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Brazil Soybean Transportation

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Overview of Brazilian Soybean Transportation in 2022

In 2022, Brazil exported 78.7 million metric tons (mmt) of soybeans, 9 percent less than 2021's total of 86.1 mmt (<u>Comex Stat, Ministério da Economia</u>).¹ A drought in the southern region during the growing season lowered production and exports (Companhia Nacional de Abastecimento (CONAB) and Valor International (globo.com)). Figure 1a shows Brazil's expanding capacity for shipping exports through the country's northern and southern ports. The expansion is the result of a comprehensive infrastructure improvement plan between the Brazilian Government and the private sector that started in 2007 (Soybean Transportation Guide: Brazil 2014-2021). Since 2014, agricultural exporters in Brazil's Center-West have gained a major competitive boost, which involves port improvements, extended railway miles, and the completion of the pavement along the BR-163 highway.² Brazil's agribusinesses exported 1 mmt of soybeans from the Port of Barcarena in 2014 the year the port first began operating. By 2022, Barcarena had become the fourth-largest Brazilian port for exporting soybeans (after Santos, São Luís, and Paranaguá). In 2022, the Barcarena accounted for 9 mmt of total Brazilian soybean exports. The port of São Luís increased exports from 3 mmt in 2013 to 11 mmt in 2022, ranking as the second-largest soybean-exporting port after Santos. Since 2013, Brazil's total exports increased more than 80 percent (fig. 1a).

Lower exports and higher transportation costs

From 2021 to 2022, Brazil's soybean transportation costs rose, reflecting a significant rise in truck rates due to higher fuel prices (fig. 1b and tables 1, 1a, 2, 2a, and 9).³ The cost of shipping a metric ton (mt) of soybeans 100 miles by truck rose 54 percent—from \$5.29 per mt to \$8.15 per mt. After rising in the first half of 2022, fuel prices started declining in July, but remained higher than 2021. Fuel prices declined in response to lower State taxes and a reduced average price of fuel sold to distributors by the State-run oil firm Petrobras (Brazilian Institute of Geography and Statistics (IBGE)) (fig. 1b). Ocean freight rates increased in the first half of 2022 and fell in the third and fourth quarters but remained higher than 2021. On average, ocean rates from selected Brazilian export routes to Hamburg, Germany, increased 1-11 percent and, to Shanghai, China, increased 4-7 percent (tables 1a, 1b, 2a, 2b, and 9).⁴ Despite rising less than truck rates, ocean rates still showed an increase because of slowing global trade volumes and easing of global supply chain disruptions. For selected routes of shipping Brazilian soybeans to China, total landed costs increased as both farm prices and transportation costs increased (tables 1 and 1a).

¹ In this report, the source of Brazil export data is the Comex Stat, Ministério da Economia.

The BR-163 highway connecting Sorriso, Mato Grosso, to Itaituba/Miritituba, Pará, was completed at the end of 2019. 2

In this report, all described changes are from 2021 to 2022, except where otherwise noted. 3

Santarém did not export to China because the rates from that port were so high. 4



Figure 1a. Brazilian soybean exports capacity expansion by port from 2013-2022

Brazil soybean exports: 2013

	Desta	Millic	on metric	tons
Santarém & TSão Luís (included a construction of the construction	Ports	2013	2014	2022
Manaus Porto Velho Porto Velho	Santos	12.9	12.7	25.7
Export volume	São Luís	3.0	3.1	11.2
Major road Major river Amazon ecoregion ¹	Paranaguá	7.7	7.5	10.2
Soybean production density, 2013 Metric tons per square kilometer < 30 31 - 90 01 - 160 Santos 12.9 Paranaguá 7.7 São 4.0 Francisco do sul 8.2 37.5 million metric tons evented	Barcarena/ Belém	-	1.1	8.9
91-150 151-350 > 350 Rio Grande Rio Grande (88% of total soybean exports)	Rio Grande	8.2	8.2	5.7
Brazil soybean exports: 2022	Salvador	1.8	2.0	3.9
5 25.8 11 25.7 million metric tons exported from another parts	Vitória	2.8	3.1	3.7
Manaus Porto Velho Porto Velho	São Francisco do Sul	4.0	4.9	3.2
Export volume	Manaus	1.3	1.4	3.1
 Port Major road Major river Amazon scoregist 	Santarém	1.0	0.9	2.5
Soybean production density, 2021 Metric tons per square kilometer	Others	0.1	0.7	0.6
31 - 90 91 - 150 151 - 350 > 350 Bio Grande A bio Sul 5.7 Rio Grande Bio Grande Bio Grande Sul 5.7 Bio Grande Sul 5.7 S2.4 million metric tons exported from southern ports (66% of total soybean exports)	Total	42.8	45.7	78.7

¹ World Wildlife Fund.

² Brazilian Institute of Geography and Statistics—Produção Agricola Municipal.

Note: A hyphen in an otherwise empty cell denotes that the data are not available.

Source: Comex Stat, Ministério da Economia and USDA, Foreign Agricultural Service.







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

From 2021 to 2022, average Brazilian soybean export prices increased 32 percent, from \$449 per mt to \$591 per mt. Measured in U.S. dollars, average soybean farm gate prices increased 15 percent, from \$485.13/mt to \$556.38/mt over the same period. The Brazilian real (R\$) appreciated by 4 percent against the US\$, from R\$5.40 per US\$ in 2021 to R\$5.16 in 2022 (Brazil Central Bank). Despite this year's appreciation of the real, Brazilian farmers benefit from the real's relative weakness against the U.S. dollar. This advantage is reflected by the fact that soybeans are priced in U.S. dollars but paid in reais. On average, in reais, farm gate prices increased 10 percent, from R\$2,614.67/mt in 2021 to R\$2,865.04/mt in 2022 (CONAB). Typically, Brazilian soybean exports peak in May and then decline through the end of the year.

In 2022, Brazil exported 53.6 mmt of soybeans to China, valued at \$31.8 billion—11 percent less than 2021's soybean total (60.5 mmt), accounting for 70 percent of Brazil's total soybean exports (78.7 mmt). The next highest shares of Brazil's soybean exports (in declining order) went to Spain, Thailand, Iran, and the Netherlands.

The southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul still dominate the soybean trade to China, collectively accounting for 69 percent of Brazil's soybean exports to China. Also, in 2022, the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 31 percent of soybean exports to China. The Amazon River port of Manaus exported a small amount of soybeans to China. In 2022, the ocean freight spread between the Shanghai routes from the northeastern port of São Luís (\$61.80/mt) and the port of Santos (\$56.04/mt) was \$5.76/mt (table 9).

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Table 1a. Costs of transporting Brazilian soybeans from thesouthern ports to Shanghai, China, 2021-22

	North I	VIT ¹ - Santos ² k	y truck	Northwest RS ¹ - Rio Grande ²			
	—US\$	/mt—	% Change	—US\$	/mt—	% Change	
	2021	2022	2021-22	2021	2022	2021-22	
Truck	59.30	93.98	58.5	18.85	29.45	56.3	
Ocean	53.40	56.04	4.9	53.94	56.99	5.7	
Total transportation	112.70	150.02	33.1	72.78	86.43	18.8	
Farm gate price ³	482.47 536.97		11.3	489.39	579.79	18.5	
Landed cost	595.16 686.98		15.4	562.17	666.23	18.5	
Transport % of landed cost	18.9	18.9 21.8		12.9 12.9		0.2	
	North	MT ¹ - Santos ²	by rail	Nortl	h MT ¹ - Parana	aguá²	
	—US\$	/mt—	% Change	—US\$	/mt—	% Change	
	2021	2022	2021-22	2021	2022	2021-22	
Truck	20.64	31.47	52.5	58.62	93.11	58.8	
Rail ⁴	29.69	44.31	49.3	-	-	-	
Ocean	53.40	56.04	4.9	55.29	57.34	3.7	
Total transportation	103.73	131.82	27.1	113.91	150.44	32.1	
Farm gate price ³	482.47	536.97	11.3	482.47	536.97	11.3	
Landed cost	586.19	668.79	14.1	596.37	687.41	15.3	
Transport % of landed cost	17.7	19.7	11.4	19.1	21.9	14.6	

¹Producing regions: MT= Mato Grosso and RS = Rio Grande Do Sul.

²Export port.

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

⁴In Brazil, there are no published 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: mt = metric ton. A hyphen in an otherwise empty cell denotes that the data are not available.



Table 1b. Costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China, 2021-22

	Nort	h MT ¹ - Santa	rém²	South MA ¹ - São Luís ²				
	—US\$	/mt—	% Change	—US\$	/mt—	% Change		
	2021	2022	2021-22	2021	2022	2021-22		
Truck	37.91	59.30	56.4	24.85	40.83	64.3		
Ocean	42.09	61.68	46.5	57.90	61.80	6.7		
Total transportation	80.00	120.98	51.2	82.75	102.63	24.0		
Farm gate price ³	482.47 536.97		11.3	484.89	558.13	15.1		
Landed cost	562.47 657.95		17.0	567.63	660.76	16.4		
Transport % of landed cost	14.2	14.2 18.4		14.5 15.5		6.6		
	Southwest Pl ¹ - São Luís ²			Nort	h MT ¹ - Barcar	rena²		
	—US\$	/mt—	% Change	—US\$	% Change			
	2021	2022	2021-22	2021	2022	2021-22		
Truck	29.15	44.32	52.1	31.84	49.44	55.3		
Barge ⁴	-	-	-	12.63	18.32	45.0		
Ocean	57.90	61.80	6.7	59.55	62.73	5.3		
Total transportation	87.05	106.12	21.9	104.02	130.49	25.4		
Farm gate price ³	475.78	542.19	14.0	482.47	536.97	11.3		
Landed cost	562.82	648.31	15.2	586.49	667.45	13.8		
Transport % of landed cost	15.5	16.3	5.7	17.7	19.5	10.2		

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

²Export port.

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

⁴In Brazil, there are no published 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: mt = metric ton. A hyphen in an otherwise empty cell denotes that the data are not available.



Table 2a. Costs of transporting Brazilian soybeans from thesouthern ports to Hamburg, Germany, 2021-22

	North I	VIT ¹ - Santos ² b	y truck	Northwest RS ¹ - Rio Grande ²			
	—US\$	/mt—	% Change	—US\$	/mt—	% Change	
	2021	2022	2021-22	2021	2022	2021-22	
Truck	59.30	93.98	58.5	18.85	29.45	56.3	
Ocean	45.11	48.34	7.1	46.28	49.48	6.9	
Total transportation	104.41	142.32	36.3	65.12	78.92	21.2	
Farm gate price ³	482.47	536.97	11.3	489.39	579.79	18.5	
Landed cost	586.88 679.28		15.7	554.51	658.71	18.8	
Transport % of landed cost	17.8 20.9		17.8	11.7	12.0	2.0	
	North	MT ¹ - Santos ²	by rail	Nort	h MT ¹ - Parana	aguá²	
	—US\$	/mt—	% Change	—US\$	% Change		
	2021	2022	2021-22	2021	2022	2021-22	
Truck	20.64	31.47	52.5	58.62	93.11	58.8	
Rail ⁴	29.69	44.31	49.3	-	-	-	
Ocean	45.11	48.34	7.1	44.35	47.23	6.5	
Total transportation	95.44	124.12	30.1	102.97	140.33	36.3	
Farm gate price ³	482.47	536.97	11.3	482.47	536.97	11.3	
Landed cost	577.90	661.09	14.4	585.44	677.30	15.7	
Transport % of landed cost	16.5	18.8	13.7	17.6	20.7	17.9	

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

²Export port.

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

⁴In Brazil, there are no published 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: mt = metric ton. A hyphen in an otherwise empty cell denotes that the data are not available.



Table 2b. Costs of transporting Brazilian soybeans from the northern andnortheastern ports to Hamburg, Germany, 2021-22

	Nort	th MT ¹ - Santa	rém²	South MA ¹ - São Luís ²			
	—US\$	/mt—	% Change	—US\$	/mt—	% Change	
	2021	2022	2021-22	2021	2022	2021-22	
Truck	37.91	59.30	56.4	24.85	40.83	64.3	
Ocean	42.09	46.68	10.9	48.36	49.08	1.5	
Total transportation	80.00	105.98	32.5	73.21	89.90	22.8	
Farm gate price ³	482.47	536.97	11.3	484.89	558.13	15.1	
Landed cost	562.47	642.95	14.3	558.10	648.04	16.1	
Transport % of landed cost	14.2	14.2 16.5		13.1	13.8	5.6	
	South	nwest Pl¹ - São	Luís ²	Nort	h MT¹ - Barcaı	ena²	
	—US\$	/mt—	% Change	—US\$	—US\$/mt—		
	2021	2022	2021-22	2021	2022	2021-22	
Truck	29.15	44.32	52.1	31.84	49.44	55.3	
Barge⁴	-	-	-	12.63	18.32	45.0	
Ocean	48.36	49.08	1.5	41.00	44.43	8.4	
Total transportation	77.51	93.39	20.5	85.47	112.19	31.3	
Farm gate price ³	475.78	542.19	14.0	482.47	536.97	11.3	
Landed cost	553.28	635.58	14.9	567.94	649.15	14.3	
Transport % of landed cost	14.0	14.6	4.5	15.0	17.3	14.8	

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

²Export port.

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

⁴In Brazil, there are no published 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: mt = metric ton. A hyphen in an otherwise empty cell denotes that the data are not available.

Indicators

Figure 2. Routes¹ and regions considered in the Brazilian soybean export transportation indicator²



¹Table defining routes by number is shown on page 13.

²Regions comprised about 79 percent of Brazilian soybean production, 2020 (Brazilian Institute of Geography and Statistics—Produção Agricola Municipal).

Table 3. Quarterly costs of transporting Brazilian soybeans from thesouthern ports to Shanghai, China, 2022

	Γ	North MT ¹ - Santos ² by truck —US\$/mt—				North MT ¹ - Paranaguá ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	83.64	102.44	99.71	90.13	93.98	82.88	101.50	98.83	89.22	93.11	
Ocean	62.00	65.75	48.70	47.70	56.04	64.00	67.75	49.00	48.60	57.34	
Total transportation	145.64	168.19	148.41	137.83	150.02	146.88	169.25	147.83	137.82	150.44	
Farm gate price ³	550.71	566.29	514.98	515.89	536.97	550.71	566.29	514.98	515.89	536.97	
Landed cost	696.34	734.48	663.39	653.73	686.98	697.58	735.55	662.81	653.71	687.41	
Transport % of landed cost	20.9	22.9	22.4	21.1	21.8	21.1	23.0	22.3	21.1	21.9	
		North M —	T ¹ - Santo -US\$/mt·	os² by rail —		Northwest RS ¹ - Rio Grande ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	27.91	34.83	32.45	30.70	31.47	27.55	32.57	30.05	27.61	29.45	
Rail ⁴	37.69	45.54	46.56	47.45	44.31	-	-	-	-	-	
Ocean	62.00	65.75	48.70	47.70	56.04	62.75	66.50	50.30	48.40	56.99	
Total transportation	127.60	146.12	127.71	125.85	131.82	90.30	99.07	80.35	76.01	86.43	
Farm gate price ³	550.71	566.29	514.98	515.89	536.97	604.37	617.87	552.66	544.28	579.79	
Landed cost	678.31	578.31 712.41 642.69 641.74 668.79				694.66	716.94	633.01	620.29	666.23	
Transport % of landed cost	18.8	20.5	19.9	19.6	19.7	13.0	13.8	12.7	12.3	12.9	

¹Producing regions: RS = Rio Grande do Sul, MT= Mato Grosso, and PR = Paraná.

²Export port.

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

⁴ In, Brazil, there are no published 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. A hyphen in an otherwise empty cell denotes that the data are not available.

Table 4. Quarterly costs of transporting Brazilian soybeans from thesouthern ports to Hamburg, Germany, 2022

	1	North MT ¹ - Santos ² by truck —US\$/mt—				North MT ¹ - Paranaguá ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	83.64	102.44	99.71	90.13	93.98	82.88	101.50	98.83	89.22	93.11	
Ocean	52.70	55.85	42.60	42.20	48.34	51.50	54.60	41.60	41.20	47.23	
Total transportation	136.34	158.29	142.31	132.33	142.32	134.38	156.10	140.43	130.42	140.33	
Farm gate price ³	550.71	566.29	514.98	515.89	536.97	550.71	566.29	514.98	515.89	536.97	
Landed cost	687.04	724.58	657.29	648.23	679.28	685.08	722.40	655.41	646.31	677.30	
Transport % of landed cost	19.8	21.8	21.7	20.4	20.9	19.6	21.6	21.4	20.2	20.7	
		North M —	T ¹ - Santo -US\$/mt ⁱ	os² by rail —		Northwest RS ¹ - Rio Grande ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	27.91	34.83	32.45	30.70	31.47	27.55	32.57	30.05	27.61	29.45	
Rail ⁴	37.69	45.54	46.56	47.45	44.31	-	-	-	-	-	
Ocean	52.70	55.85	42.60	42.20	48.34	54.00	57.20	43.60	43.10	49.48	
Total transportation	118.30	136.22	121.61	120.35	124.12	81.55	89.77	73.65	70.71	78.92	
Farm gate price ³	550.71	566.29	514.98	515.89	536.97	604.37	617.87	552.66	544.28	579.79	
Landed cost	669.01	702.51	636.59	636.24	661.09	685.91	707.64	626.31	614.99	658.71	
Transport % of landed cost	17.7	19.4	19.1	18.9	18.8	11.9	12.7	11.8	11.5	12.0	

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

²Export port.

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

⁴In, Brazil, there are no published 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. A hyphen in an otherwise empty cell denotes that the data are not available.

Table 5. Quarterly costs of transporting Brazilian soybeans from thenorthern and northeastern ports to Shanghai, China, 2022

		North MT ¹ - Santarém ² —US\$/mt—				South MA ¹ - São Luís ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	53.57	64.82	63.19	55.64	59.30	38.28	46.68	44.47	33.88	40.83	
Ocean	66.00	69.90	56.00	54.80	61.68	66.20	70.00	56.00	55.00	61.80	
Total transportation	119.57	134.72	119.19	110.44	120.98	104.48	116.68	100.47	88.88	102.63	
Farm gate price ³	550.71	566.29	514.98	515.89	536.97	558.85	591.24	545.43	537.00	558.13	
Landed cost	670.27	701.01	634.17	626.33	657.95	663.33	707.92	645.91	625.88	660.76	
Transport % of landed cost	17.8	19.2	18.8	17.6	18.4	15.8	16.5	15.6	14.2	15.5	
		Southw _	est Pl ¹ - S -US\$/mt	ao Luís² —		North MT ¹ - Barcarena ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	38.32	51.28	47.29	40.38	44.32	46.94	52.63	52.49	45.72	49.44	
Barge⁴	-	-	-	-	-	16.28	19.93	19.43	17.62	18.32	
Ocean	66.20	70.00	56.00	55.00	61.80	68.00	72.00	55.40	55.50	62.73	
Total transportation	104.52	121.28	103.29	95.38	106.12	131.22	144.56	127.32	118.84	130.49	
Farm gate price ³	543.56	585.80	529.04	510.35	542.19	550.71	566.29	514.98	515.89	536.97	
Landed cost	648.08	707.08	632.33	605.72	648.31	681.92	710.86	642.29	634.73	667.45	
Transport % of landed cost	16.1	17.2	16.3	15.7	16.3	19.2	20.3	19.8	18.7	19.5	

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

²Export port.

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

⁴In Brazil, there are no published 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. A hyphen in an otherwise empty cell denotes that the data are not available.

Table 6. Quarterly costs of transporting Brazilian soybeans from thenorthern and northeastern ports to Hamburg, Germany, 2022

		North MT ¹ - Santarém ² —US\$/mt—				South MA ¹ - São Luís ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	53.57	64.82	63.19	55.64	59.30	38.28	46.68	44.47	33.88	40.83	
Ocean	49.10	52.00	46.00	39.60	46.68	56.50	60.00	40.00	39.80	49.08	
Total transportation	102.67	116.82	109.19	95.24	105.98	94.78	106.68	84.47	73.68	89.90	
Farm gate price ³	550.71	566.29	514.98	515.89	536.97	558.85	591.24	545.43	537.00	558.13	
Landed cost	653.37	683.11	624.17	611.13	642.95	653.63	697.92	629.91	610.68	648.04	
Transport % of landed cost	15.7	17.1	17.5	15.6	16.5	14.5	15.3	13.4	12.1	13.8	
		Southw _	est Pl¹ - S -US\$/mt∙	ão Luís² —		North MT ¹ - Barcarena ² —US\$/mt—					
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
Truck	38.32	51.28	47.29	40.38	44.32	46.94	52.63	52.49	45.72	49.44	
Barge⁴	-	-	-	-	-	16.28	19.93	19.43	17.62	18.32	
Ocean	56.50	60.00	40.00	39.80	49.08	48.00	50.80	39.70	39.20	44.43	
Total transportation	94.82	111.28	87.29	80.18	93.39	111.22	123.36	111.62	102.54	112.19	
Farm gate price ³	543.56	585.80	529.04	510.35	542.19	550.71	566.29	514.98	515.89	536.97	
Landed cost	638.38	697.08	616.33	590.52	635.58	661.92	689.66	626.59	618.43	649.15	

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

²Export port.

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

⁴In Brazil, there are no published 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. A hyphen in an otherwise empty cell denotes that the data are not available.



Table 7. Quarterly truck rates for selected Brazilian soybean export transportation routes, 2022

Route	Origin ¹	Destination	Distance	Share	Frei	ght price	(US\$/mt	/100 mil	es)⁴
#	(reference city)	Destination	(miles) ²	(%) ³	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
1	Northwest RS⁵ (Cruz Alta)	Rio Grande	288	6.7	9.56	11.31	10.43	9.59	10.22
2	North MT (Sorriso)	Santos	1,190	3.3	7.03	8.61	8.38	7.57	7.90
3	North MT (Sorriso)	Paranaguá	1,262	3.1	6.57	8.04	7.83	7.07	7.38
4	South GO (Rio Verde)	Santos	587	5.1	6.65	8.15	7.62	6.89	7.33
5	South GO (Rio Verde)	Paranaguá	726	4.1	6.79	8.18	8.10	7.28	7.59
6	North Central PR (Londrina)	Paranaguá	268	3.4	9.14	10.88	10.52	9.41	9.99
7	Western Central PR (Mamborê)	Paranaguá	311	2.5	8.46	10.20	9.87	9.00	9.38
8	Triangle MG (Uberaba)	Santos	339	3.3	9.03	10.94	10.18	9.28	9.86
9	West PR (Assis Chateaubriand)	Paranaguá	377	4.1	7.91	9.46	8.90	8.19	8.62
10	West Extreme BA (São Desidério)	Salvador	535	6.1	7.25	8.61	8.28	7.72	7.96
11	Southeast MT (Primavera do Leste)	Santos	901	2.5	6.30	7.87	7.63	6.72	7.13
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.3	6.08	7.45	7.20	6.49	6.81
13	Southwest MS (Maracaju)	Paranaguá	612	3.6	6.99	8.00	8.26	7.50	7.69
14	Southwest MS (Maracaju)	Santos	652	3.4	6.97	8.41	8.20	7.40	7.74
15	Northeast MT (Canarana)	São Luís	1,177	2.0	7.23	7.47	7.14	6.54	7.09
16	East GO (Cristalina)	Santos	585	2.1	7.71	9.39	8.97	8.13	8.55
17	North PR (Cornélio Procópio)	Paranaguá	306	1.8	7.46	8.86	8.57	7.59	8.12
18	Eastern Central PR (Castro)	Paranaguá	130	2.1	11.07	13.55	13.44	11.60	12.42
19	South Central PR (Guarapuava)	Paranaguá	204	2.5	10.42	12.38	12.10	10.56	11.37
20	North Central MS (São Gabriel do Oeste)	Santos	720	2.6	6.11	7.37	7.19	6.49	6.79
21	Ribeirão Preto SP (Guairá)	Santos	314	0.5	7.41	8.71	8.35	7.45	7.98
22	Northeast MT (Canarana)	Santos	950	2.5	6.47	7.85	7.63	6.89	7.21
23	East MS (Chapadão do Sul)	Santos	607	1.3	6.15	7.35	7.00	6.41	6.73

¹The main city in the region is considered as a reference to establish the freight price.

²Distance from the main city of the considered region to the mentioned ports.

³Share is measured as a percentage of total production.

⁴Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to the U.S. dollars.

⁵RS=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.

⁶In Brazil, there are no published 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.

⁷In Brazil, there are no published 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 <u>esalqlog@esalqlog.esalq.usp.br</u>.



Route	origin ¹	Destination	Distance	Share	Freight price (US\$/mt/100 miles)⁴					
#	(reference city)	Destination	(miles) ²	(%) ³	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	
24	Northeast MT (Canarana)	Paranaguá	1,075	2.2	6.42	7.66	7.71	6.90	7.17	
25	Western Central RS (Tupanciretã)	Rio Grande	273	1.4	8.51	9.92	9.06	8.49	8.99	
26	Southwest PR(Chopinzinho)	Paranaguá	291	1.8	7.70	10.19	9.76	8.70	9.09	
27	North MT (Sorriso)	Itaituba	672	5.8	6.99	7.84	7.81	6.81	7.36	
28	North MT (Sorriso)	Porto Velho	632	6.1	6.43	7.62	7.16	6.54	6.94	
29	North MT (Sorriso)	Santarém	876	4.4	6.11	7.40	7.21	6.35	6.77	
30	South MA (Balsas)	São Luís	482	2.1	7.95	9.69	9.23	7.04	8.48	
31	Southwest PI (Bom Jesus)	São Luís	606	2.4	6.33	8.46	7.81	6.66	7.32	
32	Southeast PA (Paragominas)	Barcarena	249	1.6	8.42	9.77	9.57	8.46	9.05	
33	East TO (Campos Lindos)	São Luís	842	1.4	6.05	7.32	7.12	6.43	6.73	
	Weighted average		587	100.0	7.43	8.90	8.57	7.69	8.15	
34	North MT (Sorriso)	Rondonópolis (Rail terminal)	382		7.31	9.12	8.50	8.04	8.24	
35	Rondonópolis MT (Rail terminal) ⁶	Santos	1,019		3.70	4.47	4.57	4.66	4.35	
36	Itaituba PA (Barge terminal) ⁷	Santarém	153		4.95	6.63	6.00	5.62	5.80	
37	Itaituba PA (Barge terminal) ⁷	Barcarena	600		2.71	3.32	3.24	2.94	3.05	
38	South GO (Rio Verde)	Santos	546		4.97	6.59	6.00	5.68	5.81	

¹The main city in the region is considered as a reference to establish the freight price.

²Distance from the main city of the considered region to the mentioned ports.

³Share is measured as a percentage of total production.

⁴Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to the U.S. dollars.

⁵RS=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.

⁶In Brazil, there are no published 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.

⁷In Brazil, there are no published 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.



Table 8. Monthly Brazilian soybean export truck transportation cost index

D.f. and b	Freight price	Index variation (%)	Index value	Month	Freight price	Index variation (%)	Index value
wonth	(US\$/mt/100 miles)	(Base: prior month)	(Base: Jan-05=100)	wonth	(US\$/mt/100 miles)	(Base: prior month)	(Base: Jan-05=100)
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	Apr-21	6.20	-10.5	106.96
May-17	8.75	-8.0	150.90	May-21	5.76	-7.2	99.22
Jun-17	8.18	-6.5	141.04	Jun-21	5.87	2.0	101.22
Jul-17	8.74	6.8	150.66	Jul-21	5.09	-13.4	87.70
Aug-17	9.85	12.7	169.76	Aug-21	5.09	0.1	87.81
Sep-17	8.97	-9.0	154.55	Sep-21	5.31	4.2	91.53
Oct-17	8.64	-3.6	148.93	Oct-21	4.49	-15.5	77.36
Nov-17	8.36	-3.2	144.11	Nov-21	4.28	-4.6	73.80
Dec-17	7.23	-13.5	124.63	Dec-21	4.54	6.0	78.26
Jan-18	7.59	5.0	130.90	Jan-22	5.94	30.9	102.42
Feb-18	8.65	13.9	149.04	Feb-22	7.77	30.8	134.02
Mar-18	10.59	22.5	182.61	Mar-22	8.59	10.4	147.99
Apr-18	9.78	-7.7	168.59	Apr-22	8.83	2.9	152.27
May-18	8.96	-8.4	154.45	May-22	9.05	2.4	155.94
Jun-18	8.89	-0.8	153.24	Jun-22	8.83	-2.4	152.18
Jul-18	8.97	0.9	154.58	Jul-22	8.98	1.7	154.78
Aug-18	8.24	-8.1	142.00	Aug-22	8.79	-2.1	151.51
Sep-18	7.24	-12.1	124.78	Sep-22	7.93	-9.8	136.68
Oct-18	7.69	6.2	132.55	Oct-22	7.71	-2.7	132.98
Nov-18	7.51	-2.3	129.44	Nov-22	7.42	-3.9	127.84
Dec-18	7.19	-4.3	123.87	Dec-22	7.94	7.1	136.89

*Weighted average is calculated from production-based shares to weigh high-volume routes more heavily than low-volume routes. The share associated with each route is used to define the weight of a given route's freight price in the composition of the monthly weighted export truck freight index.



Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2020-22



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" (ESALQ/USP), Brazil, and USDA, Agricultural Marketing Service.



Figure 4. Truck rates for selected north, south, and northeastern Brazilian soybean export transportation routes, 2020-22

Note: mt = metric ton. MT= Mato Grosso and MA = Maranhão.



Figure 5. Brazilian soybean export truck transportation weighted average prices, 2019-22



Note: mt = metric ton.



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

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
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	42.70	54.00	52.50
Paranaguá	Germany (Hamburg)	31.00	41.90	53.00	51.50
Rio Grande	Germany (Hamburg)	32.00	43.80	55.50	53.80
Santarém	Germany (Hamburg)	28.65	40.00	50.60	49.10
São Luís	Germany (Hamburg)	33.25	45.90	58.00	56.30
Barcarena	Germany (Hamburg)	28.10	38.90	49.20	47.80
Santos	China (Shanghai)	37.00	50.60	64.00	62.00
Paranagua	China (Shanghai)	38.75	52.40	66.00	64.00
Rio Grande	China (Shanghai)	37.25	51.00	64.75	62.75
Santarém	China (Shanghai)	40.54	55.60	67.50	65.60
São Luís	China (Shanghai)	41.00	56.60	68.00	66.00
Barcarena	China (Shanghai)	42.00	58.20	70.00	68.00
Port	Destination	1st qtr. 2022	2nd qtr. 2022	3rd qtr. 2022	4th qtr. 2022
Santos	Germany (Hamburg)	52.70	55.85	42.60	42.20
Paranaguá	Germany (Hamburg)	51.50	54.60	41.60	41.20
Rio Grande	Germany (Hamburg)	54.00	57.20	43.60	43.10
Santarém	Germany (Hamburg)	49.10	52.00	46.00	39.60
São Luís	Germany (Hamburg)	56.50	60.00	40.00	39.80
Barcarena	Germany (Hamburg)	48.00	50.80	39.70	39.20
Santos	China (Shanghai)	62.00	65.75	48.70	47.70
Paranagua	China (Shanghai)	64.00	67.75	49.00	48.60
Rio Grande	China (Shanghai)	62.75	66.50	49.00	48.40
Santarém	China (Shanghai)	66.00	69.90	56.00	54.80
São Luís	China (Shanghai)	66.20	70.00	56.00	55.00
Barcarena	China (Shanghai)	68.00	72.00	55.40	55.50

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

Note: qtr. = quarter.



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Data Sets (XLS files):

- Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2020-22
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