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Brazil Soybean Transportation

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2023 Overview
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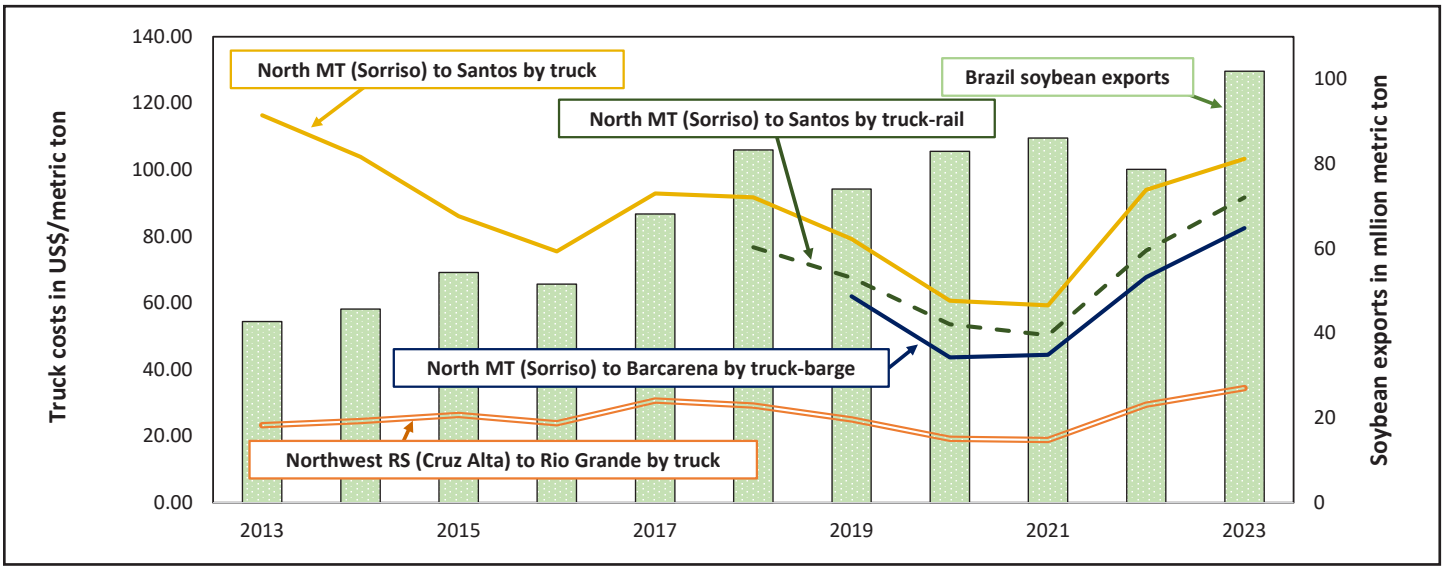
Overview of Brazilian Soybean Transportation in 2023

In 2023, Brazil's soybean exports reached a record high of nearly 102 million metric tons (mmt)— 29 percent more than 2022's total of 78.7 mmt (fig 1a) (Comex Stat, MDIC).[1] From 2022 to 2023, Brazil's soybean transportation costs decreased, reflecting a significant drop in ocean rates.

Figure 1a. Increases of export and inland transport costs—trucking, barge, and rail—for selected Brazilian export routes, 2013-23



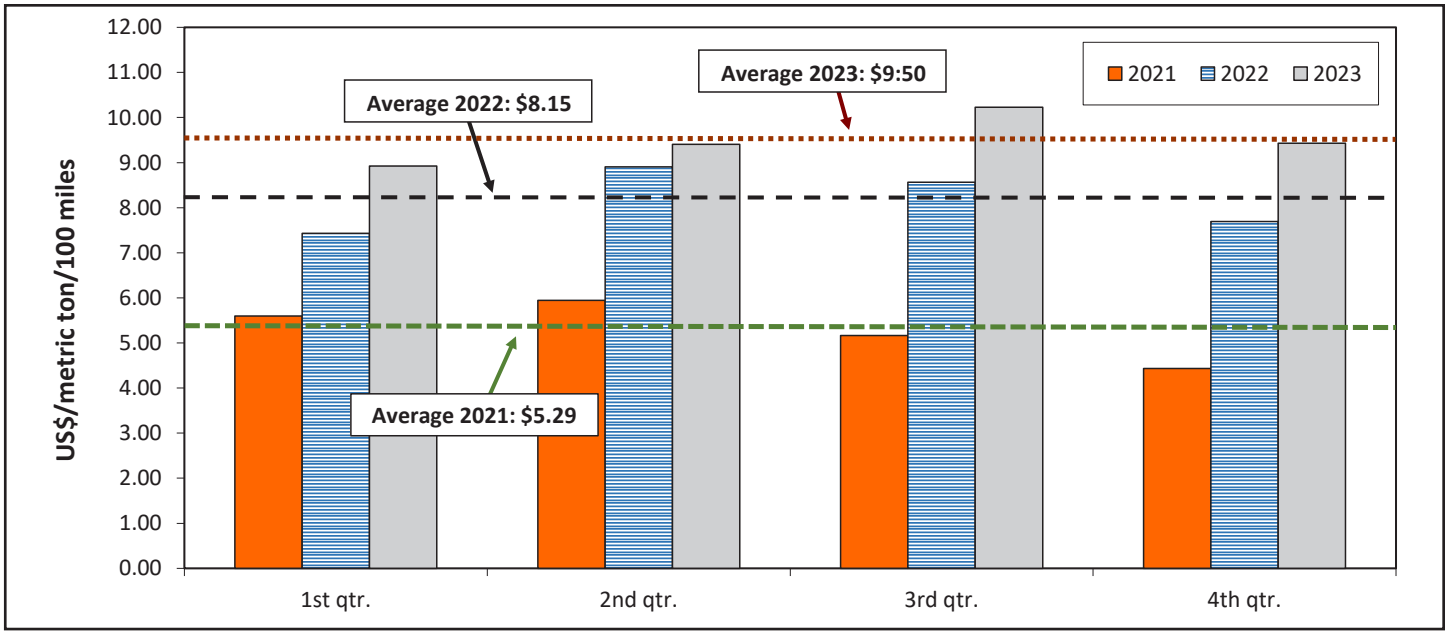
Note: MT = Mato Grosso and RG = Rio Grande do Sul. Data from North MT to Barcarena by barge from 2013 to 2018 and to Santos by rail from from 2013-2017 are not available.
Source: Comex Stat, Ministério da Indústria, Comércio Exterior e Serviços (MDIC), University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Ocean and inland freight rates. The drop in ocean rates more than offset the rise in inland rates (for trucking, barge, and rail) that was driven by strong export demand, especially from April to December (tables 1a, 1b, 2a, 2b, and 9).[2] The cost of shipping a metric ton (mt) of soybeans 100 miles by truck rose nearly 17 percent—from $8.15 per mt to $9.50 per mt (fig 1b). Although fuel prices declined from 2022 to 2023, they remained higher than in 2021. Fuel prices represent over one quarter of the Brazilian soybean export truck index.

Ocean freight rates fell in 2023 because of slowing global trade volumes, easing of global supply chain disruptions, and rising vessel supply that boosted capacity for Brazil soybean exports (*Grain Transportation Report (GTR), October 26, 2023*, and February 1, 2024). On average, ocean rates from selected Brazilian export routes to

1 In this report, the source of Brazil export data is the Comex Stat, Ministério do Desenvolvimento, Indústria, Comércio e Serviços (MDIC).
2 In this report, all described changes are from 2022 to 2023, except where otherwise noted.

Figure 1b. Brazilian soybean export truck cost index, 2021-23



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

Hamburg, Germany, fell 26-33 percent and, to Shanghai, China, fell 36-37 percent (tables 1a, 1b, 2a, 2b, and 9).[3] For selected Brazilian export routes to China, total landed costs decreased as both farm prices and transportation costs declined (tables 1a and 1b).

Farm gate prices and appreciation of Brazilian real. From 2022 to 2023, average Brazilian soybean export prices fell about 12 percent, from $591 per mt to $523 per mt. From record highs in 2022, Brazil's average farm gate prices for soybeans plunged 20 percent in U.S. dollars (to the lowest levels since late 2020)—because of abundant local soybean supplies.

Measured in U.S. dollars, soybean farm gate prices declined from $556.38/mt to $444.09/mt—and in reais, from R$2,865.04/mt to R$2,221.45/mt (CONAB). The price drop was a significant blow to farmers' revenue, despite the real's appreciation against the U.S. dollar.[4] The Brazilian real (R$) appreciated 3 percent against the U.S. dollar, from R$5.16 per US$ in 2022 to R$4.99 in 2023 (Brazil Central Bank).

Brazilian port shares of soybean exports to China. In 2023, Brazil exported a record 74.5 mmt of soybeans to China, valued at $38.9 billion. That volume was 39 percent more than 2022's soybean total (53.6 mmt) and accounted for 73 percent of Brazil's total soybean exports (101.9 mmt). The next highest shares of Brazil's soybean exports (in declining order) went to Argentina, Spain, Thailand, Turkey, and Iran.

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 2023, the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 30 percent of soybean exports to China. The Amazon River port of Manaus exported a small amount of soybeans to China. In 2023, the ocean freight spread between the Shanghai routes from the northeastern port of São Luís ($39.88/mt) and the port of Santos ($35.18/mt) was $4.70/mt (table 9).[5] For more information, contact Delmy L. Salin at delmy.salin@usda.gov.

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

4 Soybeans are priced in U.S. dollars, but farmers are paid in reais.

5 Ocean freight spread is the cost difference between two vessel routes to the same destination (Salin 2020).

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Table 1a. Costs of transporting Brazilian soybeans from the southern ports to Shanghai, China

	North MT[1] - Santos[2] by truck			Northwest RS[1] - Rio Grande[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	93.98	103.31	9.9	29.45	34.44	17.0
Ocean	56.04	35.18	-37.2	56.99	35.93	-37.0
Total transportation	150.02	138.48	-7.7	86.43	70.37	-18.6
Farm gate price[3]	536.97	415.95	-22.5	579.79	472.57	-18.5
Landed cost	686.98	554.44	-19.3	666.23	542.93	-18.5
Transport % of landed cost	21.8	25.1	14.9	12.9	13.0	0.6
	North MT[1] - Santos[2] by rail			North MT[1] - Paranaguá[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	31.47	36.92	17.3	93.11	102.07	9.6
Rail[4]	44.31	54.79	23.6	-	-	-
Ocean	56.04	35.18	-37.2	57.34	36.18	-36.9
Total transportation	131.82	126.88	-3.7	150.44	138.25	-8.1
Farm gate price[3]	536.97	415.95	-22.5	536.97	415.95	-22.5
Landed cost	668.79	542.83	-18.8	687.41	554.20	-19.4
Transport % of landed cost	19.7	23.5	19.1	21.9	25.0	14.5

[1]Producing regions: MT= Mato Grosso and RS = Rio Grande do Sul.
[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 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.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

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

	North MT[1] - Santarém[2]			South MA[1] - São Luís[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	59.30	67.70	14.2	40.83	43.61	6.8
Ocean	61.68	39.33	-36.2	61.80	39.88	-35.5
Total transportation	120.98	107.02	-11.5	102.63	83.49	-18.7
Farm gate price[3]	536.97	415.95	-22.5	558.13	445.89	-20.1
Landed cost	657.95	522.98	-20.5	660.76	529.38	-19.9
Transport % of landed cost	18.4	20.6	11.9	15.5	15.9	2.3
	Southwest PI[1] - São Luís[2]			North MT[1] - Barcarena[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	44.32	48.59	9.6	49.44	56.13	13.5
Barge[4]	-	-	-	18.32	26.38	44.0
Ocean	61.80	39.88	-35.5	62.73	40.06	-36.1
Total transportation	106.12	88.47	-16.6	130.49	122.57	-6.1
Farm gate price[3]	542.19	444.76	-18.0	536.97	415.95	-22.5
Landed cost	648.31	533.22	-17.8	667.45	538.52	-19.3
Transport % of landed cost	16.3	16.7	2.0	19.5	22.9	17.1

[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 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.
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. Costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany

	North MT[1] - Santos[2] by truck			Northwest RS[1] - Rio Grande[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	93.98	103.31	9.9	29.45	34.44	17.0
Ocean	48.34	33.21	-31.3	49.48	34.13	-31.0
Total transportation	142.32	136.52	-4.1	78.92	68.57	-13.1
Farm gate price[3]	536.97	415.95	-22.5	579.79	472.57	-18.5
Landed cost	679.28	552.47	-18.7	658.71	541.13	-17.9
Transport % of landed cost	20.9	24.8	18.5	12.0	12.7	6.4
	North MT[1] - Santos[2] by rail			North MT[1] - Paranaguá[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	31.47	36.92	17.3	93.11	102.07	9.6
Rail[4]	44.31	54.79	23.6	-	-	-
Ocean	48.34	33.21	-31.3	47.23	32.45	-31.3
Total transportation	124.12	124.92	0.6	140.33	134.52	-4.1
Farm gate price[3]	536.97	415.95	-22.5	536.97	415.95	-22.5
Landed cost	661.09	540.87	-18.2	677.30	550.48	-18.7
Transport % of landed cost	18.8	22.0	17.0	20.7	23.6	13.8

[1]Producing regions: MT= Mato Grosso and RS = Rio Grande Do Sul.
[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 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.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

Brazil Soybean Transportation

Table 2b. Costs of transporting Brazilian soybeans from the northern and northeastern ports to Hamburg, Germany

	North MT[1] - Santarém[2]			South MA[1] - São Luís[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	59.30	67.70	14.2	40.83	43.61	6.8
Ocean	46.68	31.38	-32.8	49.08	36.25	-26.1
Total transportation	105.98	99.07	-6.5	89.90	79.86	-11.2
Farm gate price[3]	536.97	415.95	-22.5	558.13	445.89	-20.1
Landed cost	642.95	515.03	-19.9	648.04	525.75	-18.9
Transport % of landed cost	16.5	19.3	17.4	13.8	15.3	10.5
	Southwest PI[1] - São Luís[2]			North MT[1] - Barcarena[2]		
	—US$/mt—		% Change	—US$/mt—		% Change
	2022	2023	2022-23	2022	2023	2022-23
Truck	44.32	48.59	9.6	49.44	56.13	13.5
Barge[4]	-	-	-	18.32	26.38	44.0
Ocean	49.08	36.25	-26.1	44.43	30.85	-30.6
Total transportation	93.39	84.84	-9.2	112.19	113.35	1.0
Farm gate price[3]	542.19	444.76	-18.0	536.97	415.95	-22.5
Landed cost	635.58	529.60	-16.7	649.15	529.31	-18.5
Transport % of landed cost	14.6	16.1	9.9	17.3	21.5	24.6

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

[2]Export port.

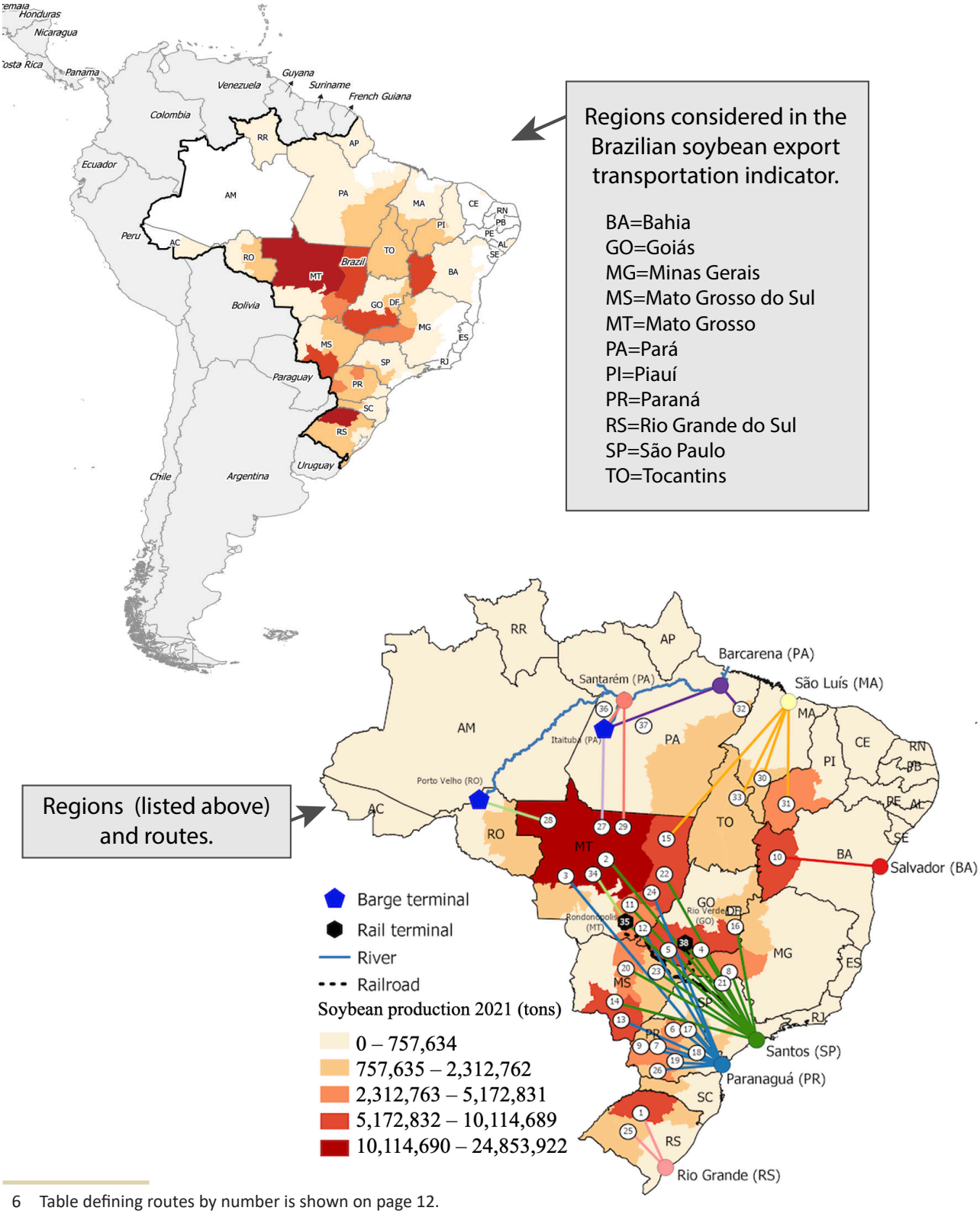
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no 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.

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

Figure 2. Routes[6] and regions considered in the Brazilian soybean export transportation indicator[7]



6 Table defining routes by number is shown on page 12.

7 Regions comprised about 79 percent of Brazilian soybean production, 2021 (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.

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Table 3. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China, 2023

	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	96.25	100.36	113.56	103.06	103.31	95.66	98.90	112.54	101.19	102.07
Ocean	33.50	35.20	37.00	35.00	35.18	35.00	36.70	37.50	35.50	36.18
Total transportation	129.75	135.56	150.56	138.06	138.48	130.66	135.60	150.04	136.69	138.25
Farm gate price[3]	472.04	384.93	399.94	406.91	415.95	472.04	384.93	399.94	406.91	415.95
Landed cost	601.78	520.49	550.51	544.97	554.44	602.70	520.53	549.99	543.60	554.20
Transport % of landed cost	21.6	26.0	27.4	25.3	25.1	21.7	26.1	27.3	25.1	25.0
	North MT[1] - Santos[2] by rail —US$/mt—					Northwest RS[1] - Rio Grande[2] —US$/mt—				
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
Truck	34.85	35.89	40.22	36.72	36.92	33.02	33.70	35.89	35.16	34.44
Rail[4]	49.62	54.47	58.44	56.61	54.78	-	-	-	-	-
Ocean	33.50	35.20	37.00	35.00	35.18	34.00	35.70	38.50	35.50	35.93
Total transportation	117.97	125.56	135.66	128.33	126.88	67.02	69.40	74.39	70.66	70.37
Farm gate price[3]	472.04	384.93	399.94	406.91	415.95	525.80	437.80	469.48	457.20	472.57
Landed cost	590.00	510.49	535.60	535.24	542.83	592.81	507.20	543.87	527.85	542.93
Transport % of landed cost	20.0	24.6	25.3	24.0	23.5	11.3	13.7	13.7	13.4	13.0

[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 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.
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 4. Quarterly costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany, 2023

	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	96.25	100.36	113.56	103.06	103.31	95.66	98.90	112.54	101.19	102.07
Ocean	31.65	33.20	35.00	33.00	33.21	31.00	32.50	34.20	32.10	32.45
Total transportation	127.90	133.56	148.56	136.06	136.52	126.66	131.40	146.74	133.29	134.52
Farm gate price[3]	472.04	384.93	399.94	406.91	415.95	472.04	384.93	399.94	406.91	415.95
Landed cost	599.93	518.49	548.51	542.97	552.47	598.70	516.33	546.69	540.20	550.48
Transport % of landed cost	21.3	25.8	27.1	25.1	24.8	21.2	21.6	26.8	24.7	23.6
	North MT[1] - Santos[2] by rail —US$/mt—					Northwest RS[1] - Rio Grande[2] —US$/mt—				
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
Truck	34.85	35.89	40.22	36.72	36.92	33.02	33.70	35.89	35.16	34.44
Rail[4]	49.62	54.47	58.44	56.61	54.78	-	-	-	-	-
Ocean	31.65	33.20	35.00	33.00	33.21	32.50	34.20	36.00	33.80	34.13
Total transportation	116.12	123.56	133.66	126.33	124.92	65.52	67.90	71.89	68.96	68.57
Farm gate price[3]	472.04	384.93	399.94	406.91	415.95	525.80	437.80	469.48	457.20	472.57
Landed cost	588.15	508.49	533.60	533.24	540.87	591.31	505.70	541.37	526.15	541.13
Transport % of landed cost	19.7	19.4	25.0	23.7	22.0	11.1	13.4	13.3	13.1	12.7

[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 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.
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 5. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China, 2023

	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	62.23	68.56	73.96	66.05	67.70	41.03	41.07	48.72	43.63	43.61
Ocean	37.50	39.40	41.40	39.00	39.33	38.00	40.00	42.00	39.50	39.88
Total transportation	99.73	107.96	115.36	105.05	107.02	79.03	81.07	90.72	83.13	83.49
Farm gate price[3]	472.04	384.93	399.94	406.91	415.95	508.13	420.39	428.33	426.71	445.89
Landed cost	571.76	492.89	515.30	511.96	522.98	587.16	501.46	519.05	509.84	529.38
Transport % of landed cost	17.4	21.9	22.4	20.5	20.6	13.5	16.2	17.5	16.3	15.9
	Southwest PI[1] - São Luís[2] —US$/mt—					North MT[1] - Barcarena[2] —US$/mt—				
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
Truck	46.93	46.41	52.28	48.74	48.59	53.34	58.45	61.36	51.36	56.13
Barge[4]	-	-	-	-	-	21.24	27.47	30.47	26.33	26.38
Ocean	38.00	40.00	42.00	39.50	39.88	38.25	40.20	42.20	39.60	40.06
Total transportation	84.93	86.41	94.28	88.24	88.47	112.83	126.12	134.03	117.29	122.57
Farm gate price[3]	499.05	406.67	432.42	440.89	444.76	472.04	384.93	399.94	406.91	415.95
Landed cost	583.97	493.08	526.70	529.13	533.22	584.86	511.05	533.97	524.19	538.52
Transport % of landed cost	14.5	17.5	17.9	16.7	16.7	19.3	24.7	25.1	22.4	22.9

[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 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.
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, 2023

	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	62.23	68.56	73.96	66.05	67.70	41.03	41.07	48.72	43.63	43.61
Ocean	30.00	31.50	33.00	31.00	31.38	34.50	36.30	38.20	36.00	36.25
Total transportation	92.23	100.06	106.96	97.05	99.07	75.53	77.37	86.92	79.63	79.86
Farm gate price[3]	472.04	384.93	399.94	406.91	415.95	508.13	420.39	428.33	426.71	445.89
Landed cost	564.26	484.99	506.90	503.96	515.03	583.66	497.76	515.25	506.34	525.75
Transport % of landed cost	16.3	20.6	21.1	19.3	19.3	12.9	15.5	16.9	15.7	15.3
	Southwest PI[1] - São Luís[2] —US$/mt—					North MT[1] - Barcarena[2] —US$/mt—				
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
Truck	46.93	46.41	52.28	48.74	48.59	53.34	58.45	61.36	51.36	56.13
Barge[4]	-	-	-	-	-	21.24	27.47	30.47	26.33	26.38
Ocean	34.50	36.30	38.20	36.00	36.25	29.40	31.00	32.50	30.50	30.85
Total transportation	81.43	82.71	90.48	84.74	84.84	103.98	116.92	124.33	108.19	113.35
Farm gate price[3]	499.05	406.67	432.42	440.89	444.76	472.04	384.93	399.94	406.91	415.95
Landed cost	580.47	489.38	522.90	525.63	529.60	576.01	501.85	524.27	515.09	529.31
Transport % of landed cost	14.0	16.9	17.3	16.1	16.1	18.1	23.3	23.7	21.0	21.5

[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 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.
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, 2023

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	10.2	11.46	11.70	12.46	12.21	11.96
2	North MT (Sorriso)	Santos	1,190	2.9	8.09	8.43	9.54	8.66	8.68
3	North MT (Sorriso)	Paranaguá	1,262	2.7	7.58	7.84	8.92	8.02	8.09
4	South GO (Rio Verde)	Santos	587	5.0	7.77	8.38	9.25	8.42	8.46
5	South GO (Rio Verde)	Paranaguá	726	4.0	7.96	8.19	9.32	8.48	8.49
6	North Central PR (Londrina)	Paranaguá	268	2.8	11.40	11.96	13.09	12.33	12.20
7	Western Central PR (Mamborê)	Paranaguá	311	2.2	10.59	10.82	12.16	11.43	11.25
8	Triangle MG (Uberaba)	Santos	339	3.3	10.77	11.57	12.66	11.63	11.66
9	West PR (Assis Chateaubriand)	Paranaguá	377	3.1	9.50	9.73	10.93	10.21	10.09
10	West Extreme BA (São Desidério)	Salvador	535	6.4	8.61	9.39	9.99	9.34	9.33
11	Southeast MT (Primavera do Leste)	Santos	901	2.4	7.37	7.92	8.98	8.46	8.18
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.2	7.17	7.52	8.51	7.74	7.74
13	Southwest MS (Maracaju)	Paranaguá	612	3.7	8.47	9.02	9.90	8.81	9.05
14	Southwest MS (Maracaju)	Santos	652	3.5	8.46	9.16	9.39	8.98	9.00
15	Northeast MT (Canarana)	São Luís	1,177	2.0	6.96	7.31	8.37	7.39	7.51
16	East GO (Cristalina)	Santos	585	2.0	8.98	9.58	10.54	9.64	9.68
17	North PR (Cornélio Procópio)	Paranaguá	306	1.7	9.28	9.68	10.58	10.05	9.90
18	Eastern Central PR (Castro)	Paranaguá	130	1.8	14.81	16.09	16.53	16.56	16.00
19	South Central PR (Guarapuava)	Paranaguá	204	2.2	13.16	14.28	15.61	14.91	14.49
20	North Central MS (São Gabriel do Oeste)	Santos	720	2.7	7.26	8.02	8.80	8.03	8.03
21	Ribeirão Preto SP (Guairá)	Santos	314	0.4	9.15	9.43	10.34	9.82	9.68
22	Northeast MT (Canarana)	Santos	950	2.4	7.87	8.46	9.02	8.12	8.37
23	East MS (Chapadão do Sul)	Santos	607	1.4	7.23	7.76	8.62	7.81	7.85

[1]The main city in the regions is considered as a reference to establish the freight price.
[2]Distance from the main city of the considered region to the mentioned ports.
[3]Share of exports in total production (percentage).
[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 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.
[7]In 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.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/ USP) and USDA, Agricultural Marketing Service.

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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	2.1	7.41	7.78	8.75	7.80	7.93
25	Western Central RS (Tupanciretã)	Rio Grande	273	2.7	10.01	10.58	10.81	11.14	10.63
26	Southwest PR(Chopinzinho)	Paranaguá	291	1.6	10.33	10.98	11.94	11.36	11.15
27	North MT (Sorriso)	Itaituba	672	5.2	7.94	8.70	9.13	7.65	8.36
28	North MT (Sorriso)	Porto Velho	632	5.5	7.46	7.75	8.47	7.69	7.84
29	North MT (Sorriso)	Santarém	876	4.0	7.10	7.82	8.44	7.54	7.73
30	South MA (Balsas)	São Luís	482	2.0	8.52	8.53	10.12	9.06	9.06
31	Southwest PI (Bom Jesus)	São Luís	606	2.5	7.75	7.66	8.63	8.05	8.02
32	Southeast PA (Paragominas)	Barcarena	249	1.6	10.50	10.16	9.56	12.36	10.64
33	East TO (Campos Lindos)	São Luís	842	1.8	7.06	7.26	8.13	7.46	7.48
	Weighted average		**587**	**100.0**	**8.92**	**9.41**	**10.23**	**9.43**	**9.50**
34	North MT (Sorriso)	Rondonópolis (Rail terminal)	382		9.12	9.39	10.53	9.61	9.67
35	Rondonópolis MT (Rail terminal)[6]	Santos	1,019		4.87	5.35	5.73	5.56	5.38
36	Itaituba PA (Barge terminal)[7]	Santarém	153		7.93	5.39	5.46	5.43	6.05
37	Itaituba PA (Barge terminal)[7]	Barcarena	600		3.54	4.58	5.08	4.39	4.40
38	South GO (Rio Verde) (Rail terminal)[6]	Santos	546		5.96	6.72	7.39	6.97	6.76

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

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

[3]Share of exports in total production (percentage).

[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 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.

[7]In 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.

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

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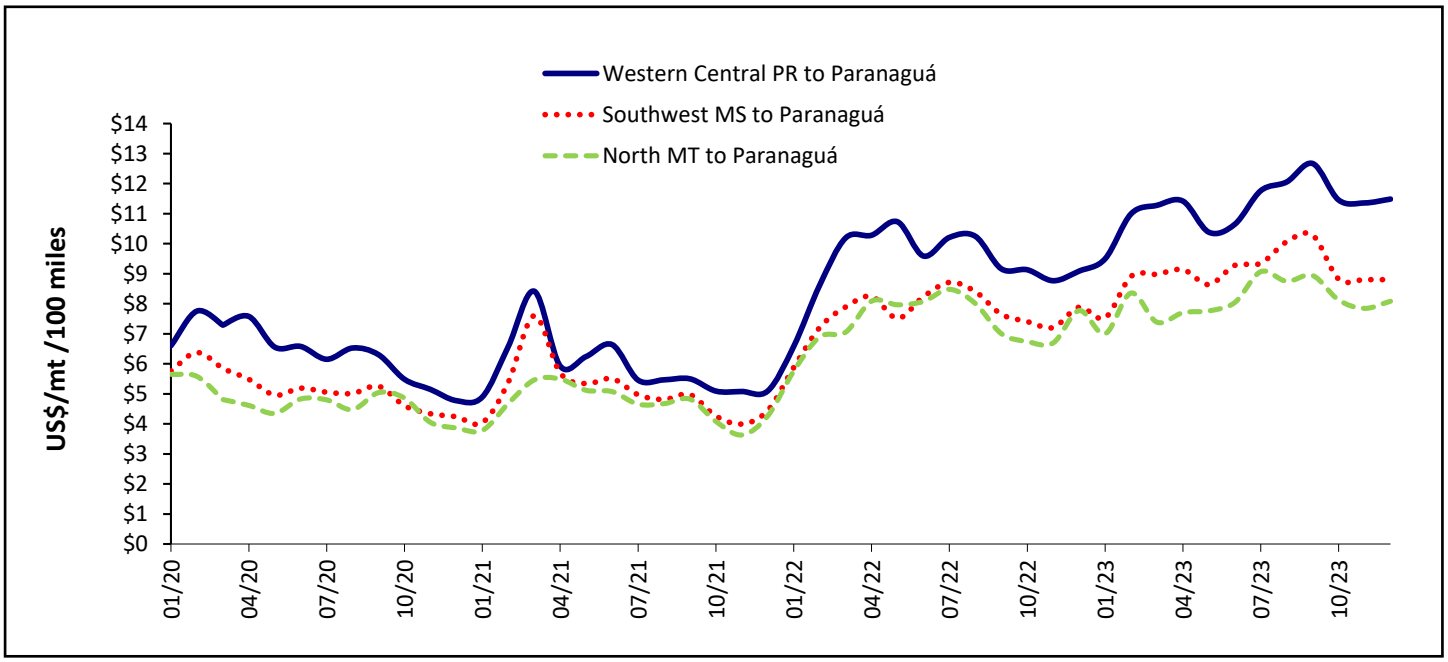
Table 8. Monthly Brazilian soybean export truck transportation cost index

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-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
Jan-19	7.72	7.5	133.13	Jan-23	7.97	0.4	137.38
Feb-19	8.19	6.0	141.15	Feb-23	9.41	18.1	162.28
Mar-19	7.34	-10.3	126.61	Mar-23	9.39	-0.3	161.87
Apr-19	7.16	-2.6	123.35	Apr-23	9.57	1.9	164.91
May-19	6.73	-5.9	116.02	May-23	9.27	-3.1	159.82
Jun-19	6.94	3.1	119.56	Jun-23	9.38	1.1	161.64
Jul-19	8.33	20.1	143.60	Jul-23	10.09	7.6	173.97
Aug-19	7.85	-5.8	135.23	Aug-23	10.09	0.0	173.94
Sep-19	7.09	-9.7	122.17	Sep-23	10.50	4.1	181.01
Oct-19	6.57	-7.4	113.19	Oct-23	9.38	-10.7	161.66
Nov-19	6.41	-2.3	110.54	Nov-23	9.36	-0.2	161.31
Dec-19	5.93	-7.5	102.21	Dec-23	9.55	2.0	164.60

*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.

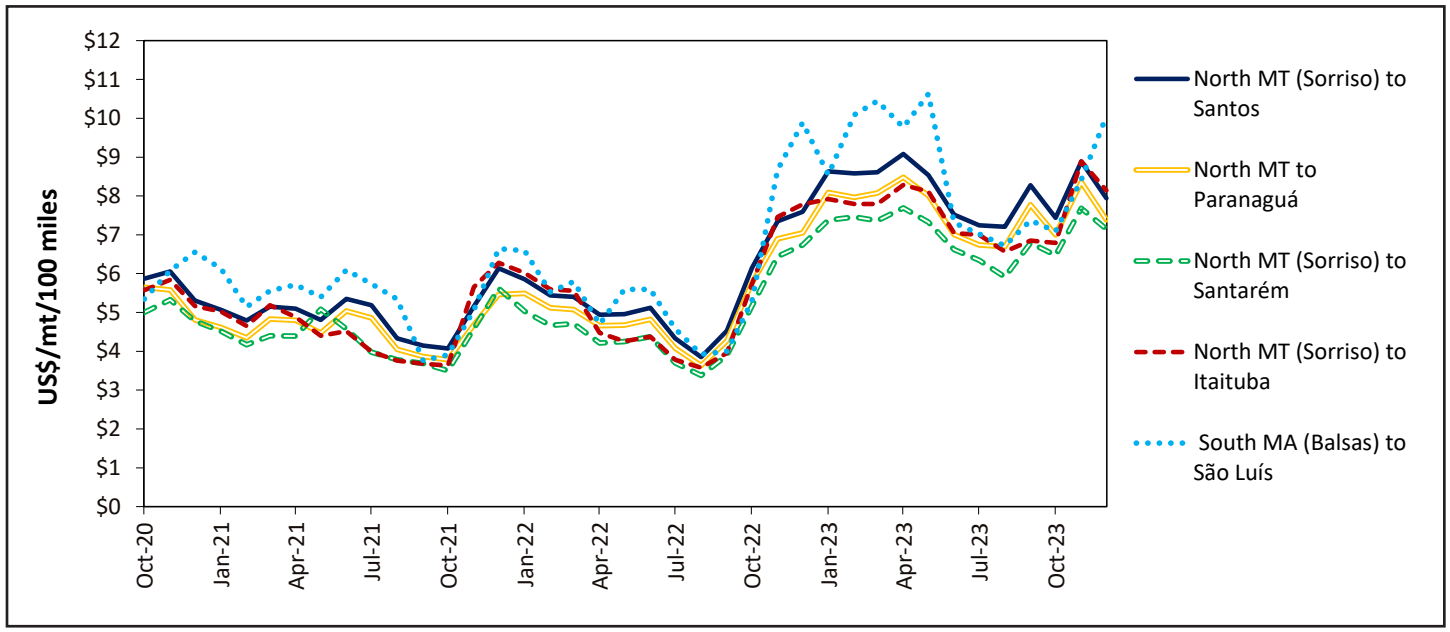
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2020-23



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, 2020-23



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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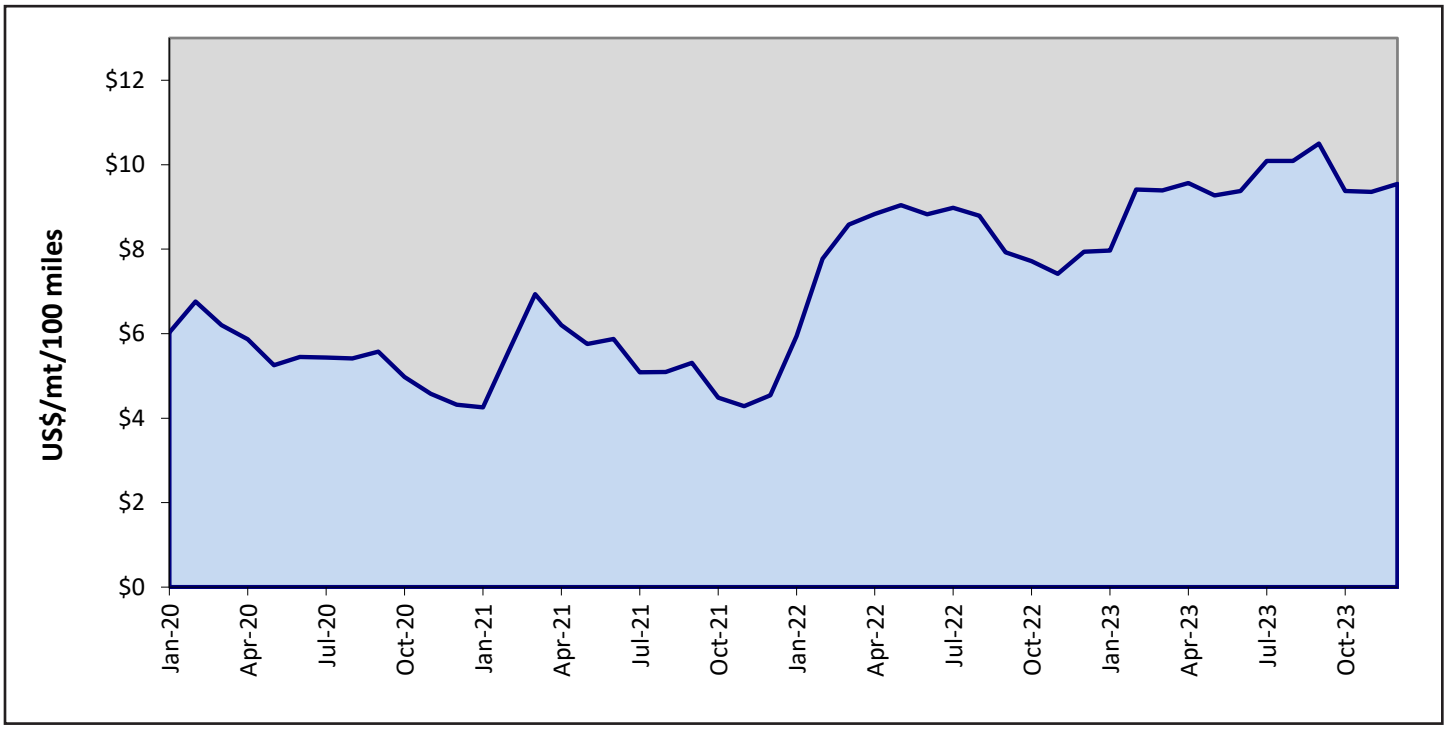
Figure 5. Brazilian soybean export truck transportation weighted average prices, 2020-23



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. 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

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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
Port	**Destination**	**1st qtr. 2023**	**2nd qtr. 2023**	**3rd qtr. 2023**	**4th qtr. 2023**
Santos	Germany (Hamburg)	31.65	33.20	35.00	33.00
Paranaguá	Germany (Hamburg)	31.00	32.50	34.20	32.10
Rio Grande	Germany (Hamburg)	32.50	34.20	36.00	33.80
Santarém	Germany (Hamburg)	30.00	31.50	33.00	31.00
São Luís	Germany (Hamburg)	34.50	36.30	38.20	36.00
Barcarena	Germany (Hamburg)	29.40	31.00	32.50	30.50
Santos	China (Shanghai)	33.50	35.20	37.00	35.00
Paranagua	China (Shanghai)	35.00	36.70	37.50	35.50
Rio Grande	China (Shanghai)	34.00	35.70	38.50	35.50
Santarém	China (Shanghai)	37.50	39.40	41.40	39.00
São Luís	China (Shanghai)	38.00	40.00	42.00	39.50
Barcarena	China (Shanghai)	38.25	40.20	42.20	39.60

*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, 2020-23
- Figure 4. Truck rates for selected north, south, and northeastern Brazilian soybean export transportation routes, 2020-23
- Figure 5. Brazilian soybean export truck transportation weighted average prices, 2020-23
- Table 1a. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China
- Table 1b. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China
- Table 2a. Quarterly costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany
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- Table 3. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China, 2023
- Table 4. Quarterly costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany, 2023
- Table 5. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China, 2023
- Table 6. Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Hamburg, Germany, 2023
- Table 7. Quarterly truck rates for selected Brazilian soybean export transportation routes, 2023
- Table 8. Monthly Brazilian soybean export truck transportation cost index
- Table 9. Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Germany and China (US$/metric ton)

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- Soybean Transportation Guide
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