Export of soybeans through the Port of Santos

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ABSTRACT
The soy export industry in Brazil has seen remarkable recent growth, driven by global demand. The country, one of the world's largest producers and exporters, plays a central role in international markets. Exports via the Port of Santos have an economic highlight, meeting the demand for food and animal feed in several regions. Soy makes a strategic contribution to the Brazilian trade balance and agribusiness, especially in response to Chinese demand. The Port of Santos is crucial for international outflow, generating foreign exchange and boosting the national economy. This study aims to explore and analyze the aspects, challenges and impacts of soybean exports through the Port of Santos, considering it's vital role in the Brazilian economic scenario.

Keywords: Export, Soy, International.

1 INTRODUCTION

When the terms "agriculture" and "business" are combined, they refer to any economic activity derived from or pertinent to agricultural production and trade.

Essentially, it encompasses all the fundamental stages to put an agricultural product on the market, from its production through processing, to distribution.

Corn and soybeans continue to be the main representatives of Brazilian agriculture, but livestock also strongly influences the amount invoiced.

Agriculture for export has been responsible for the growth of Brazilian domestic products. Agribusiness is the sector that exports the most in Brazil, a result that is mainly due to the high productivity achieved by the technological advances used in the sector.

In the first seven months of this year, the main sectors exported by São Paulo's agribusiness were sugar and alcohol; soy; Meat; forest products such as pulp and paper and juices.

In May, the movement of goods at the Port of Santos reached an all-time high for that month in 2023, with soybean shipments being a key factor in this remarkable result. This resulted in an increase in dry bulk handling, setting a new monthly record level and the second highest monthly mark in the port's history.

Compared to the same period of the previous year, when shipments totaled a smaller quantity, the current expectation represents an increase of almost 40% in exported volumes.

In May this year, Brazil registered a total shipment of 14.365 million tons of soybeans abroad and the Port of Santos led Brazil's soybean exports. Shipments totaled a considerable volume during this period, surpassing the record for the same month in the previous year.

This research aims to highlight the importance of exporting soybeans to Brazil through the Port of Santos, showing data and statistics, as well as the future challenges and opportunities for the export of this grain. In addition, it seeks to address the need for sustainable agricultural practices and the consideration of Voluntary Sustainability Standards to ensure responsible and sustainable exports.

2 THEORETICAL BACKGROUND

2.1 OVERVIEW OF SOYBEAN EXPORTS IN BRAZIL

The situation of soybean exports in Brazil in the first seven months of this year reached a record of approximately 72.46 million tons, regardless of the marketing cadence of the harvest of this oilseed having been below the normality of the last five years. According to the National Supply Company (CONAB), there was a record production of soybeans in the country, with 154.6 million tons harvested in the 2022/23 harvest, marrying with the excellent performance in sales to the international market.

The rise in exports is especially attributed to China's gradual demand for Brazilian soybeans. Data from China's Customs Department (GACC) show that Chinese imports between January and July 2023 reached 62.30 million tons, symbolizing a 15% increase compared to the same period last year. Brazilian farmers have already sold something close to 80.93% of this exported amount, corresponding to 50.42 million tons, according to data from SECEX (Secretariat of Foreign Trade).

Last July, soybean exports reached 9.70 million tons, taking advantage of port premiums that contributed to the flow of the grain.International prices are on the rise, however, regardless of the 6% increase in prices compared to the previous month, they are still 27% lower compared to the values recorded in the same month of 2022.

As a result, Brazil has led the world in soybean production and exports since the 2019/20 harvest. Brazil, Argentina and the United States together produced about 297 million tons in the 2022/23 harvest, which is consistent with 80% of world production.

According to the United States Department of Agriculture (USDA), Brazilian soybean production corresponds to 42% of world production, followed by the United States with 31%, Argentina 7%, China 5%, India 3% and Paraguay 2%.

The forecast is that soybeans should be the most relevant export item in national agribusiness in 2023, as 98.5 million tons are expected to be exported. The state of Mato Grosso, with 26% of the national soybean production, is the largest Brazilian producer.

Figure 1: Soybean handling at the port of Santos 01\2023 to 07\2023

Em toneladas		Movimentação geral no porto de Santos no mês						(SPA-FL.24) Estatisca de Jan/23 até Jul/23			
Especificação		Importação			Exportação			Total geral			
		Longo curso	Cabotagem	Total	Longo curso	Cabotagem	Total	Longo curso	Cabotagem	Total	2023
Sólidos a Granel	Farelo de soja	-	-	-	494.901	2.615	497.516	494.901	2.615	497.516	Janeiro
	Soja em grãos	-	-	-	135.466	-	135.466	135.466	-	135.466	
	Farelo de soja	-	-	-	508.424	5.972	514.396	508.424	5.972	514.396	Fevereiro
	Soja em grãos	-	-	-	3.333.657	9.050	3.342.707	3.333.657	9.050	3.342.707	
	Farelo de soja	5.356	-	5.356	808.785	265	809.050	814.141	265	814.406	Março
	Soja em grãos	-	-	-	6.248.912	21.293	6.270.205	6.248.912	21.293	6.270.205	
	Farelo de soja	13.016	-	13.016	760.599	5.998	766.597	773.615	5.998	779.613	Abril
	Soja em grãos	1.463	-	1.463	4.959.258	404	4.959.662	4.960.721	404	4.961.125	
	Farelo de soja	-	-	-	820.629	-	820.629	820.629	-	820.629	Junho
	Soja em grãos	-	-	-	4.933.106	9.503	4.942.609	4.933.106	9.503	4.942.609	
	Farelo de soja	11.247	-	11.247	999.223	-	999.223	1.010.470	-	1.010.470	Julho
	Soja em grãos	-	-	-	2.085.878	1.492	2.087.370	2.085.878	1.492	2.087.370	

Source: Port of Santos; Home page > operational information > statistics > statistical monthly.

2.2 PORT OF SANTOS: INFRASTRUCTURE AND LOGISTICS CAPACITY

The Port of Santos is the largest exporter of Brazilian soybeans, with 12 bulk terminals and 14 berths available between Organized Port Terminals and Private Use Terminals (TUP's), contributing to the flow of grain to the whole world. They are:

1) Luís Antônio Mesquita Integrating Terminal (TIPLAM) – 2 berths;

storage capacity: 197,000 tons; cradle depth: 13.2 m; maximum vessel length: 230 m; ship width: 37 m; Air Draft: 18 m;

Charging flow: 35,000 tons per day.

2) Guarujá Bulk Terminal (TGG) – 1 berth;

storage capacity: 65,000 tons; cradle depth: 14.3 m; maximum vessel length: 230 m; ship width: 46 m; Air Draft: 18 m;

Charging flow: 50,000 tons per day.

3) Guarujá Sugar Export Terminal (TEAG) – 1 Berth:

storage capacity: 110,000 tons; cradle depth: 13.3 m;

Maximum ship length: 229 m; ship width: 33 m; Air Draft: 16 m;

Charging flow: 25,000 tons per day.

4) Guarujá Export Terminal (TEG) – 1 berth;

storage capacity: 90,000 tons; cradle depth: 13.3 m;

maximum vessel length: 230 m; ship width: 36 m; Air Draft: 16 m;

Charging flow: 35,000 tons per day.

5) Terminal Cutrale – 1 crib;

storage capacity: 140,000 tons; cradle depth: 13.7 m;

Maximum ship length: 229 m; ship width: 38 m; Air Draft: 16 m;

Charging flow: 25,000 tons per day.

6) Cofco (Terminal 12A) – 1 Berth / Will move to 3 Cribs;

storage capacity: 65,000 tons; cradle depth: 13.4 m;

Maximum ship length: 229 m; ship width: 38 m; Air Draft: 17.5 m;

Charging flow: 35,000 tons per day.

On March 30, 2023, COFCO acquired the area called STS11, which is located between berths 12A and 15, with this, it will become the largest vegetable bulk terminal in Brazil, expected to start operating in 2025, and fully operational in 2026, thus increasing the handling capacity to 14 million tons.

7) CLI (Logistics and Infrastructure Corridor) – 2 berths;

storage capacity: 260,000 tons; cradle depth: 14.2 m;

maximum vessel length: 230 m; ship width: 38 m; Air Draft: 19 m;

Charging flow: 50,000 tons per day.

8) Copersucar – 1 crib;

storage capacity: 367,000 tons; cradle depth: 13.9 m;

Maximum ship length: 229 m; ship width: 38 m; Air Draft: 18 m;

Charging flow: 40,000 tons per day.

9) T-Grain Bulk Terminal – 1 Berth;

storage capacity: 100,000 tons; cradle depth: 13.9 m;

maximum vessel length: 230 m; ship width: 38 m; Air Draft: 18 m;

Charging flow: 25,000 tons per day.

10) Terminal XXXIX – 1 berth;

storage capacity: 260,000 tons; cradle depth: 14.5 m;

Maximum length of the vessel: 255 m; ship width: 38 m; Air Draft: 16 m;

Charging flow: 30,000 tons per day.

11) Santos Export Terminal (TES) – 1 berth;

storage capacity: 250,000 tons; cradle depth: 14.5 m;

Maximum length of the vessel: 255 m; ship width: 38 m; Air Draft: 16 m;

Charging flow: 30,000 tons per day.

12) ADM Terminal (Terminal 39) – 1 berth;

storage capacity: 194,000 tons; cradle depth: 13.7 m;

Maximum length of the vessel: 255 m; ship width: 38 m; Air Draft: 18 m;

Charging flow: 35,000 tons per day.

The port of Santos is 70 km from São Paulo, the largest production and consumer center in Latin America, connecting to the large transport infrastructure chain, allowing the annual movement of millions of tons of goods, commodities and merchandise.

Managed by Ecovias, the Anchieta-Imigrantes system is one of the largest corridors for the flow of foreign trade. The system consists especially of the SP-160 (Imigrantes), SP-150 (Anchieta) highways, as well as the SP-41 (Planalto Interconnection), SP-55 (Padre Manuel da Nóbrega), SP-248 (Cónego Domenico Rangoni) and SP-59 (Baixada Interconnection) highways.

Rail access to the port is through the RUMO Railway System, which has three railway networks in the state of São Paulo, the Paulista network, the North network and the West network, these three networks are interconnected to the port of Santos by the SOUTH network. There is also VLI's Center-Southeast corridor, which operates the Center-Atlantic Railroad that interconnects with Rumo's São Paulo network in the city of Estrela D'Oeste, in addition to the Santos-Jundiaí Railroad where MRS has powerful locomotives that transport cargo between Santos and São Paulo. On October 3, 2023, the contract of the new assignee of FIPS (Internal Railway of the Port of Santos) officially began, which are integrated by the companies VLI, RUMO and MRS, so this new assignee will have to manage it for 35 years with the counterpart of investing at least R$ 1 billion in 5 years to expand the local railway capacity. The projection is to double the flow capacity of the port railway complex in 5 years. The main interventions will be the rail yard between channel 4 and Ponta da Praia, equipped with 3 railroad tracks to serve the pulp terminals; viaducts for the elimination of level crossings in the region of channel 4-Marinha; pedestrian walkways between channel 4 and Ponta da Praia; railway "Pera", two viaducts and footbridge in the Outeirinhos region; new road at the 2nd entrance to the right bank of the Port of Santos, in Saboó.

In the interior of the organized port, the upgrade, development and improvement of the railway infrastructure, waterway access and other public facilities are the responsibility of the APS (Santos Port Authority), while the investments in superstructure such as terminals, equipment for cargo movements, are made by the private sector through lease agreements and other partnerships provided for in the legal structure of the sector.

2.3 LOGISTIC FLOW OF SOYBEAN EXPORTS THROUGH THE PORT OF SANTOS

The greatest adversity of soybeans begins soon after harvesting, at the point where it is transported by a truck. From the warehouses to the ship's shipment abroad, a large portion of the benefits provided by

the country's beautiful conditions, such as the beneficial climate, vast soils and high agricultural technology are slowly disappearing along the way.

Because soybean farms store their products in warehouses and silos to be transferred to trucks bound for the Intermodal Complex of Rondonópolis (MT), for this these vehicles need to use the BR-163 Highway, which has precarious sections. There are parts where truck drivers need to pay extra attention so as not to run the risk of death and not to break down the truck. Unfortunately, the roads responsible for the flow of 30% of soybean exports are precarious, which brings a lot of damage along the way. There is a "light at the end of the tunnel", there are good prospects for improving this stretch, because in May 2023, the highway concession was transferred to the state of Mato Grosso, and there is a determined schedule for the start of improvement and duplication works. The restorations will start at the points where there are more accidents, with this the hopes of increasing efficiency and reducing costs on this route are growing.

Arriving at the Intermodal Complex of Rondonópolis (MT), which has the capacity to unload up to two thousand trucks per day at the peak of the harvest, the soybeans go to the warehouses and, by means of hoppers, with the capacity to load three compositions simultaneously, are transferred to the wagons. With this, it is ready to travel 1,655 kilometers to the Port of Santos. Today the compositions are 120 wagons replacing about 261 trucks on the roads, with this the operation becomes more efficient, not only economically, but also ecologically, as rail transport has greater load capacity and causes less negative impacts on the environment.

Currently, the rail modal is being the most used in the transportation of grain exports, most terminals in Santos receive about 70% of the cargo by train and 30% by road. Arriving at the terminals of the port of Santos, the wagons and trucks undergo a quality inspection and the cargo, once approved, is unloaded into hoppers and dumpers to be transported by means of conveyor belts to warehouses and silos. After that, the conveyors take the soybeans to the shiploader to be loaded in the holds of the bulk carriers that will go to their different destinations.

From January to September 2023, more than 87.1 million tons of the oilseed were exported, 17.91% more in the same period of 2022. The main destination is China, which imported 64.068 million tons in this period, followed by Spain with 3.129 million tons, Argentina with 2.054 million tons, Thailand with 1.795 million tons and Turkey with 1.723 million tons.

2.4 ENVIRONMENTAL ASPECTS AND SUSTAINABILITY

The export of soy is also associated with attention to deforestation. It is significant to reflect on environmental impacts, such as deforestation, and discover strategies to reduce these negative effects

The growth of soy agribusiness can have worrisome socio-environmental consequences, encompassing land and environmental issues. This highlights the relevance of enabling sustainable agriculture and agricultural production systems that minimize these impacts.

The statistical study confirms that many soybean farmers have a positive understanding of their social and environmental practices. This indicates that producers are adopting sustainable measures in their operations.

The export of soy in Santos takes into account the Voluntary Sustainability Standards (NVS) to ensure more sustainable business practices. These standards aim at the progression of environmentally responsible soy production chains. The export of soybeans in Santos is deeply linked to issues of sustainability and environmental impacts. It is essential to promote sustainable agricultural practices, adopt voluntary sustainability standards and monitor impact indicators to ensure that soy exports are carried out responsibly and sustainably.

> "the guiding instrument and mandatory compliance for all actors of the Organized Port, with regard to the proper management of solid waste generated in all activities developed. Every year, inventories are compiled, data are analyzed, and the results obtained are presented in the Annual Report on Solid Waste of the Port of Santos, published in the first half of the following year [...] in the PGRS, actions to raise awareness about solid waste are planned with the port community. In this context, several actions were developed, such as the Sustainable Environment Month, where there were several lectures open to the internal and external public on the environmental aspects of port activity, as well as presentations on the management of administrative and household waste, with the participation of employees from various companies and the community in general" (PORTO DE SANTOS, 2018, p. 104)

2.5 FUTURE CHALLENGES AND OPPORTUNITIES

According to EMBRAPA in 1977, the country produced about 46 million tons of grains, while in 2023, a harvest of more than 300 million tons of grains is estimated. This means that grain production in Brazil has grown by 500% in the last 4 decades. Brazil has been consolidating itself as the largest food exporter in the world, so the country must be prepared to support the world demand for food.

Therefore, soybean producers must be prepared to continue to break production and export records, so the challenges of the coming years will be the reduction of deforestation, saving water use, recycling, and reducing the use of agrochemicals. Use more and more Digital Agriculture tools, in addition to investing in infrastructure, train workers to work in the field to have sustainable production.

As a result, the port of Santos has a development plan to meet the growing demand for soybean exports. Among these new projects are the second entrance to the port, construction of viaducts on the Perimetral Avenue of the Left Bank, construction of the Perimetral Avenue of the Right Bank, expansion and construction of rotating parking lots for trucks, expansion of the internal railway network, as well as the revitalization of the existing network to receive larger wagons.

3 METHODOLOGICAL PROCEDURES

The present research is descriptive which, according to Antônio Carlos Gil, has as its primary objective the description of the characteristics of a given population or phenomenon or, alternatively, the establishment of relationships between the variables. It is bibliographic as to the technical procedure; According to Gil (2008), bibliographic research is developed from material already elaborated, consisting mainly of books and scientific articles, with the main advantage being the possibility of covering a broader series of phenomena than could be done directly, especially when the problem requires geographically scattered data. Its approach is qualitative and the method is hypothetical-deductive.

4 FINAL CONSIDERATIONS

The export of soybeans is of great importance to Brazil, being one of the main grains harvested and exported in the country. The Port of Santos plays a significant role in this process, being the largest port in Brazil and handling a large amount of soybeans.

Currently, rail transport is the most used in transporting soybean exports, with most terminals in Santos receiving about 70% of the cargo by train and 30% by trucks. However, the road used to transport 30% of soybean exports is precarious, causing losses along the way. There are expectations of improvements in this section, with the concession of the highway transferred to the state of Mato Grosso and improvement and duplication works planned.

In addition, interventions are planned at the Port of Santos to expand rail capacity and improve infrastructure, such as the construction of viaducts, footbridges and expansion of the internal rail network. These improvements aim to increase efficiency and reduce the environmental impacts of transporting soybeans.

In the period from January to September 2023, more than 87.1 million tons of soybeans were exported, with China being the main destination, followed by Spain, Argentina, Thailand and Turkey. However, it is important to highlight that soy exports are associated with attention to deforestation, and it is necessary to reflect on the environmental impacts and seek strategies to reduce these negative effects.

In summary, the export of soybeans is of great importance to Brazil, boosting agribusiness and the country's economy. However, it is essential to look for ways to make this activity more sustainable, minimizing social and environmental impacts and investing in improvements in transport infrastructure.

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