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Brazil Soybean Transportation

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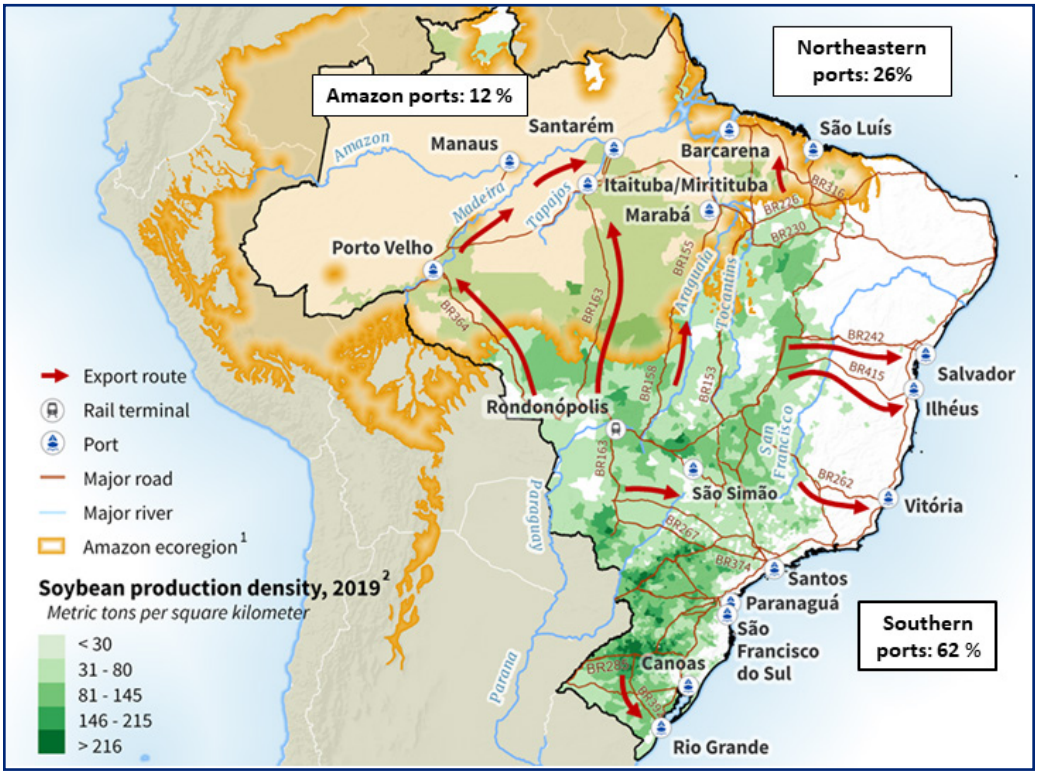
Delayed Soybean Exports and High Global Demand Led to Higher Prices in First Quarter 2021

Brazil's soybean export season typically starts in January, peaks in May, and declines through the end of the year. However, this season, planting and harvest were delayed.[1] The delay pushed the export window to overlap with the sugarcane harvest season and caused vessel delays and backups in March, especially in the southern port of Santos. These vessel disruptions increased ocean freight rates (tables 1, 2, and 9) (Reuters). Strong Chinese demand for iron-ore and grain, as well as heavy rain in northern Brazil, also contributed to a significant increase in ocean freight rates. This was particularly true for the routes from the northern and northeastern ports of Santarém and São Luís, Brazil, to Shanghai, China, and Hamburg, Germany, as vessels waited either to load grain or iron-ore (tables 1, 1a, 2, 2a, and 9) (Safety4Sea and Mining.com). Further contributing to the continued rise of ocean freight and charter rates, from January through March, was the reopening of major economies around the world after their pandemic lockdowns (*Grain Transportation Report* (GTR), April 15). Santos is still the largest Brazilian soybean export port, followed by Paranaguá, Barcarena, São Luís, Santarém, and Manaus. These six ports accounted for nearly 88 percent of Brazil's total exports in first quarter 2021. With the shares broken down from a north/south perspective, the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul dominated the soybean trade, accounting for about 62 percent of Brazil's soybean

1 In Brazil, early October through mid-December is the main soybean planting period, and February-April is the harvest season. Brazil begins exporting soybeans in early January. U.S. soybeans are planted in May and early June and are generally harvested in September and October. The United States begins exporting soybeans in late September.

Figure 1. Southern ports exported 62 percent of Brazilian soybeans, January-March 2021



1 World Wildlife Fund.
2 Brazilian Institute of Geography and Statistics—Produção Agricola Municipal.
Source: USDA/Agricultural Marketing Service (AMS) and USDA/Foreign Agricultural Service (FAS).

exports (fig. 1). Meanwhile, the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for 26 percent of soybean exports. The Amazon River ports of Manaus and Santarém exported 12 percent of Brazil's total soybean exports.

From first quarter 2020 to first quarter 2021 (year to year), Brazilian soybean exports declined from 17.1 million metric tons (mmt) to 16.2 mmt (Comex Stat, Ministério da Economia).[2] Year to year, the cost of shipping a metric ton (mt) of soybeans 100 miles by truck decreased about 12 percent from $6.33 per mt to $5.60 per mt (table 8). This reduction also partially reflects the weakening of the Brazilian real (R$) against the U.S. dollar. The Brazilian real depreciated nearly 23 percent against the U.S. dollar, from R$4.47 per U.S. dollar to R$5.48 per U.S. dollar (Brazil Central Bank). In the State of Mato Grosso, lower transportation costs and higher farm gate prices led to lower costs for transporting Brazilian soybeans from the southern ports to Shanghai and Hamburg. (Transportation costs fell because the decline in truck and rail rates offset the increase in ocean rates.) As a share of total landed costs, transportation costs from northern Mato Grosso to Santos, Paranaguá, and Rio Grande decreased 33-37 percent (tables 1 and 2).

Year to year, average Brazilian soybean export prices rose by 14 percent, from $347.69 per mt to $396.30 per mt. Brazilian farmers have benefitted from the real's depreciation against the U.S. dollar, because soybeans are priced in U.S. dollars, but paid in reais. Measured in U.S. dollars, soybean average farm gate prices increased nearly 60 percent, from $296.27/mt to $473.15/mt year to year. The depreciation of the real led to higher domestic prices. On average, in reais, first-quarter 2021 farm gate prices nearly doubled, from R$1,316.94/mt to R$2,589.04 (Companhia Nacional de Abastecimento (CONAB)).

A couple of factors diverted soybean trade from South America to the United States during the first quarter of 2021: first, Brazil's inability to supply large export volumes to China at the beginning of its harvest season and, second, Argentinean producers' reluctance to sell additional supplies of soybeans beyond what they needed to meet expenses (ERS, *Oil Crops Outlook*, April 2021; FAS, *Grain: World Markets and Trade*, March 2021 and April 2021). In the first 3 months of 2021, Brazil exported 11.6 mmt of soybeans to China, valued at $4.6 billion, nearly 8 percent less than its total of 12.6 mmt in first quarter 2020. The next highest shares of Brazil's soybean exports (in declining order) went to Thailand, Spain, Turkey, and the Netherlands. The southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul still dominate the soybean trade to China, accounting for 73 percent of Brazil's soybean exports to China. The northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for 27 percent of soybean exports to China. The Amazon River ports of Manaus and Santarém did not export to China. These ports exported mostly to the European Union (91 percent) and Africa (9 percent). The ocean freight spread between the Shanghai routes from the northeastern port of São Luís ($41/mt) and the port of Santos ($37/mt) was $4/mt (table 9). For more information, contact Delmy L. Salin at delmy.salin@usda.gov.

2 In this report, the source of Brazil export data is the Comex Stat, Ministério da Economia.

Brazil Soybean Transportation

Table 1. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China

	2020 1st qtr.	2021 1st qtr.	% Change 2020-21	2020 1st qtr.	2021 1st qtr.	% Change 2020-21
	North MT[1] - Santos[2] by truck —US$/mt—			Northwest RS[1] - Rio Grande[2] —US$/mt—		
Truck	68.33	60.94	-10.8	22.92	19.91	-13.1
Ocean	35.50	37.00	4.2	37.00	37.25	0.7
Total transportation	103.83	97.94	-5.7	59.92	57.16	-4.6
Farm gate price[3]	282.59	463.10	63.9	300.04	475.64	58.5
Landed cost	386.43	561.04	45.2	359.97	532.80	48.0
Transport % of landed cost	26.9	17.5	-35.0	16.6	10.7	-35.6
	North MT[1] - Santos[2] by rail —US$/mt—			North MT[1] - Paranaguá[2] —US$/mt—		
Truck	24.79	22.18	-10.5	67.48	58.57	-13.2
Rail[4]	37.73	30.95	-18.0	-	-	-
Ocean	35.50	37.00	4.2	37.25	38.75	4.0
Total transportation	98.02	90.13	-8.0	104.73	97.32	-7.1
Farm gate price[3]	282.59	463.10	63.9	282.59	463.10	63.9
Landed cost	380.61	553.22	45.4	387.32	560.42	44.7
Transport % of landed cost	25.8	16.3	-36.7	27.0	17.4	-35.8

[1]Producing regions: RS = Rio Grande do Sul and MT= Mato Grosso.

[2]Export port.

[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the railroad company and shippers.

Note: qtr. = quarter. mt = metric ton.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 1a. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China

	2020 1st qtr.	2021 1st qtr.	% Change 2020-21	2020 1st qtr.	2021 1st qtr.	% Change 2020-21
	North MT[1] - Santarém[2] —US$/mt—			South MA[1] - São Luís[2] —US$/mt—		
Truck	44.10	40.01	-9.3	28.86	25.06	-13.2
Ocean	36.50	50.54	38.5	36.75	41.00	11.6
Total transportation	80.60	90.55	12.3	65.61	66.06	0.7
Farm gate price[3]	282.59	463.10	63.9	300.23	466.73	55.5
Landed cost	363.20	553.64	52.4	365.83	532.79	45.6
Transport % of landed cost	22.2	16.4	-26.3	17.9	12.4	-30.9
	Southwest PI[1] - São Luís[2] —US$/mt—			North MT[1] - Barcarena[2] —US$/mt—		
Truck	32.49	29.27	-9.9	37.11	34.86	-6.1
Barge[4]	-	-	-	16.42	16.37	-0.3
Ocean	36.75	41.00	11.6	38.50	42.00	9.1
Total transportation	69.24	70.27	1.5	92.03	93.23	1.3
Farm gate price[3]	302.03	484.07	60.3	282.59	463.10	63.9
Landed cost	371.27	554.34	49.3	374.62	556.33	48.5
Transport % of landed cost	18.6	12.7	-32.0	24.6	16.8	-31.8

[1]Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil, there are no public/official Barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Note: qtr. = quarter. mt = metric ton.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 2. Quarterly costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany

	2020 1st qtr.	2021 1st qtr.	% Change 2020-21	2020 1st qtr.	2021 1st qtr.	% Change 2020-21
	North MT[1] - Santos[2] —US$/mt—			Northwest RS[1] - Rio Grande[2] —US$/mt—		
Truck	68.33	60.94	-10.8	22.92	19.91	-13.1
Ocean	29.25	31.25	6.8	29.50	32.00	8.5
Total transportation	97.58	92.19	-5.5	52.42	51.91	-1.0
Farm gate price[3]	282.59	463.10	63.9	300.04	475.64	58.5
Landed cost	380.18	555.29	46.1	352.47	527.55	49.7
Transport % of landed cost	25.7	16.6	-35.3	14.9	9.8	-33.8
	North MT[1] - Santos[2] —US$/mt—			North MT[1] - Paranaguá[2] —US$/mt—		
Truck	24.79	22.18	-10.5	67.48	58.57	-13.2
Rail[4]	37.73	30.95	-18.0	-	-	-
Ocean	29.25	31.25	6.8	30.00	31.00	3.3
Total transportation	91.77	84.38	-8.1	97.48	89.57	-8.1
Farm gate price[3]	282.59	463.10	63.9	282.59	463.10	63.9
Landed cost	374.36	547.47	46.2	380.07	552.67	45.4
Transport % of landed cost	24.5	15.4	-37.1	25.6	16.2	-36.8

[1]Producing regions: RS = Rio Grande do Sul and MT= Mato Grosso.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the railroad company and shippers.
Note: qtr. = quarter. mt = metric ton.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 2a. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Hamburg, Germany

	2020 1st qtr.	2021 1st qtr.	% Change 2020-21	2020 1st qtr.	2021 1st qtr.	% Change 2020-21
	North MT[1] - Santarém[2] —US$/mt—			South MA[1] - São Luís[2] —US$/mt—		
Truck	44.10	40.01	-9.3	28.86	25.06	-13.2
Ocean	25.00	28.65	14.6	22.25	33.25	49.4
Total transportation	69.10	68.66	-0.6	51.11	58.31	14.1
Farm gate price[3]	282.59	463.10	63.9	300.23	466.73	55.5
Landed cost	351.70	531.75	51.2	351.33	525.04	49.4
Transport % of landed cost	19.6	12.9	-34.3	14.5	11.1	-23.7
	Southwest PI[1] - São Luís[2] —US$/mt—			North MT[1] - Barcarena[2] --US$/mt--		
Truck	32.49	29.27	-9.9	37.11	34.86	-6.1
Barge[4]	-	-	-	16.42	16.37	-0.3
Ocean	22.25	33.25	49.4	24.00	28.10	17.1
Total transportation	54.74	62.52	14.2	77.53	79.33	2.3
Farm gate price[3]	302.03	484.07	60.3	282.59	463.10	63.9
Landed cost	356.77	546.59	53.2	360.12	542.43	50.6
Transport % of landed cost	15.3	11.4	-25.5	21.5	14.6	-32.1

[1]Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.

[2]Export port.

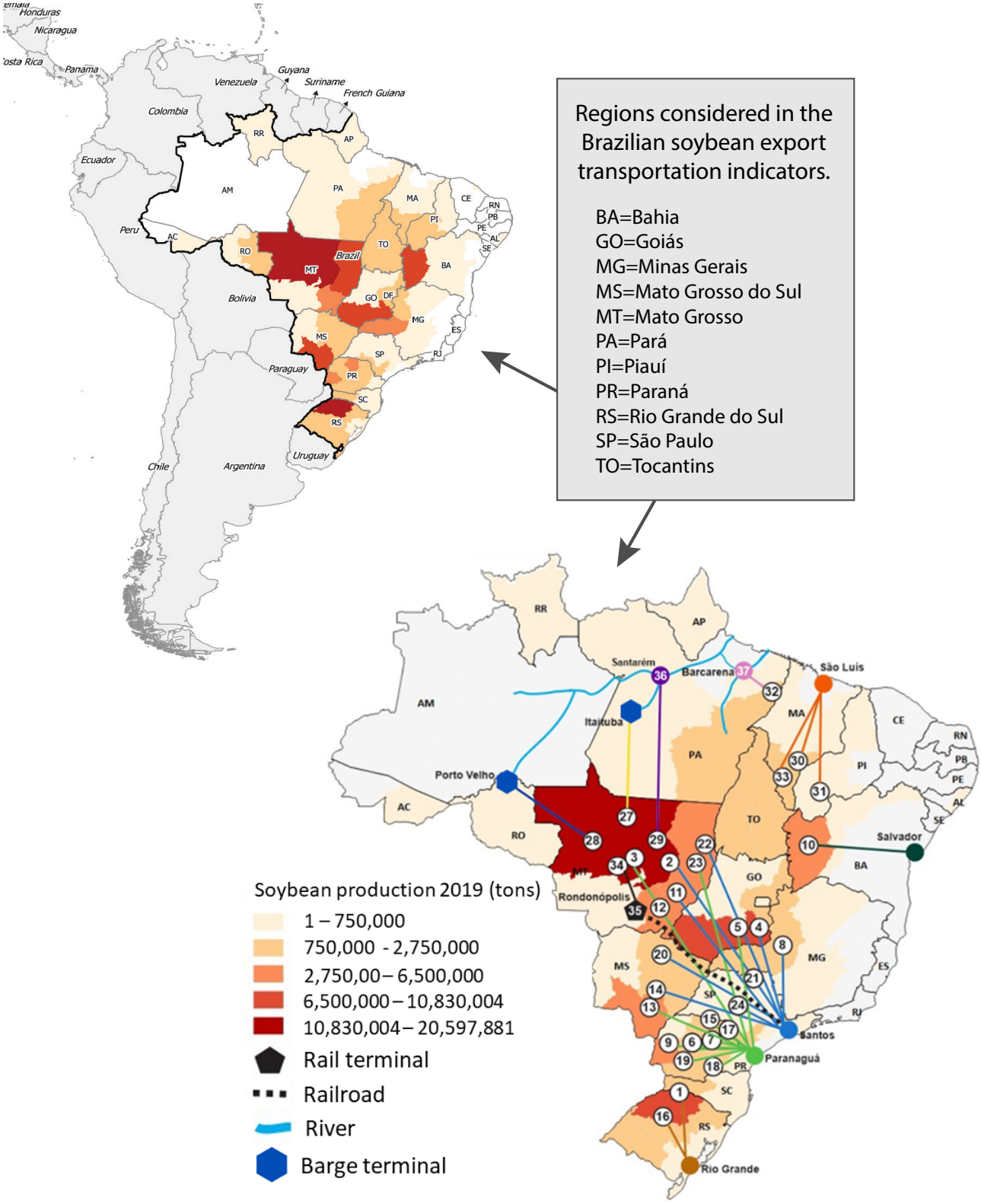
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official Barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.

Note: qtr. = quarter. mt = metric ton.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Figure 2. Routes[1] and regions considered in the Brazilian soybean export transportation indicator[2]



[1]Table defining routes by number is shown on page 12.

[2]Regions comprised about 79 percent of Brazilian soybean production, 2019 (Brazilian Institute of Geography and Statistics—Produção Agricola Municipal).

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 3. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China

	—2021—									
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
	North MT[1] - Santos[2] by truck —US$/mt—					North MT[1] - Paranaguá[2] —US$/mt—				
Truck	60.94				60.94	58.57				58.57
Ocean	37.00				37.00	38.75				38.75
Total transportation	97.94				97.94	97.32				97.32
Farm gate price[3]	463.10				463.10	463.10				463.10
Landed cost	561.04				561.04	560.42				560.42
Transport % of landed cost	17.5				17.5	17.4				17.4
	North MT[1] - Santos[2] by rail —US$/mt—					Northwest RS[1] - Rio Grande[2] —US$/mt—				
Truck	22.18				22.18	19.91				19.91
Rail[4]	30.95				30.95	-				-
Ocean	37.00				37.00	37.25				37.25
Total transportation	90.13				90.13	57.16				57.16
Farm gate price[3]	463.10				463.10	475.64				475.64
Landed cost	553.22				553.22	532.80				532.80
Transport % of landed cost	16.3				16.3	10.7				10.7

[1]Producing regions: RS = Rio Grande do Sul, MT= Mato Grosso, and PR = Paraná.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4] In, Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the railroad company and shippers.
Note: qtr. = quarter. mt = metric ton. Avg. = average.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 4. Quarterly costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany

	—2021—									
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
	North MT[1] - Santos[2] by truck —US$/mt—					North MT[1] - Paranaguá[2] —US$/mt—				
Truck	60.94				60.94	58.57				58.57
Ocean	31.25				31.25	31.00				31.00
Total transportation	92.19				92.19	89.57				89.57
Farm gate price[3]	463.10				463.10	463.10				463.10
Landed cost	555.29				555.29	552.67				552.67
Transport % of landed cost	16.6				16.6	16.2				16.2
	North MT[1] - Santos[2] by rail —US$/mt—					Northwest RS[1] - Rio Grande[2] —US$/mt—				
Truck	22.18				22.18	19.91				19.91
Rail[4]	30.95				30.95	-				-
Ocean	31.25				31.25	32.00				32.00
Total transportation	84.38				84.38	51.91				51.91
Farm gate price[3]	463.10				463.10	475.64				475.64
Landed cost	547.47				547.47	527.55				527.55
Transport % of landed cost	15.4				15.4	9.8				9.8

[1]Producing regions: RS = Rio Grande do Sul and MT= Mato Grosso.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In, Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the railroad company and shippers.
Note: qtr. = quarter. mt = metric ton. Avg. = average.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 5. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China

	—2021—									
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
	North MT[1] - Santarém[2] —US$/mt—					South MA[1] - São Luís[2] —US$/mt—				
Truck	40.01				40.01	25.06				25.06
Ocean	50.54				50.54	41.00				41.00
Total transportation	90.55				90.55	66.06				66.06
Farm gate price[3]	463.10				463.10	466.73				466.73
Landed cost	553.64				553.64	532.79				532.79
Transport % of landed cost	16.4				16.4	12.4				12.4
	Southwest PI[1] - São Luís[2] —US$/mt—					North MT[1] - Barcarena[2] --US$/mt-				
Truck	29.27				29.27	34.86				34.86
Barge[4]	-				-	16.37				16.37
Ocean	41.00				41.00	42.00				42.00
Total transportation	70.27				70.27	93.23				93.23
Farm gate price[3]	484.07				484.07	463.10				463.10
Landed cost	554.34				554.34	556.33				556.33
Transport % of landed cost	12.7				12.7	16.8				16.8

[1]Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil, there are no public/official Barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Note: qtr. = quarter. mt = metric ton. Avg. = average.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 6. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Hamburg, Germany

	—2021—									
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
	North MT[1] - Santarém[2] —US$/mt—					South MA[1] - São Luís[2] —US$/mt—				
Truck	40.01				40.01	25.06				25.06
Ocean	28.65				28.65	33.25				33.25
Total transportation	68.66				68.66	58.31				58.31
Farm gate price[3]	463.10				463.10	466.73				466.73
Landed cost	531.75				531.75	525.04				525.04
Transport % of landed cost	12.9				12.9	11.1				11.1
	Southwest PI[1] - São Luís[2] —US$/mt—					North MT[1] - Barcarena[2] --US$/mt-				
Truck	29.27				29.27	34.86				34.86
Barge[4]	-				-	16.37				16.37
Ocean	33.25				33.25	28.10				28.10
Total transportation	62.52				62.52	79.33				79.33
Farm gate price[3]	484.07				484.07	463.10				463.10
Landed cost	546.59				546.59	542.43				542.43
Transport % of landed cost	11.4				11.4	14.6				14.6

[1]Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil, there are no public/official Barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Note: qtr. = quarter. mt = metric ton. Avg. = average.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 7. Quarterly truck rates for selected Brazilian soybean export transportation routes, 2021

Route #	Origin[1] (reference city)	Destination	Distance (miles)[2]	Share (%)[3]	Freight price (US$/mt/100 miles)[4]				
					1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
1	Northwest RS[5] (Cruz Alta)	Rio Grande	288	12.0	6.91				6.91
2	North MT (Sorriso)	Santos	1,190	3.3	5.12				5.12
3	North MT (Sorriso)	Paranaguá	1,262	3.1	4.64				4.64
4	South GO (Rio Verde)	Santos	587	4.9	4.96				4.96
5	South GO (Rio Verde)	Paranaguá	726	3.9	5.07				5.07
6	North Central PR (Londrina)	Paranaguá	268	2.8	7.17				7.17
7	Western Central PR (Mamborê)	Paranaguá	311	2.2	6.63				6.63
8	Triangle MG (Uberaba)	Santos	339	3.0	6.86				6.86
9	West PR (Assis Chateaubriand)	Paranaguá	377	1.7	6.08				6.08
10	West Extreme BA (São Desidério)	Salvador	535	5.9	5.28				5.28
11	Southeast MT (Primavera do Leste)	Santos	901	2.5	4.69				4.69
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.3	4.58				4.58
13	Southwest MS (Maracaju)	Paranaguá	612	3.0	5.68				5.68
14	Southwest MS (Maracaju)	Santos	652	2.8	5.47				5.47
15	West PR (Assis Chateaubriand)	Santos	550	1.2	5.35				5.35
16	East GO (Cristalina)	Santos	585	1.9	5.72				5.72
17	North PR (Cornélio Procópio)	Paranaguá	306	1.7	5.84				5.84
18	Eastern Central PR (Castro)	Paranaguá	130	2.0	8.74				8.74
19	South Central PR (Guarapuava)	Paranaguá	204	2.3	8.46				8.46
20	North Central MS (São Gabriel do Oeste)	Santos	720	2.4	4.61				4.61
21	Ribeirão Preto SP (Guairá)	Santos	314	0.0	5.42				5.42
22	Northeast MT (Canarana)	Santos	950	3.6	4.78				4.78
23	East MS (Chapadão do Sul)	Santos	607	0.0	4.64				4.64

[1]Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available.
[2]Distance from the main city of the considered region to the mentioned ports.
[3]Share is measured as a percentage of total production.
[4]Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to the U.S. dollars.
[5]RS=Rio Grande do Sul, MT=Mato Grosso, GO=Goiás, PR=Paraná, MG=Minas Gerais, BA=Bahia, MS=Mato Grosso do Sul, SP=São Paulo, PI=Piauí, MA=Maranhão, PA=Pará, and TO=Tocantins.
[6]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.
[7]In Brazil, there are no public/official Barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Note: qtr. = quarter. mt = metric ton. Avg. = average.
For more details, on the definitions/calculations contact esalqlog@esalqlog.esalq.usp.br.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

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Table 7. Quarterly truck rates for selected Brazilian soybean export transportation routes, 2021

Route #	Origin[1] (reference city)	Destination	Distance (miles)[2]	Share (%)[3]	Freight price (US$/mt/100 miles)[4]				
					1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
24	Northeast MT (Canarana)	Paranaguá	1,075	3.2	4.23				4.23
25	Western Central RS (Tupanciretã)	Rio Grande	273	2.7	5.42				5.42
26	Southwest PR(Chopinzinho)	Paranaguá	291	1.5	6.83				6.83
27	North MT (Sorriso)	Itaituba	672	5.8	5.19				5.19
28	North MT (Sorriso)	Porto Velho	632	6.2	4.55				4.55
29	North MT (Sorriso)	Santarém	876	4.4	4.57				4.57
30	South MA (Balsas)	São Luís	482	2.2	5.20				5.20
31	Southwest PI (Bom Jesus)	São Luís	606	2.5	4.83				4.83
32	Southeast PA (Paragominas)	Barcarena	249	1.6	6.61				6.61
33	East TO (Campos Lindos)	São Luís	842	1.4	4.51				4.51
	Weighted average		**587**	**100.0**	**5.60**				**5.60**
34	North MT (Sorriso)	Rondonópolis (**Rail terminal**)	382		5.81				5.81
35	Rondonópolis MT (**Rail terminal**)[6]	Santos	1,019		3.04				3.04
36	Itaituba PA **(Barge terminal)**[7]	Santarém	224		5.97				5.97
37	Itaituba PA **(Barge terminal)**[7]	Barcarena	738		2.22				2.22

[1]Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available.
[2]Distance from the main city of the considered region to the mentioned ports.
[3]Share is measured as a percentage of total production.
[4]Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to the U.S. dollars.
[5]RS=Rio Grande do Sul, MT=Mato Grosso, GO=Goiás, PR=Paraná, MG=Minas Gerais, BA=Bahia, MS=Mato Grosso do Sul, SP=São Paulo, PI=Piauí, MA=Maranhão, PA=Pará, and TO=Tocantins.
[6]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.
[7]In Brazil, there are no public/official Barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Note: qtr. = quarter. mt = metric ton. Avg. = average.
For more details, on the definitions/calculations contact esalqlog@esalqlog.esalq.usp.br.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

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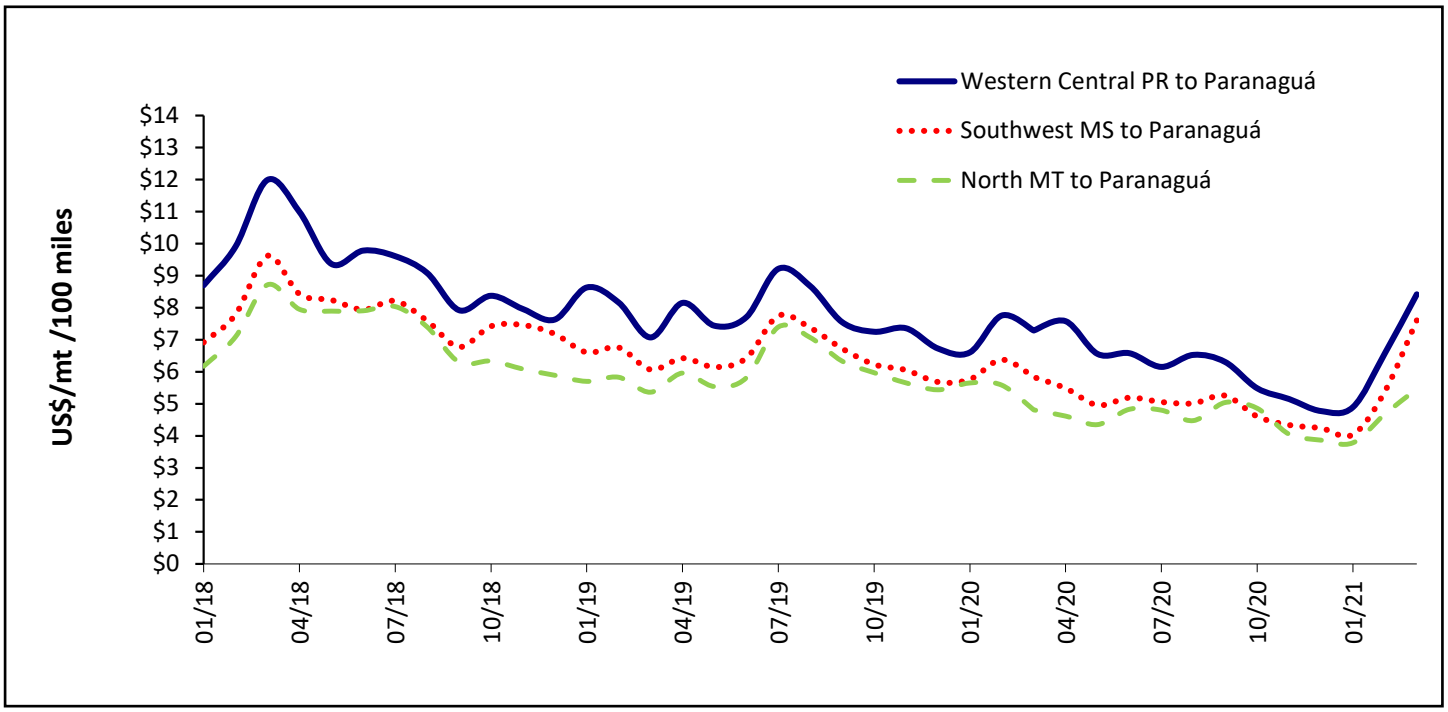
Table 8. Monthly Brazilian soybean export truck transportation cost index

Month	Freight price (US$/mt/100 miles)	Index variation (%) (Base: prior month)	Index value (Base: Jan-05=100)	Month	Freight price (US$/mt/100 miles)	Index variation (%) (Base: prior month)	Index value (Base: Jan-05=100)
Jan-14	8.86	-0.6	152.73	Jan-18	7.59	5.0	130.90
Feb-14	10.34	16.7	178.24	Feb-18	8.65	13.9	149.04
Mar-14	11.61	12.3	200.13	Mar-18	10.59	22.5	182.61
Apr-14	11.35	-2.2	195.65	Apr-18	9.78	-7.7	168.59
May-14	10.90	-4.0	187.89	May-18	8.96	-8.4	154.45
Jun-14	10.34	-5.1	178.24	Jun-18	8.89	-0.8	153.24
Jul-14	10.16	-1.7	175.21	Jul-18	8.97	0.9	154.58
Aug-14	10.10	-0.6	174.08	Aug-18	8.24	-8.1	142.00
Sep-14	9.66	-4.3	166.54	Sep-18	7.24	-12.1	124.78
Oct-14	8.77	-9.3	151.13	Oct-18	7.69	6.2	132.55
Nov-14	8.36	-4.6	144.16	Nov-18	7.51	-2.3	129.44
Dec-14	7.96	-4.9	137.15	Dec-18	7.19	-4.3	123.87
Jan-15	8.01	0.7	138.15	Jan-19	7.72	7.5	133.13
Feb-15	8.02	0.1	138.29	Feb-19	8.19	6.0	141.15
Mar-15	8.32	3.7	143.44	Mar-19	7.34	-10.3	126.61
Apr-15	9.00	8.2	155.13	Apr-19	7.16	-2.6	123.35
May-15	8.39	-6.8	144.58	May-19	6.73	-5.9	116.02
Jun-15	8.01	-4.5	138.12	Jun-19	6.94	3.1	119.56
Jul-15	7.56	-5.7	130.25	Jul-19	8.33	20.1	143.60
Aug-15	7.38	-2.4	127.15	Aug-19	7.85	-5.8	135.23
Sep-15	6.60	-10.5	113.78	Sep-19	7.09	-9.7	122.17
Oct-15	6.70	1.5	115.43	Oct-19	6.57	-7.4	113.19
Nov-15	7.08	5.8	122.08	Nov-19	6.41	-2.3	110.54
Dec-15	6.76	-4.5	116.56	Dec-19	5.93	-7.5	102.21
Jan-16	6.42	-5.1	110.63	Jan-20	6.03	1.7	103.90
Feb-16	6.73	4.8	115.98	Feb-20	6.76	12.2	116.52
Mar-16	7.79	15.8	134.33	Mar-20	6.20	-8.2	106.95
Apr-16	8.30	6.5	143.05	Apr-20	5.86	-5.5	101.09
May-16	7.28	-12.3	125.43	May-20	5.26	-10.4	90.58
Jun-16	7.16	-1.5	123.51	Jun-20	5.45	3.7	93.95
Jul-16	7.46	4.2	128.64	Jul-20	5.44	-0.2	93.74
Aug-16	7.33	-1.7	126.41	Aug-20	5.41	-0.4	93.34
Sep-16	6.35	-13.3	109.53	Sep-20	5.58	3.0	96.14
Oct-16	5.88	-7.5	101.35	Oct-20	4.97	-10.8	85.71
Nov-16	5.00	-14.9	86.21	Nov-20	4.58	-7.9	78.95
Dec-16	5.47	9.4	94.32	Dec-20	4.32	-5.8	74.39
Jan-17	7.32	33.8	126.20	Jan-21	4.26	-1.3	73.39
Feb-17	9.85	34.6	169.85	Feb-21	5.60	31.5	96.50
Mar-17	10.38	5.3	178.90	Mar-21	6.93	23.8	119.49
Apr-17	9.52	-8.3	164.05				
May-17	8.75	-8.0	150.90				
Jun-17	8.18	-6.5	141.04				
Jul-17	8.74	6.8	150.66				
Aug-17	9.85	12.7	169.76				
Sep-17	8.97	-9.0	154.55				
Oct-17	8.64	-3.6	148.93				
Nov-17	8.36	-3.2	144.11				
Dec-17	7.23	-13.5	124.63				

*Weighted average.

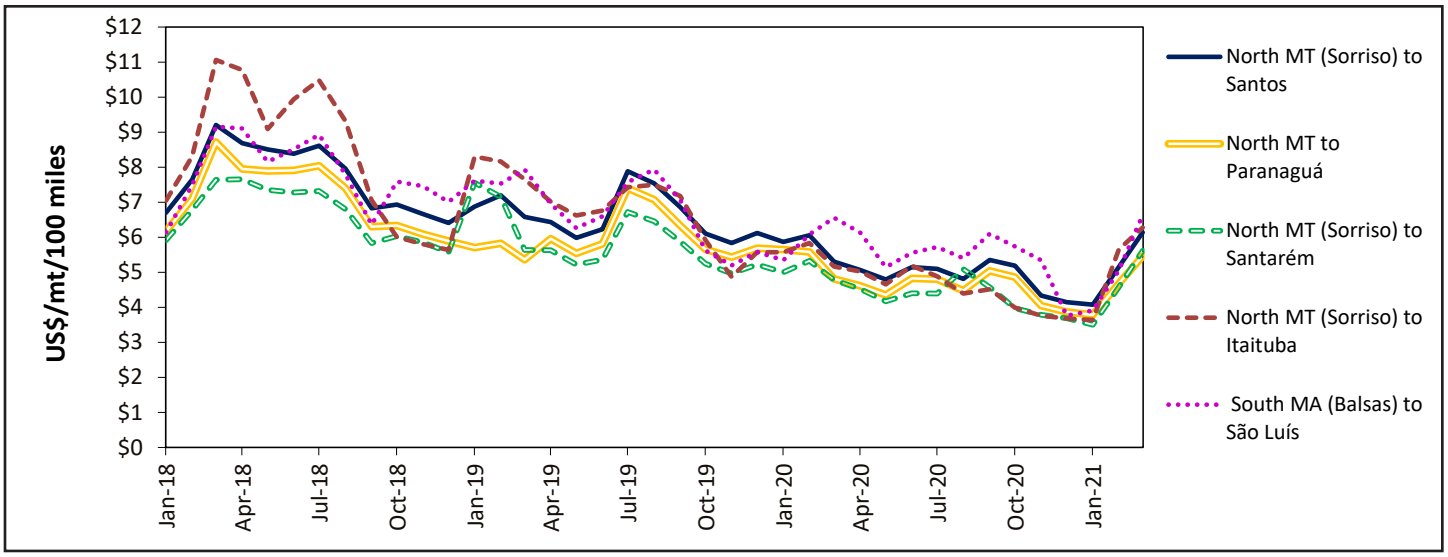
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2018-21



Note: mt = metric ton. PR = Paraná, MT= Mato Grosso, and MS = Mato Grosso do Sul.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Figure 4. Truck rates for selected north, south, and northeastern Brazilian soybean export transportation routes, 2018-21



Note: mt = metric ton. MT= Mato Grosso and MA = Maranhão.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

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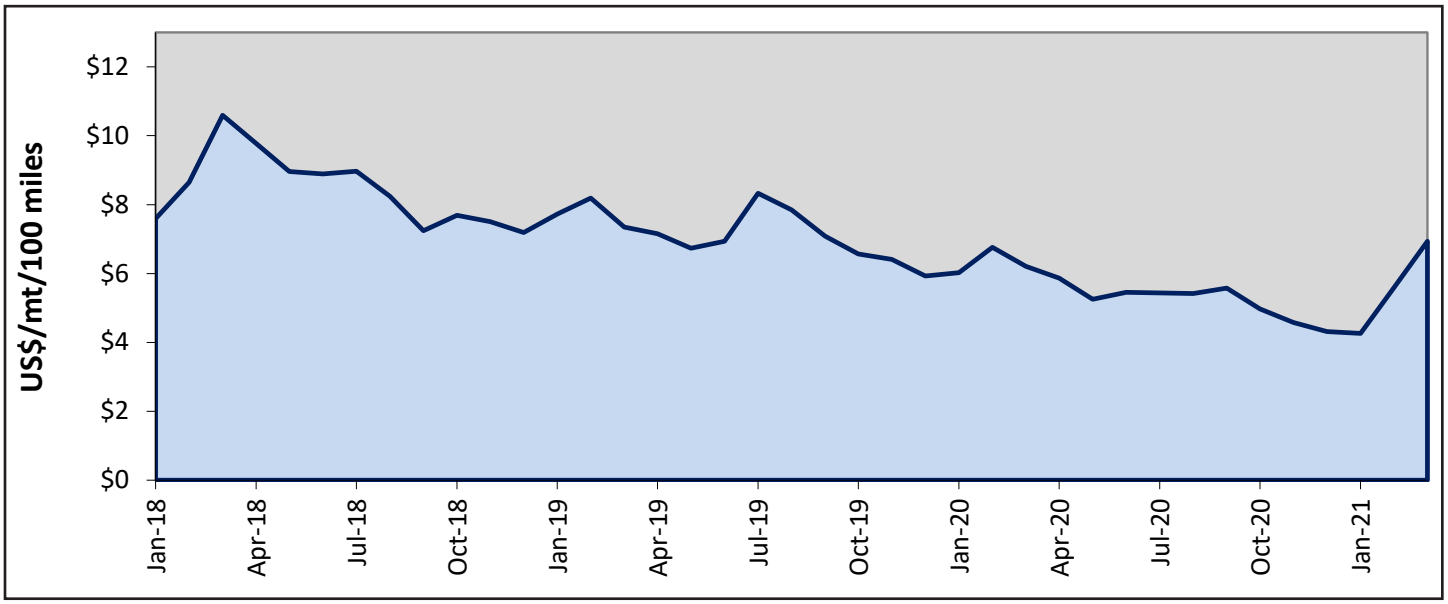
Figure 5. Brazilian soybean export truck transportation weighted average prices, 2018-21



Note: mt = metric ton.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

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Table 9. Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Germany and China (US$/metric ton)*

Port	Destination	1st qtr. 2016	2nd qtr. 2016	3rd qtr .2016	4th qtr. 2016
Santos	Germany (Hamburg)	16.00	17.00	16.50	23.00
Paranaguá	Germany (Hamburg)	16.00	17.00	16.50	24.00
Rio Grande	Germany (Hamburg)	16.00	17.00	16.50	23.00
Santarém	Germany (Hamburg)	11.03	14.13	15.00	19.80
São Luís	Germany (Hamburg)	8.25	11.00	11.80	15.80
Barcarena	Germany (Hamburg)	9.60	12.45	13.20	17.35
Santos	China (Shanghai)	17.50	16.50	12.50	20.00
Paranagua	China (Shanghai)	18.00	18.50	14.50	21.50
Rio Grande	China (Shanghai)	18.50	17.00	13.00	20.50
Santarém	China (Shanghai)	22.00	21.00	19.40	23.75
São Luís	China (Shanghai)	20.00	18.40	17.50	22.00
Barcarena	China (Shanghai)	22.50	21.50	20.00	23.75
Port	**Destination**	**1st qtr. 2017**	**2nd qtr. 2017**	**3rd qtr. 2017**	**4th qtr. 2017**
Santos	Germany (Hamburg)	21.00	24.00	26.00	27.00
Paranaguá	Germany (Hamburg)	22.00	25.00	27.00	28.00
Rio Grande	Germany (Hamburg)	22.00	25.00	27.00	28.00
Santarém	Germany (Hamburg)	21.00	23.60	25.00	26.00
São Luís	Germany (Hamburg)	17.60	20.00	21.20	22.00
Barcarena	Germany (Hamburg)	18.00	20.60	21.80	22.70
Santos	China (Shanghai)	18.50	29.00	30.00	30.00
Paranagua	China (Shanghai)	20.50	30.50	31.00	31.50
Rio Grande	China (Shanghai)	18.00	29.50	31.00	30.70
Santarém	China (Shanghai)	24.00	33.50	31.00	34.50
São Luís	China (Shanghai)	23.50	30.25	31.00	33.50
Barcarena	China (Shanghai)	24.00	33.50	31.00	34.50
Port	**Destination**	**1st qtr. 2018**	**2nd qtr. 2018**	**3rd qtr. 2018**	**4th qtr. 2018**
Santos	Germany (Hamburg)	27.00	25.00	24.00	25.00
Paranaguá	Germany (Hamburg)	28.00	26.00	25.00	26.00
Rio Grande	Germany (Hamburg)	28.00	26.00	25.00	26.00
Santarém	Germany (Hamburg)	25.00	22.90	22.50	23.00
São Luís	Germany (Hamburg)	21.00	19.10	18.50	19.00
Barcarena	Germany (Hamburg)	23.00	20.90	20.20	20.00
Santos	China (Shanghai)	32.50	31.00	27.75	30.00
Paranagua	China (Shanghai)	32.00	32.00	28.75	31.00
Rio Grande	China (Shanghai)	33.00	31.50	28.25	31.50
Santarém	China (Shanghai)	38.50	35.50	31.25	34.00
São Luís	China (Shanghai)	37.00	34.80	30.75	33.00
Barcarena	China (Shanghai)	37.50	33.80	32.25	35.00

*The rates correspond to the average actual values negotiated between shippers and carriers and qtr. = weighted according to the magnitude of the shipped volume.

Note: qtr. = quarter.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

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Table 9. Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Germany and China (US$/metric ton)*

Port	Destination	1st qtr. 2019	2nd qtr. 2019	3rd qtr. 2019	4th qtr. 2019
Santos	Germany (Hamburg)	23.00	21.50	27.00	31.00
Paranaguá	Germany (Hamburg)	23.00	21.25	27.00	30.75
Rio Grande	Germany (Hamburg)	23.00	21.25	27.00	31.25
Santarém	Germany (Hamburg)	21.00	20.25	25.92	26.50
São Luís	Germany (Hamburg)	18.00	17.10	22.77	23.50
Barcarena	Germany (Hamburg)	19.00	17.85	23.52	24.25
Santos	China (Shanghai)	32.25	30.92	33.25	38.17
Paranagua	China (Shanghai)	33.75	31.42	34.75	39.50
Rio Grande	China (Shanghai)	31.58	30.25	34.25	39.67
Santarém	China (Shanghai)	32.25	30.58	38.25	39.17
São Luís	China (Shanghai)	31.00	30.58	38.25	39.42
Barcarena	China (Shanghai)	32.25	29.92	38.25	39.42
Port	**Destination**	**1st qtr. 2020**	**2nd qtr. 2020**	**3rd qtr. 2020**	**4th qtr. 2020**
Santos	Germany (Hamburg)	29.25	20.50	24.00	25.25
Paranaguá	Germany (Hamburg)	30.00	21.50	25.00	25.35
Rio Grande	Germany (Hamburg)	29.50	20.75	24.50	25.75
Santarém	Germany (Hamburg)	25.00	16.00	20.75	22.00
São Luís	Germany (Hamburg)	22.25	17.50	25.00	26.30
Barcarena	Germany (Hamburg)	24.00	15.00	20.50	21.75
Santos	China (Shanghai)	35.50	27.08	31.33	31.67
Paranagua	China (Shanghai)	37.25	28.83	33.08	33.42
Rio Grande	China (Shanghai)	37.00	28.58	32.83	33.17
Santarém	China (Shanghai)	36.50	28.08	34.83	35.21
São Luís	China (Shanghai)	36.75	28.33	35.33	35.67
Barcarena	China (Shanghai)	38.50	28.33	36.33	36.67
Port	**Destination**	**1st qtr. 2021**	**2nd qtr. 2021**	**3rd qtr. 2021**	**4th qtr. 2021**
Santos	Germany (Hamburg)	31.25			
Paranaguá	Germany (Hamburg)	31.00			
Rio Grande	Germany (Hamburg)	32.00			
Santarém	Germany (Hamburg)	28.65			
São Luís	Germany (Hamburg)	33.25			
Barcarena	Germany (Hamburg)	28.10			
Santos	China (Shanghai)	37.00			
Paranagua	China (Shanghai)	38.75			
Rio Grande	China (Shanghai)	37.25			
Santarém	China (Shanghai)	50.54			
São Luís	China (Shanghai)	41.00			
Barcarena	China (Shanghai)	42.00			

*The rates correspond to the average actual values negotiated between shippers and carriers and qtr. = weighted according to the magnitude of the shipped volume.

Note: qtr. = quarter.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

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Data Sets (XLS files):

- Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2018-21
- Figure 4. Truck rates for selected north, south, and northeastern Brazilian soybean export transportation routes, 2018-21
- Figure 5. Brazilian soybean export truck transportation weighted average prices, 2018-21
- Table 1. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China
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