

# Soybean Production, Marketing Costs, and Export Competitiveness in Brazil and the United States

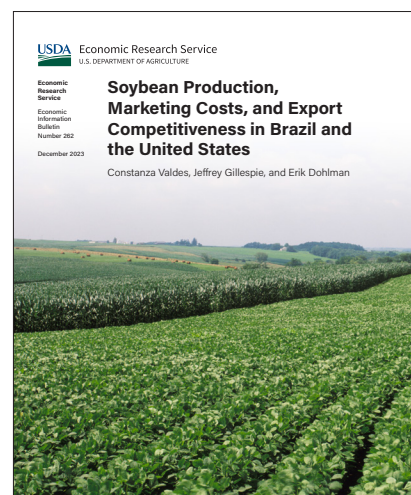
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## What Is the Issue?

Soybeans and their products—soybean meal and soybean oil—are the most traded agricultural commodity, accounting for nearly 9 percent of the total value of global agricultural trade. Historically, the United States was the world’s largest soybean exporter, but in marketing year (a period that corresponds to when harvesting and marketing takes place) (MY) 2012/13, Brazil exported more soybeans than the United States. Since then, Brazil’s share of the global soybean trade has increased. Projections indicate that the Brazilian share of global soybean trade could increase from 51.6 to 60.6 percent between MYs 2021/22 and 2032/33. Soybeans are Brazil’s main agricultural commodity export by volume, and the country exports more than 60 percent of the soybeans it grows. The international market is of great importance to the U.S. agricultural economy, with soybean exports accounting for 48 percent of total production. Brazil and the United States are major export competitors; thus, a comparison of their production costs will help infer how changes to factors underlying production, marketing costs, and infrastructure affect their export competitiveness. Many aspects of the international trade dynamics of the soybean sector are rapidly changing. Some of these include changes in global demand, local currency fluctuations, transportation costs, and input availability. Brazil’s recent expansion of soybean shipments during September to December and recent disruptions to fertilizer imports that were exacerbated by Russia’s war against Ukraine also play a role.

## What Did the Study Find?

Findings of this study describe many of the factors that affect production, marketing costs, and export competitiveness of the world’s leading soybean exporters—the United States and Brazil. This study compares the differences between farm-level production costs and returns for soybeans in the United States and Brazil in 2017/18–2021/22 for the most productive growing regions in each country.



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With respect to production costs, returns, and competitiveness, the study finds that:

- Costs of production differed between the United States and Brazil, partially reflecting Brazil's greater reliance on custom services to provide equipment and labor for crop field operations as opposed to farm ownership of machinery in the United States. Land costs were also higher in the United States. Overall, allocated overhead costs were lower in Brazil than in the United States.
- Total costs per bushel of soybeans in the United States exceeded total costs per bushel of soybeans in Brazil in 2021/22.
- Average national farm-level production costs per acre for soybeans in Brazil were 19.9 percent below the United States in 2021/22, largely because of lower land and capital costs. The United States had higher yields per acre than Brazil in the regions included in the study, particularly in the U.S. Heartland region, which helped offset the higher per acre costs.
- Brazilian producers had higher national average returns per bushel over total costs than the United States in 2021/22, \$4.05 compared with \$2.13.
- Average national returns per bushel above operating costs for soybeans were highest for the United States in 2021/22—16.4 percent above Brazil's returns.
- The U.S. Heartland was the lowest-cost exporter of soybeans. Paraná in Brazil was the next lowest-cost exporter, primarily due to its location close to a port and low internal transport costs. The Brazilian State of Mato Grosso is competitive with the United States in the export of soybeans despite higher inland transport costs due to lower soybean costs of production.
- Improvements in Brazil's overland transportation infrastructure over the past decade resulted in cost savings per metric ton for exporting soybeans from the main producing State, Mato Grosso, through southern ports. Average inland transport costs in MYs 2017/18–2021/22 decreased to \$77 per metric ton, compared with \$98 per metric ton in MYs 2008/09–2012/13.
- Overland transportation improvements in Central Brazil to provide access to the northern ports lowered truck rates, resulting in cost savings of \$28 per metric ton, further improving Brazil's Mato Grosso's competitive position.
- Brazilian exports of soybeans from northern Mato Grosso to Shanghai, China, via the Santarém port in the north represent a savings of \$25 per metric ton in landed costs, compared with exports via the traditional Santos port in the southern region.

## **How Was the Study Conducted?**

To assess the relative competitiveness of Brazil and the United States in the global export market, this study compares farm-level production costs, as well as the cost of internal transportation and shipping costs, to a common export destination (Shanghai in China). Soybean production costs are estimated on the costs per planted acre and the costs per bushel. The soybean cost accounts are divided into operating costs and allocated overhead costs. Costs are compared at the national and regional levels for the most productive soybean growing region in each country: the U.S. Heartland and Brazil's Mato Grosso State, the largest soybean producer in Brazil since 2000. For Brazil, the State of Paraná is also included to evaluate inland transportation costs for soybeans exported through southern ports. To make the comparison less sensitive to annual price and yield variations, per-bushel costs and returns are compared using 5-year average prices and yields.