their resources on the military instead. Other speakers at the conference discussed political issues and strategies for dealing with North Korea.

Recent Publications

United States and Canadian Agricultural Herbicide Costs: 2003 Update, Agricultural Policy Brief No. 2, September 2003, by Richard Taylor and James Gray.

2003 North Dakota Agricultural Outlook: Representative Farms, 2003-2012, Agribusiness & Applied Economics Report No. 523, October 2003, by Richard D. Taylor, Won W. Koo, and Andrew Swenson.

Analysis of U.S. Wheat Market Shares in East Asia, Agribusiness & Applied Economics Report No. 524, November 2003, by Hyun J. Jin and Won W. Koo.

Determining Bilateral Trade Patterns Using a Dynamic Gravity Equation, Agribusiness & Applied Economics Report No. 525, November 2003, by MinKyoung Kim, Gue Dae Cho, and Won W. Koo.

Asymmetric Pattern of Intra-industry Trade Between the United States and Canada, Agribusiness & Applied Economics Report No. 526, November 2003, by MinKyoung Kim, Gue Dae Cho, and Won W. Koo.

To obtain these publications, contact Beth Ambrosio, Center for Agricultural Policy and Trade Studies, NDSU, at (701) 231-7334, or download from this website: http://www.ag.ndsu.nodak.edu/capts/publication.htm

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CAPTS News

The center held an Advisory Board meeting on November 14th at the Fargo Ramada Plaza Suites hotel. The board approved 17 future research projects and added 4 new projects: 1) impacts of the USDA's decision on Canadian cattle and beef imports on the U.S cattle industry, 2) impacts of the U.S.-Central America Free Trade Agreement on the U.S. sugar industry, 3) potential economic effects of the U.S.-Australia Free Trade Agreement, and 4) economic feasibility of organic, GM, and non-GM wheat production. The board authorized the 2003/2004 budget for the center, and also approved a workshop on the early detection of invasive species (May 2004) and a conference titled ***Structural Changes and Competitiveness under Globalization***, which will take place in Fargo on October 11-12, 2004.

This conference will be organized jointly with the Humphrey Institute of Public Affairs at the University of Minnesota. Conference themes are:

- Recent structural adjustments in U.S. farms and agribusinesses under a free trade environment, and impacts on U.S. agricultural competitiveness;
- Major issues in globalization, e.g., foreign direct investment, biotechnology, government subsidies, and transportation;
- Major increases in agricultural production for Brazil and Argentina, and outlook for U.S. agriculture; and
- Strategies to increase profitability of farming.