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Catastrophic Floods in Southern Brazil: Implications for Agricultural Sector

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Unprecedented flooding in May has severely affected the agricultural sector in Rio Grande do Sul, Brazil's southernmost state and a major agribusiness zone. Record high rainfall has affected more than 90% of the state—an area comparable to the United Kingdom—resulting in at least 173 deaths, about 1,000 residents injured, and nearly 600,000 people displaced. More than 2 million people have been directly affected by the ongoing climate crisis in Rio Grande do Sul.

Floods and resultant landslides have destroyed food-storage facilities, disrupted harvests, and damaged soils. As Brazil's second-largest soybean-producing state and its primary rice-growing area, Rio Grande do Sul contributes 13% to the nation's Agricultural Gross Domestic Product (GDP). Rio Grande do Sul also produces other crops, such as wheat and corn, and has dairy, swine and poultry operations. Peak flooding occurred about a month ago. We now provide an analysis of the estimated losses across key commodities in Brazil's southernmost state and discuss the potential further impact on global grain markets.

Background of Historic Flooding in Rio Grande do Sul

In May, Rio Grande do Sul, Brazil's southernmost state, experienced its worst climate disaster because of record-breaking rainfall that led to unprecedented flooding. Porto Alegre, the state capital, recorded nearly 540 millimeters (21 inches) of rain in May. In the same month, other regions saw precipitation levels reach over 700 millimeters (28 inches) — eight times higher than the historical average. Experts attribute this calamity to three main factors: 1) the El Niño phenomenon, which, although weaker than in late 2023, continues to affect South America's weather (see *farmdoc daily*, December 12, 2023); 2) high humidity levels from the Amazon rainforest; and 3) a heatwave impacting Brazil's Southwest and Center-West regions (USDA, 2024).




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Estimated Losses in Agricultural and Livestock Sectors

The National Confederation of Municipalities estimates losses exceeding \$600 million in the agricultural and livestock sectors of Rio Grande do Sul. The State Department of Agriculture reports that at least 48,000 producers and nearly 3.2 million hectares (equivalent to 8 million acres) were affected by the May flooding, which began as the summer crop season was ending. More than 206,000 rural properties were impacted, with production losses and damage to infrastructure, including roads and storage facilities. According to a report from Serasa Experian, a data services company, 144 storage facilities were directly affected in Rio Grande do Sul, impacting over 1.1 million tons of grains. As a result of this historic flooding, the Brazilian bank Bradesco forecasts a 3.5% recession in Brazil's agricultural GDP in 2024 relative to the last year.

Floods in Rio Grande do Sul have led to an estimated loss of 2.71 million tons of soybeans (equivalent to 100 million bushels), according to state crop agency Emater (see Table 1). The agency now expects the state's soybean crop to total 19.53 million tons (718 million bushels), down from the previously forecasted 22.24 million tons (817 million bushels). This represents a 1.8% reduction in national soybean production, which National Supply Company (Conab) estimates at 147.68 million tons (equivalent to 5,426 million bushels). Rio Grande do Sul produces approximately 15% of the nation's soybeans.

Table 1. Expected Losses in Crop Production in Rio Grande do Sul (RS) and Brazil

Crop Season 2023/2024	RS Area Affected (million hectares)	RS Lost Production (million tons)	Brazil's Production (million tons)	Brazil's Reduction (%)
Soybean 	1.49	2.71	147.68	1.8
Rice 	0.09	0.16	10.49	1.5
Corn 	0.14	0.35	111.64	0.3

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Source: Emater, Rio Grande do Sul Department of Agriculture and Conab

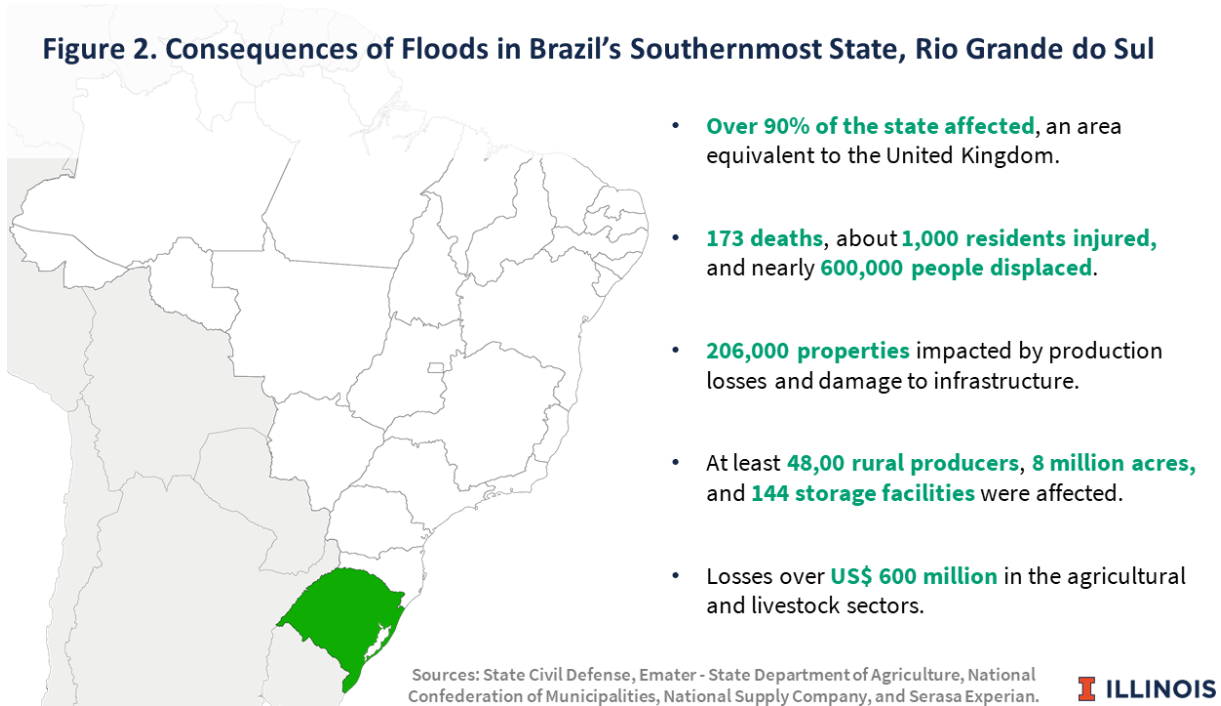
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After two seasons of production below trend estimates associated with dry weather attributed to the influence of La Niña (see *farmdoc daily*, February 25, 2022), farmers in Rio Grande do Sul expected to have a record crop season. The state's full potential was expected to offset 2023/24 yield losses in the Center-West caused by drought in late 2023. Despite the recent damage to the soybean crop, Rio Grande do Sul still ranks as Brazil's second-largest soybean producer, behind Mato Grosso. As of June 2, the country's soybean harvest was 99% finished.

Rice is expected to have a loss of 161 thousand tons, representing 1.5% of the national output (see Table 1). Rio Grande do Sul produces over 70% of the nation's rice. The Rio Grande do Sul Rice Institute (Irga) estimated that 84% of all areas had been harvested when the heavy rains began. Approximately 23 thousand hectares were completely lost because of the floods, and another 18 thousand hectares were partially underwater. Despite these losses, the expected harvest is similar to last year's—about 7 million tons, according to the Rio Grande do Sul Rice Institute.

To prevent potential price spikes, the Brazilian government announced a measure to allow the import of up to 1 million tons of rice at the height of the flood crisis in early May. Since then, Brazilian farmers and the government have clashed over the authorization. The rice industry argues that the imports will discourage future planting and are unnecessary, given the ample domestic supply. Last week (on June 6), Brazil purchased 263,370 metric tons of imported rice for \$250 million. The volume acquired was lower than the initially anticipated 300,000 tons. The Brazilian government has eliminated the import taxes on three types of rice for all countries. The zero-tariff measure will be effective until December 31, 2024.

Figure 2. Consequences of Floods in Brazil's Southernmost State, Rio Grande do Sul



Rio Grande do Sul is also Brazil's largest first-season corn producer. The floods led to an estimated loss of 354 thousand tons of corn (equivalent to 14 million bushels). The impact on the total Brazilian corn harvest is minimal, as almost 80% of Brazil's corn production comes from its second crop, called *safrinha*, and primarily produced in the Center-West region after the soybean harvest. Unlike farmers in Central Brazil, those in Rio Grande do Sul do not plant a second corn crop because of the cold winter weather.

In addition to crop production losses, Rio Grande do Sul's livestock production was severely impacted and will require a long time to recover. With the nation's third largest hog and poultry herds, Brazil's southernmost state also plays a significant role in the country's livestock sector. Emater reported that losses affected at least 3,711 ranchers, primarily poultry producers, who lost an estimated 1.198 million animals to floods and landslides. There were also significant losses in beef and dairy cattle, pigs, and fish production.

Potential Further Impacts on Grain Markets

Market analysts have been discussing the consequences of the floods in Rio Grande do Sul and how they might affect prices and trade flows (Cruz, 2024). Although the percentage reduction does not seem significant compared to Brazil's total production for the 2023-2024 crop season, the losses and logistical issues in Rio Grande do Sul will likely impact the country's domestic supply and demand. Additionally, given Rio Grande do Sul's significant contribution to national agriculture, prices for several basic food items are expected to increase in the second half of 2024.

Moreover, the recent weather issues may impact the state's livestock and crop production next year, as many producers with financial restrictions may not fully recover before the planting season in late September and early October. This situation, associated with increased production costs, could lead to a reduction in Brazil's estimated corn and soybean production. Some market analysts are already predicting that Brazil may reduce the area planted with soybeans in the next crop season for the first time in 17 years. If that happens, there likely will be impacts on Brazilian exports in the 2024/2025 marketing year.

Another limitation to increasing the planted area in Brazil next season comes from a recent change in Brazilian tax law. On June 4, President Luiz Inácio Lula da Silva signed a provisional measure that limits the ability of Brazil's commodity exporters and processors to monetize tax credits. To compensate,

merchants will likely raise prices, making soybeans grown in Brazil less competitive compared with American soybeans. In a practical way, Brazilian soybean processors and biofuel producers should have higher tax costs and lower margins.

Soybean futures shot higher last week as the Brazilian rule-tightening sparked expectations of higher U.S. exports. The Brazilian news also helped corn futures move higher for the first time in eight sessions. Although the scope of the tax change is unknown, Brazilian ag industries and farmers' associations have asked to politicians reject the rule, which has immediate effect for 120 days. To continue running after 120 days, the measure must be approved by Congress.

The upcoming crop estimates from Conab and USDA will provide further insights into the extent of the damage and its implications for the 2023/2024 crop season. The World Agricultural Supply and Demand Estimates (WASDE), scheduled for June 12, and Conab, for June 13, are expected to introduce new reductions in the estimates because of the weather issues in the South of Brazil. In May, Conab had already reduced its 2023/2024 soybean production estimate for Rio Grande do Sul by 0.46 million tons (equivalent to 17 million bushels).

Conclusions

The catastrophic floods in Rio Grande do Sul, Brazil's southernmost state, have impacted the agricultural and livestock sectors, leading to significant losses in crop production and infrastructure damage. The higher impact was on livestock and soybean production, representing a nearly 2% reduction in national soybean production. Other crops, such as rice and corn, were impacted on a smaller scale as their harvests were more advanced when the heavy rains began.

Looking ahead, the challenges faced by farmers in Rio Grande do Sul because of financial constraints and damaged infrastructure could lead to reduced soybean and corn planting in the next season, further affecting Brazil's overall crop production and international markets. The potential reduction in the area planted with soybeans, alongside the recent tax changes affecting commodity exporters, could diminish Brazil's competitiveness in the global market, at least in the short term.

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