A quarterly publication of the Agricultural Marketing Service <u>www.ams.usda.gov/services/transportation-analysis</u>

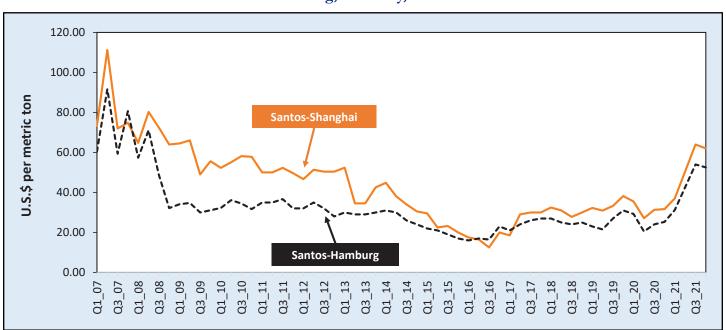


2021 Overview Published February 2022

Overview of Brazilian Soybean Transportation in 2021

In 2021, Brazil exported 86.0 million metric tons (mmt) of soybeans, 4 percent more than 2020's total of 82.9 mmt—an increase that also raised transportation demand (Comex Stat, Ministério da Economia).¹ From 2020 to 2021, the rise in Brazil's soybean transportation costs reflected a significant rise in ocean rates (fig. 1 and tables 1, 1a, 2, 2a, and 9).² Ocean rates to Shanghai, China, rose 64-76 percent (from all ports) and doubled from the northern ports to Hamburg, Germany. The 2021 ocean rates were the highest levels seen since the second quarters of 2007 and 2008. The 2020-21 increases were due to strong demand for shipping bulk items. The increases also resulted from tight vessel supply caused by congestion and other pandemic-related logistic inefficiencies (Grain Transportation Report, January 20, 2021). The cost of shipping a metric ton (mt) of soybeans 100 miles by truck decreased from \$5.49 per mt in 2020 to \$5.29 per mt in 2021 (fig. 1a and table 8). This nearly 4-percent drop was mostly due to the Brazilian real's (R\$) depreciation against the U.S. dollar—5 percent from 2020 to 2021, from R\$5.15 per U.S. dollar to R\$5.40 per U.S. dollar (Brazil Central Bank). In selected routes (except from Paranaguá) of shipping Brazilian soybeans to China, total transportation costs as a percentage of total landed costs declined as rising farm prices more than exceeded the increase in total transportation costs (tables 1 and 1a).





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

² In this report, all described changes are from 2020 to 2021, except where otherwise noted.



10.00 Average 2020: \$5.49 Average 2021: \$5.29 Average 2019: \$7.19 9.00 **2019** US\$/metric ton/100 miles 8.00 **2020** 7.00 **2021** 6.00 5.00 4.00 3.00 2.00 1.00 0.00 2nd qtr. 3rd qtr. 4th qtr. 1st qtr.

Figure 1a. Brazilian soybean export truck cost index, 2019-21

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

Average Brazilian soybean export prices increased 30 percent, from \$344 per mt to \$449 per mt. Brazilian farmers have benefited from the real's depreciation against the U.S. dollar, because exported soybeans are priced in U.S. dollars, but producers are paid in reais. Measured in U.S. dollars, average soybean farm gate prices increased 40 percent, from \$346.55/mt to \$485.13/mt. The depreciation of the real also led to higher domestic prices. On average, in reais, farm gate prices increased 46 percent, from R\$1,796.88/mt to R\$2,617.15 (Companhia Nacional de Abastecimento). Typically, Brazilian soybean exports peak in May and decline through the end of the year.

In 2021, Brazil exported 60.5 mmt of soybeans to China, valued at \$27.2 billion, slightly less than 2020's total (60.6 mmt), accounting for 70 percent of Brazil's total exports (86.1 mmt). The next highest shares of Brazil's soybean exports (in declining order) went to Spain, Thailand, the Netherlands, and Turkey.

Santos was the largest Brazilian soybean export port, followed by Rio Grande, Paranaguá, São Luís, Barcarena, and São Francisco do Sul. These six ports accounted for 83 percent of Brazil's total exports.

The southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul still dominate the soybean trade to China, collectively accounting for 74 percent of Brazil's soybean exports to China. Also, in 2021, the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 25 percent of soybean exports to China. The Amazon River ports of Manaus and Santarém exported a small amount to China (mainly from Manaus), but exported mostly to the European Union, North America, and Africa. In 2021, the ocean freight spread between the Shanghai routes from the northeastern port of São Luís (\$57.90/mt) and the port of Santos (\$53.40/mt) was \$4.50/mt (table 9).

Brazil's Infrastructure Improvements: An update of selected legislation that facilitates exports of agricultural products

Brazil continues to depend heavily on trucks to transport grain to major destinations. This dependence is ensured for some time, because of the long distances that separate major production regions from terminals for barge and rail. This dependency is further ensured by limited rail and inland waterway infrastructure



capacity (<u>ESALQ/USP</u>).³ To overcome this limitation, the Brazilian Government enacted a new legal framework for railways and changed its cabotage law to enable private-sector investment and increase the Brazilian transportation sector's competitiveness internationally.⁴

Rail regulations: On December 3, 2021, <u>National Land Transport Agency (ANTT)</u> established a rule governing the execution of projects by railroad concessionaires, <u>ANTT Resolution nº 5956</u>. The purpose of the law is to expedite the technical analysis required for the ANTT to approve infrastructure improvements of the Concessionaire's Interest Projects (PICs) and Third-Party Interest Projects (PITs).

The PICs are now categorized as:

- Small-scale railway projects are developed within the area covered by the concession, without the need for expropriation and with low environmental impact. Examples include the expansion of a yard and the installation or relocation or demolition of a Lane Change Device.
- Large-scale railway projects constitute an extension equal to or greater than 6.2 miles (10 kilometers (km)). Examples include a railway bypass, new stretch, branch, variant or duplication of a railway line.
- **Special artwork designs** include work (for example) on a bridge, railway viaduct, underpass, or footbridge.
- Auxiliary installation projects include administrative buildings, filling and washing stations, sandpits and wagon, and locomotive workshops.
- **Diverse projects** include level crossings, pedestrian crossings, and signaling, as well as control systems.

In the case of PICs—for all projects classified as small-scale railways, special artwork designs, auxiliary installations, and diverse projects —there will typically be an automatic authorization. In these cases, authorization is not granted automatically *only* where the projects negatively impact the economic balance of the contract (as determined by ANTT's review of the PIC standard application).

In the case of PITs, authorization occurs after project approval by the concessionaire and submission of a standard application to ANTT. Most PITs encompass essential public services and structures, such as railway crossings; sanitation networks (water supply network, sewage collection network, urban drainage network); and transmission lines of electricity, required by third parties (city halls and sanitation and energy companies, among others).

BR do Mar Law: On January 10, 2022, the Brazilian Congress approved a cabotage project called "BR do Mar" (Road of the Sea), changing the rules to allow foreign ships to compete with Brazilian ones and increasing fleet availability to cabotage in the national territory. With "BR do Mar" the Government's intention is to make the cabotage sector more attractive, stimulating competition and lowering costs. According to the Planning and Logistics Company (EPL), a public company linked to the Federal Government, cabotage accounts for only 11 percent of cargo transport in Brazil. Most freight is carried by truck (65 percent). EPL estimates that the BR do Mar program can reduce cabotage costs by more than 15 percent; increase containers transported per year from 1.2 million containers in 2019 to 2 million in 2022; and expand the fleet dedicated to cabotage by 40 percent over the next 3 years. For more information, contact Delmy L. Salin at delmy.salin@usda.gov.

³ In Brazil, short-haul movements' average distance is about 440 miles (707 kilometers (km)) from the farm to rail and barge terminals (<u>ESALQ/USP</u>). In the United States, the average distance from farm to inland elevators grain elevators terminals is about 25-100 miles (<u>GTOR</u>).

⁴ Cabotage laws govern foreign maritime activity in domestic coastal trades. Brazil's updated cabotage law makes the chartering of foreign vessels more flexible.



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

	2020	2021	% Change 2020-21	2020	2021	% Change 2020-21
	North I	MT¹ - Santos² b —US\$/mt—	y truck	Northy	vest RS¹ - Rio G —US\$/mt—	Grande ²
Truck	60.65	59.30	-2.2	19.24	18.85	-2.0
Ocean	31.40	53.40	70.1	32.90	53.94	64.0
Total transportation	92.04	112.70	22.4	52.13	72.78	39.6
Farm gate price ³	357.23	482.47	35.1	354.57	489.39	38.0
Landed cost	449.27	595.16	32.5	406.70	562.17	38.2
Transport % of landed cost	21.2	18.9	-10.9	13.1	12.9	-1.8
	North	MT¹ - Santos² —US\$/mt—	by rail	Norti	n MT¹ - Parana —US\$/mt—	aguá²
Truck	21.47	20.64	-3.9	28.48	58.62	105.8
Rail ⁴	32.13	29.69	-7.6	-	-	-
Ocean	31.40	53.40	70.1	31.40	55.29	76.1
Total transportation	85.00	103.73	22.0	59.88	113.91	90.2
Farm gate price ³	357.23	482.47	35.1	331.01	482.47	45.8
Landed cost	442.22	586.19	32.6	390.88	596.37	52.6
Transport % of landed cost	19.9	17.7	-11.4	15.8	19.1	20.6

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

Note: mt = metric ton.

²Export port.

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

⁴In 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.



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

	2020	2021	% Change 2020-21	2020	2021	% Change 2020-21
	Nort	th MT¹ - Santa —US\$/mt—	rém²	Sou	th MA¹ - São L —US\$/mt—	uís²
Truck	39.20	37.91	-3.3	26.83	24.85	-7.4
Ocean	33.66	57.31	70.3	34.02	57.90	70.2
Total transportation	72.86	95.22	30.7	60.85	82.75	36.0
Farm gate price ³	357.23	482.47	35.1	353.30	484.89	37.2
Landed cost	430.08	577.69	34.3	414.15	567.63	37.1
Transport % of landed cost	17.6	16.5	-6.3	15.0	14.5	-3.3
	Soutl	nwest PI¹ - São —US\$/mt—	Luís²	Nort	h MT¹ - Barcar —US\$/mt—	ena²
Truck	29.81	29.15	-2.2	31.72	31.84	0.4
Barge⁴	-	-	-	11.94	12.63	5.8
Ocean	34.02	57.90	70.2	34.96	59.55	70.3
Total transportation	63.83	87.05	36.4	78.61	104.02	32.3
Farm gate price ³	342.39	475.78	39.0	357.23	482.47	35.1
Landed cost	406.23	562.82	38.5	435.84	586.49	34.6
Transport % of landed cost	16.0	15.5	-3.4	18.7	17.7	-5.4

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

Note: mt = metric ton.

²Export port.

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

⁴In 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.



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

	2020	2021	% Change 2020-21	2020	2021	% Change 2020-21
	North N	VIT¹ - Santos² k —US\$/mt—	oy truck	Northwest RS¹ - Rio Grande² —US\$/mt—		
Truck	60.65	59.30	-2.2	19.24	18.85	-2.0
Ocean	24.75	45.11	82.3	25.13	46.28	84.2
Total transportation	85.40	104.41	22.3	44.36	65.12	46.8
Farm gate price ³	357.23	482.47	35.1	354.57	489.39	38.0
Landed cost	442.62	586.88	32.6	398.93	554.51	39.0
Transport % of landed cost	20.0	17.8	-11.2	11.4	11.7	2.6
	North	MT¹ - Santos² —US\$/mt—	by rail	Nort	h MT¹ - Parana —US\$/mt—	nguá²
Truck	21.47	20.64	-3.9	28.48	58.62	105.8
Rail ⁴	32.13	29.69	-7.6	-	-	-
Ocean	24.75	45.11	82.3	24.75	44.35	79.2
Total transportation	78.35	95.44	21.8	53.23	102.97	93.4
Farm gate price ³	357.23	482.47	35.1	331.01	482.47	45.8
Landed cost	435.58	577.90	32.7	384.24	585.44	52.4
Transport % of landed cost	18.7	16.2	-13.5	14.3	17.6	22.7

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

Note: mt = metric ton.

²Export port.

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

⁴In 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.



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

	2020	2021	% Change 2020-21	2020	2021	% Change 2020-21
	Nort	th MT¹ - Santa —US\$/mt—	rém²	Sou	th MA¹ - São L —US\$/mt—	uís²
Truck	39.20	37.91	-3.3	26.83	24.85	-7.4
Ocean	20.94	42.09	101.0	22.76	48.36	112.5
Total transportation	60.14	80.00	33.0	49.59	73.21	47.6
Farm gate price ³	357.23	482.47	35.1	353.30	484.89	37.2
Landed cost	417.37	562.47	34.8	402.89	558.10	38.5
Transport % of landed cost	15.0 14.2 -5.4		12.6	13.1	4.1	
	South	nwest PI¹ - São —US\$/mt—	Luís²	Nort	h MT¹ - Barcar US\$/mt	rena²
Truck	29.81	29.15	-2.2	31.72	31.84	0.4
Barge⁴	-	-	-	11.94	12.63	5.8
Ocean	22.76	48.36	112.5	20.31	41.00	101.8
Total transportation	52.58	77.51	47.4	63.97	85.47	33.6
Farm gate price ³	342.39	475.78	39.0	357.23	482.47	35.1
Landed cost	394.97	553.28	40.1	421.19	567.94	34.8
Transport % of landed cost	13.6	14.0	3.4	15.2	15.0	-0.9

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

Note: mt = metric ton.

²Export port.

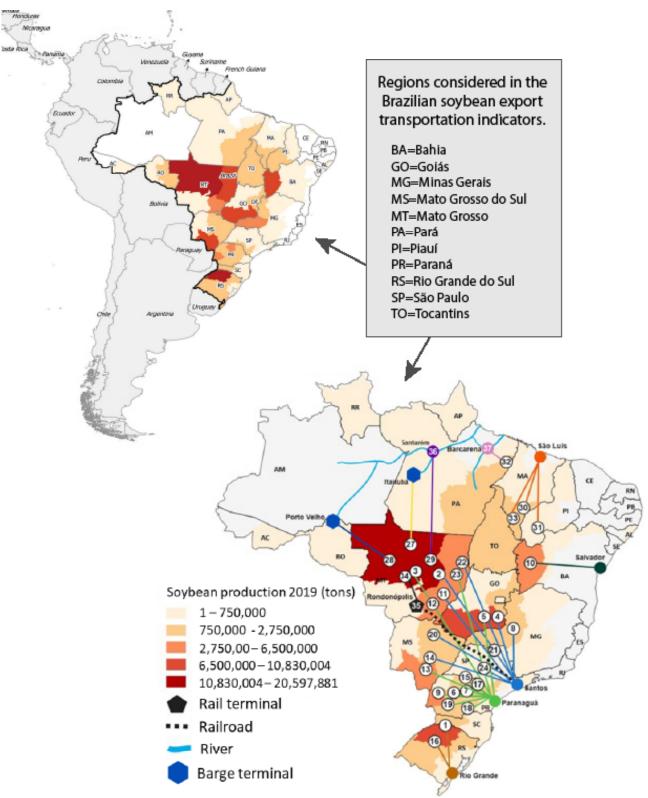
³The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

⁴In 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.



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, 2019 (Brazilian Institute of Geography and Statistics—Produção Agricola Municipal).



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

					—20	21—							
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.			
	ľ	North MT¹ - Santos² by truck —US\$/mt—				•				North MT¹ - Paranaguá² —US\$/mt—			
Truck	60.94	66.24	59.59	50.42	59.30	58.57	65.99	59.53	50.39	58.62			
Ocean	37.00	50.60	64.00	62.00	53.40	38.75	52.40	66.00	64.00	55.29			
Total transportation	97.94	116.84	123.59	112.42	112.70	97.32	118.39	125.53	114.39	113.91			
Farm gate price ³	463.10	495.57	513.31	457.88	482.47	463.10	495.57	513.31	457.88	482.47			
Landed cost	561.04	612.41	636.91	570.30	595.16	560.42	613.96	638.84	572.28	596.37			
Transport % of landed cost	17.5	19.1	19.4	19.7	18.9	17.4	19.3	19.6	20.0	19.1			
		North M	T ¹ - Santo -US\$/mt	•		1	Northwes –	st RS¹ - Ri -US\$/mt-		2			
Truck	22.18	23.05	19.88	17.44	20.64	19.91	21.09	18.32	16.06	18.85			
Rail ⁴	30.95	30.44	30.09	27.27	29.69	-	-	-	-	-			
Ocean	37.00	50.60	64.00	62.00	53.40	37.25	51.00	64.75	62.75	53.94			
Total transportation	90.13	104.10	113.97	106.71	103.73	57.16	72.09	83.07	78.81	72.78			
Farm gate price ³	463.10	495.57	513.31	457.88	482.47	475.64	505.86	497.59	478.45	489.39			
Landed cost	553.22	599.67	627.28	564.59	586.19	532.80	577.95	580.66	557.26	562.17			
Transport % of landed cost	16.3	17.4	18.2	18.9	17.7	10.7	12.5	14.3	14.1	12.9			

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

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

²Export port.

³The 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.



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

					—20	21—								
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.				
	ı	North MT¹ - Santos² by truck —US\$/mt—				•					North MT¹ - Paranaguá² —US\$/mt—			
Truck	60.94	66.24	59.59	50.42	59.30	58.57	65.99	59.53	50.39	58.62				
Ocean	31.25	42.70	54.00	52.50	45.11	31.00	41.90	53.00	51.50	44.35				
Total transportation	92.19	108.94	113.59	102.92	104.41	89.57	107.89	112.53	101.89	102.97				
Farm gate price ³	463.10	495.57	513.31	457.88	482.47	463.10	495.57	513.31	457.88	482.47				
Landed cost	555.29	604.51	626.91	560.80	586.88	552.67	603.46	625.84	559.78	585.44				
Transport % of landed cost	16.6	18.0	18.1	18.4	17.8	16.2	17.9	18.0	18.2	17.6				
			T ¹ - Santo -US\$/mt-	os² by rail —		1		st RS¹ - Ri -US\$/mt	o Grande —	2				
Truck	22.18	23.05	19.88	17.44	20.64	19.91	21.09	18.32	16.06	18.85				
Rail ⁴	30.95	30.44	30.09	27.27	29.69	-	-		-	-				
Ocean	31.25	42.70	54.00	52.50	45.11	32.00	43.80	55.50	53.80	46.28				
Total transportation	84.38	96.20	103.97	97.21	95.44	51.91	64.89	73.82	69.86	65.12				
Farm gate price ³	463.10	495.57	513.31	457.88	482.47	475.64	505.86	497.59	478.45	489.39				
Landed cost	547.47	591.77	617.28	555.09	577.90	527.55	570.75	571.41	548.31	554.51				
Transport % of landed cost	15.4	16.3	16.8	17.5	16.5	9.8	11.4	12.9	12.7	11.7				

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

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

²Export port.

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

⁴In, 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.



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

					—20	21—				
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
			MT¹ - San -US\$/mt					MA¹ - Sã -US\$/mt-		
Truck	40.01	42.08	37.51	32.06	37.91	25.06	28.77	25.51	20.06	24.85
Ocean	40.54	55.60	67.50	65.60	57.31	41.00	55.60	68.00	66.00	57.65
Total transportation	80.55	97.68	105.01	97.66	95.22	66.06	84.37	93.51	86.06	82.50
Farm gate price ³	463.10	495.57	513.31	457.88	482.47	466.73	503.18	501.47	468.17	484.89
Landed cost	543.64	593.25	618.32	555.54	577.69	532.79	587.55	594.97	554.23	567.38
Transport % of landed cost	14.8	16.5	17.0	17.6	16.5	12.4	14.4	15.7	15.5	14.5
			est PI ¹ - S -US\$/mt					MT¹ - Bar US\$/mt		
Truck	29.27	34.77	27.33	25.22	29.15	34.86	38.44	29.35	24.71	31.84
Barge ⁴	-	-	-	-	-	13.32	12.85	12.11	12.24	12.63
Ocean	41.00	55.60	68.00	66.00	57.65	42.00	58.20	70.00	68.00	59.55
Total transportation	70.27	90.37	95.33	91.22	86.80	90.18	109.49	111.46	104.95	104.02
Farm gate price ³	484.07	489.79	483.65	445.58	475.78	463.10	495.57	513.31	457.88	482.47
Landed cost	554.34	580.17	578.98	536.80	562.57	553.27	605.06	624.78	562.83	586.49
Transport % of landed cost	12.7	15.7	16.5	17.0	15.5	16.3	18.1	17.8	18.6	17.7

 $^{^{1}}$ Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.

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

²Export port

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

⁴In 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.



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

					—20	21—				
	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Avg.
		North MT¹ - Santarém² —US\$/mt—				South MA¹ - São Luís² —US\$/mt—				
Truck	40.01	42.08	37.51	32.06	37.91	25.06	28.77	25.51	20.06	24.85
Ocean	28.65	40.00	50.60	49.10	42.09	33.25	45.90	58.00	56.30	48.36
Total transportation	68.66	82.08	88.11	81.16	80.00	58.31	74.67	83.51	76.36	73.21
Farm gate price ³	463.10	495.57	513.31	457.88	482.47	466.73	503.18	501.47	468.17	484.89
Landed cost	531.75	577.65	601.42	539.04	562.47	525.04	577.85	584.97	544.53	558.10
Transport % of landed cost	12.9	14.2	14.6	15.1	14.2	11.1	12.9	14.3	14.0	13.1
			est PI ¹ - S -US\$/mt-					MT¹ - Bar US\$/mt		
Truck	29.27	34.77	27.33	25.22	29.15	34.86	38.44	29.35	24.71	31.84
Barge ⁴	-	-	-	-	-	13.32	12.85	12.11	12.24	12.63
Ocean	33.25	45.90	58.00	56.30	48.36	28.10	38.90	49.20	47.80	41.00
Total transportation	62.52	80.67	85.33	81.52	77.51	76.28	90.19	90.66	84.75	85.47
Farm gate price ³	484.07	489.79	483.65	445.58	475.78	463.10	495.57	513.31	457.88	482.47
Landed cost	546.59	570.47	568.98	527.10	553.28	539.37	585.76	603.98	542.63	567.94
Transport % of landed cost	11.4	14.1	15.0	15.5	14.0	14.1	15.4	15.0	15.6	15.0

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

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

²Export port.

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

⁴In 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.



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

Route	Origin ¹	Destination	Distance	Share	Frei	ght price	(US\$/mt	:/100 mile	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	12.0	6.91	7.32	6.36	5.58	6.54
2	North MT (Sorriso)	Santos	1,190	3.3	5.12	5.57	5.01	4.24	4.98
3	North MT (Sorriso)	Paranaguá	1,262	3.1	4.64	5.23	4.72	3.99	4.65
4	South GO (Rio Verde)	Santos	587	4.9	4.96	5.11	4.54	3.91	4.63
5	South GO (Rio Verde)	Paranaguá	726	3.9	5.07	5.33	4.77	4.07	4.81
6	North Central PR (Londrina)	Paranaguá	268	2.8	7.17	7.15	6.08	5.26	6.42
7	Western Central PR (Mamborê)	Paranaguá	311	2.2	6.63	6.27	5.48	5.09	5.87
8	Triangle MG (Uberaba)	Santos	339	3.0	6.86	6.94	6.03	5.25	6.27
9	West PR (Assis Chateaubriand)	Paranaguá	377	1.7	6.08	5.93	5.23	4.60	5.46
10	West Extreme BA (São Desidério)	Salvador	535	5.9	5.28	5.69	5.17	4.30	5.11
11	Southeast MT (Primavera do Leste)	Santos	901	2.5	4.69	5.27	4.43	3.77	4.54
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.3	4.58	5.08	4.43	3.77	4.47
13	Southwest MS (Maracaju)	Paranaguá	612	3.0	5.68	5.51	4.92	4.23	5.09
14	Southwest MS (Maracaju)	Santos	652	2.8	5.47	5.60	4.86	4.18	5.03
15	West PR (Assis Chateaubriand)	Santos	550	1.2	5.35	5.54	4.92	4.24	5.01
16	East GO (Cristalina)	Santos	585	1.9	5.72	6.00	5.34	4.57	5.41
17	North PR (Cornélio Procópio)	Paranaguá	306	1.7	5.84	5.81	4.86	4.32	5.21
18	Eastern Central PR (Castro)	Paranaguá	130	2.0	8.74	9.00	7.52	6.46	7.93
19	South Central PR (Guarapuava)	Paranaguá	204	2.3	8.46	8.45	7.25	6.27	7.61
20	North Central MS (São Gabriel do Oeste)	Santos	720	2.4	4.61	4.79	4.26	3.65	4.33
21	Ribeirão Preto SP (Guairá)	Santos	314	0.0	5.42	5.69	4.76	4.21	5.02
22	Northeast MT (Canarana)	Santos	950	3.6	4.78	5.34	4.55	3.88	4.64
23	East MS (Chapadão do Sul)	Santos	607	0.0	4.64	4.79	4.22	3.63	4.32

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

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

For more details, on the definitions/calculations contact $\underline{esalqlog@esalqlog.esalq.usp.br}.$

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 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.

⁷In 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.



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

Route	Origin¹	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.
24	Northeast MT (Canarana)	Paranaguá	1,075	3.2	4.23	5.04	4.54	3.85	4.42
25	Western Central RS (Tupanciretã)	Rio Grande	273	2.7	5.42	6.62	5.98	4.79	5.70
26	Southwest PR(Chopinzinho)	Paranaguá	291	1.5	6.83	7.32	6.37	5.50	6.51
27	North MT (Sorriso)	Itaituba	672	5.8	5.19	5.72	4.37	3.68	4.74
28	North MT (Sorriso)	Porto Velho	632	6.2	4.55	4.94	4.39	3.77	4.41
29	North MT (Sorriso)	Santarém	876	4.4	4.57	4.80	4.28	3.66	4.33
30	South MA (Balsas)	São Luís	482	2.2	5.20	5.97	5.30	4.17	5.16
31	Southwest PI (Bom Jesus)	São Luís	606	2.5	4.83	5.74	4.51	4.16	4.81
32	Southeast PA (Paragominas)	Barcarena	249	1.6	6.61	6.46	5.36	4.77	5.80
33	East TO (Campos Lindos)	São Luís	842	1.4	4.51	4.75	4.24	3.62	4.28
	Weighted average		587	100.0	5.60	5.94	5.16	4.44	5.29
34	North MT (Sorriso)	Rondonópolis (Rail terminal)	382		5.81	6.04	5.20	4.57	5.40
35	Rondonópolis MT (Rail terminal) ⁶	Santos	1,019		3.04	2.99	2.95	2.68	2.91
36	Itaituba PA (Barge terminal) ⁷	Santarém	153		5.97	4.49	3.51	3.69	4.41
37	Itaituba PA (Barge terminal) ⁷	Barcarena	600		2.22	2.14	2.02	2.04	2.10

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

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

For more details, on the definitions/calculations contact esalqlog@esalqlog.esalq.usp.br.

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 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.

⁷In 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.



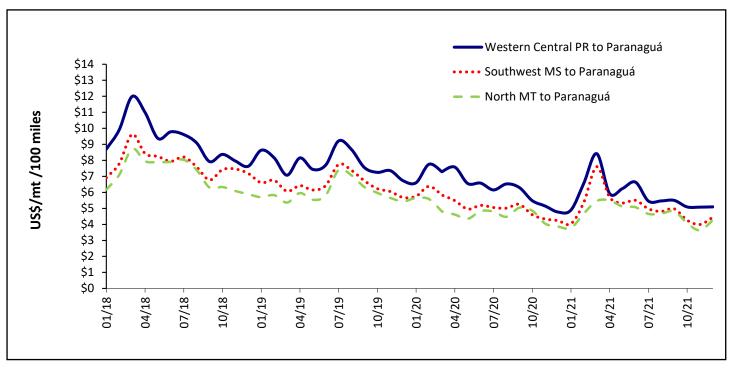
Table 8. Monthly Brazilian soybean export truck transportation cost index

Month	Freight price (US\$/mt/100 miles)	Index variation (%)	Index value (Base: Jan-05=100)	Month	Freight price (US\$/mt/100 miles)	Index variation (%) (Base: prior month)	Index value
		1 1	,,		1 11 1		,
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	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

^{*}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.



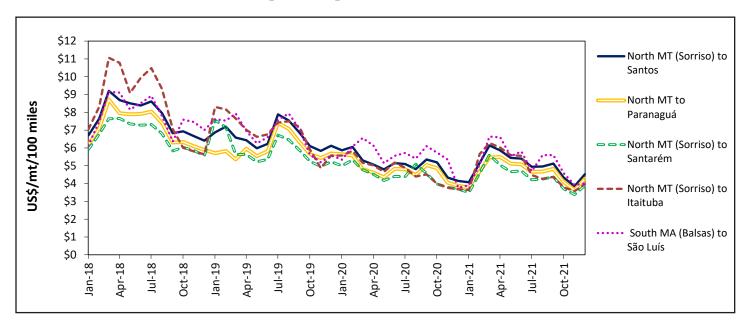
Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2018-21



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.



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



Note: mt = metric ton.



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.



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	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

^{*}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.



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Data Sets (XLS files):

- Figure 3. Truck rates for selected southern Brazilian soybean export transportation routes, 2018-21
- <u>Figure 4. Truck rates for selected north, south, and northeastern Brazilian soybean export transportation routes, 2018-21</u>
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- Table 1. Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China
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- <u>Table 9. Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Germany</u> and China (US\$/metric ton)

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- Prior Articles: <u>Brazil Soybean Transportation</u>
- Related Articles: Grain Transportation Report: December 9, 2021 (PDF)

Preferred Citation:

Salin, Delmy. Brazil Soybean Transportation. February 2022. U.S. Department of Agriculture, Agricultural Marketing Service. Web. http://dx.doi.org/10.9752/TS052.02-2022>

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