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Soybean Transportation Guide: BRAZIL 2017











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Author: Delmy L. Salin, USDA, Agricultural Marketing Service

Graphic Designer: Jessica E. Ladd, USDA, Agricultural Marketing Service

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Executive Summary

The *Soybean Transportation Guide* is a visual snapshot of Brazilian soybean transportation, in 2017. It provides data on the cost of shipping soybeans, via highways and ocean, to Shanghai, China, and Hamburg, Germany. It also includes information about soybean production, exports, railways, ports, and infrastructural developments.

Brazil is one of the most important U.S. competitors in the world oilseeds market. Brazil's competitiveness in the world market depends largely on its transportation infrastructure, both production and transportation cost, increases in planted area, and productivity. Brazil and U.S. producers use the same production and technological advancements, making their soybeans relative substitutes. U.S. soybean competitiveness worldwide rests upon critical factors such as transportation costs and structural infrastructure improvements. Brazil is gaining a cost advantage. However, the United States retains a significant share of global soybean exports. In 2017, per-bushel total production costs in the main producing areas of the U.S. Midwest averaged \$9.29 per bushel, compared with \$7.52 per bushel in Argentina, \$7.53 per bushel in the Brazilian State of Mato Grosso, and \$8.01 per bushel in Paraná. Although variable costs in the United States are lower, fixed costs—due to land values and capital costs—are much higher than in Mato Grosso and Paraná.

Since 2013, Brazil has surpassed U.S. soybean exports, becoming the top world soybean exporter. Further, the U.S. Department of Agriculture forecasts that Brazil is expected to be the world's largest soybean exporter through 2028. While the United States is the world's leading producer in terms of volume, its export competitiveness relative to South America declined during a period of strong global growth in soybean demand. However, the United States remains the second-largest exporter, followed by Argentina, Paraguay, and Canada. The market shares for Brazil, the United States, and Argentina were 43, 40, and 5 percent, respectively, in 2017. China is the driver of global soybean trade, accounting for about two-thirds of soybean worldwide imports. Brazil kept its leadership position in China with a market share of about 48 percent, down from 51 percent in 2016. The United States market share in China increased to 39 percent, from 35 percent in 2016. Argentina's market share declined to 7 percent, from 10 percent a year earlier.

Brazil's Economy and BR-163 Pavement Status

According to the Brazilian Institute of Geography and Statistics and the International Monetary Fund, Brazil emerged from recession in 2017 with economic growth of 1.1 percent, 11.8 percent unemployment (December 2017), and 2.95 percent inflation. Recovery is expected to continue in 2018 with economic growth of 1.9 percent for 2018 and 2.9 percent in 2019.

In October 2017, the Brazilian government announced the last 62 miles (100 km) of pavement along highway of BR-163 connecting Sorriso to Miritituba will be finished in two sections:

- The junction between BR 230, "Rodovia Transamazônica" (PA), and Vila Planalto is under construction (22 miles).
- The Army Engineer Construction Battalion (BEC) will paved the remainder 40 miles between Novo Progresso and Igarapé do Lauro. September-December 2018.

Currently, it takes 3 days to ship grain from Sorriso, North MT, to Miritituba because of the poor condition of the last 62 miles (100 km of unpaved road) of BR-163 connecting Sorriso to Miritituba. Travel time will be reduced to 1.5 days after paving of this section is finished. According to industry analysts, transportation costs will be reduced by about US\$10/metric ton (mt) (R\$30/mt) when BR-163 is finished.

Soybean Transportation Cost and Export Demand

In calendar year 2017, record exports offset the impact of higher transportation costs, and a stronger currency that lowered Brazil's domestic farm prices. During 2017, world soybean supply growth outpaced demand because of higher yields and increased planted area, resulting in a drop of soybean export prices; averaging \$381/metric ton (mt). Additionally, the cost of shipping a metric ton (mt) of soybeans 100 miles by truck increased, from \$6.78 in 2016 to \$8.82 in 2017. Brazilian soybean transportation costs to Shanghai, China—as a percentage of total landed costs from the routes of North Mato Grosso (MT) and South Goiás to Santos, North Central Paraná to Paranaguá, and Northwest Rio Grande do Sul to Rio Grande—increased 33-54 percent, due to higher transportation costs and lower farm prices, compared with 2016. In Sorriso, North MT (the largest Brazilian soybean-producing State), transportation costs represented 29 percent of the total landed costs of shipping soybeans to Shanghai through Santos, compared with 34 percent in 2008, and 45 percent in 2006.

Ocean rates, from the southern Brazilian ports, increased 35-41 percent to Hamburg and 56-62 percent to China because of higher grain exports, increases in bunker fuel prices, and strong iron ore trade. Brazilian farmers did not benefit from the 9 percent gain in value of the Brazilian real (R\$) against the U.S. dollar because soybeans are priced in U.S. dollars and paid in reais. Soybean farm prices—measured in U.S. dollars—decreased nearly 9 percent, to \$314.41.62/mt from \$343.62/mt in 2016. Average farm prices in 2017—in Brazilian real (R\$)—declined about 16 percent, to R\$1,003.62 from R\$1,189.63 /mt. In 2017, the Brazilian real (R\$) appreciated against the U.S. dollar compared to 2016, from R\$3.50 per U.S. dollar to R\$3.19.

China is Brazil's major soybean buyer, accounting for 79 percent of total exports (68.1 mmt), followed by Spain, Thailand, Netherlands, Iran, and Russia. Soybean exports to China increased 40 percent to 53.8 mmt (valued at US\$20.3 billion), from 38.6 mmt in 2016. Mato Grosso, the largest Brazilian exporting State, accounted for 26 percent of total Brazilian soybean exports, followed by Rio Grande Do Sul, Paraná, Goiás, Mato Grosso Do Sul, and São Paulo. Mato Grosso was also the top exporter to China, followed by Rio Grande do Sul, Paraná, Goiás, and São Paulo.

In 2017, Santos was the largest Brazilian soybean export port, followed by Rio Grande, Paranaguá, São Luís, São Francisco do Sul, and Barcarena. These six ports accounted for nearly 82 percent of total exports. Looking at the split from a different north/south perspective, the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul dominate the soybean trade to China, accounting for about 75 percent of Brazil's soybean exports to China. While the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 24 percent of exports to China. The Amazon River ports of Manaus and Santarém exported 1 percent to China.

Overall, Brazil's transportation infrastructure is improving. However, transportation costs in its Midwest region, especially in MT, are still higher than Iowa in the United States; and also higher than in the southern Brazilian State of Rio Grande do Sul and the northeastern State of Maranhão. Rio Grande do Sul and Maranhão exporters have lower transportation costs than the United States' routes to China through the Pacific Northwest, and from Iowa through the U.S. Gulf to Shanghai.

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GENERAL INFORMATION



li li	nformation about Brazil
Population:	207,780, 000 (January 2018 est., Census, Instituto Brasileiro de Geografia e Estatística (IBGE)
Gross Domestic Product per Capita, 2017:	US\$ 15,500 (est.)
Inflation, 2017:	2.95 percent (Banco Central do Brasil)
Unemployment, 4th Quarter 2017:	11.8 percent (IBGE)
Area:	8,514,877 sq km
Languages:	Portuguese (official), Spanish, English, French

Routes¹ and regions considered in the Brazilian soybean export transportation indicators²



¹ Table defining routes by number is shown on page 33

² Regions comprised about 81 percent of Brazilian soybean production, 2015

Source: USDA/AMS & ESALQ – University of São Paulo (USP), Brazil

(MT) and South Goiás to Santos, North Central Paraná to Paranaguá, and Northwest Rio Grande do Sul to Rio Grande-increased 33-54 percent due transportation costs represented 29 percent of the total landed costs of shipping soybeans to Shanghai through Santos, compared with 34 percent to higher transportation costs and lower farm prices, compared with 2016. In Sorriso, North MT (the largest Brazilian soybean-producing State), In 2017, Brazilian soybean transportation costs to Shanghai, China—as a percentage of total landed costs from the routes of North Mato Grosso in 2008, and 45 percent in 2006.

										ĺ				
	2012	2013	2014	2015	2016	2017	% Change 16-17	2012	2013	2014	2015	2016	2017	% Change 16-17
			North –	ı MT¹ - Sa -US\$/mt-	ntos² -				2	Vorthwes —	t RS¹ - Ri(US\$/mt-	o Grande	Q	
	111.78	116.40	103.90	86.04	75.49	92.95	23.1	25.83	23.26	24.56	26.37	18.38	30.72	67.1
	49.70	40.96	36.85	23.81	16.63	26.88	61.7	49.69	41.52	37.02	25.31	20.50	27.30	33.2
sportation	161.48	157.36	140.75	109.86	92.12	119.82	30.1	75.51	64.79	61.58	51.68	38.88	58.02	49.2
e ³	483.31	415.28	388.33	295.17	331.91	293.60	-11.5	483.22	459.33	442.52	331.55	352.69	322.30	-8.6
ost	644.80	572.64	529.08	405.02	424.03	413.43	-2.5	558.73	524.11	504.10	383.23	391.57	380.32	-2.9
% of landed cost	28.4	28.4	27.8	27.1	21.9	29.0	32.5	13.7	12.3	12.2	13.5	6.6	15.3	54.1
		Ž	orth Cent —	ter PR ¹ - F -US\$/mt-	aranaguá —	j ²				South 	i GO¹ - Sa US\$/mt-	intos² —		
	34.76	32.26	30.98	24.07	21.31	29.29	37.4	55.02	58.90	62.57	39.82	34.66	44.22	27.6
	55.20	43.88	39.21	24.92	18.13	28.38	56.6	49.70	40.96	36.85	23.81	16.63	26.88	61.7
sportation	89.96	76.15	70.19	48.99	39.44	57.66	46.2	104.72	99.86	99.42	63.63	51.28	71.09	38.6
e ³	513.81	470.66	433.91	323.15	340.74	321.54	-5.6	479.80	428.06	401.49	304.36	329.15	301.99	-8.3
ost	603.76	546.80	504.10	372.14	380.18	379.20	-0.3	584.52	527.93	500.91	368.00	380.43	373.08	-1.9
% of landed cost	15.1	13.9	13.9	13.1	10.4	15.2	46.1	18.1	18.9	19.8	17.2	13.6	19.1	40.6

Cost of transporting soybeans from Brazil to Shanghai, China

Producing regions: RS = Rio Grande do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná

²Export ports

³Source: Companhia Nacional de Abastecimento (CONAB) <u>www.conab.gov.br</u> Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

In 2017, Brazilian soybean transportation costs from Mato Grosso (MT), as a percentage of total landed costs increased 29 percent, and 40 percent from Rio Grande do Sul (RS) to Hamburg, Germany, from a year earlier.

	2012	2013	2014	2015	2016	2017	% Change 16-17	2012	2013	2014	2015	2016	2017	% Change 16-17
			North –	n MT¹ - Sa -US\$/mt-	ntos² -				2	lorthwes —	t RS¹ - Rid US\$/mt-	o Grande	2	
Truck	111.78	116.40	103.90	86.04	75.49	92.95	23.1	25.83	23.26	24.56	26.37	23.85	30.72	28.8
Ocean	31.75	29.50	27.75	19.75	18.13	24.50	35.2	33.15	29.50	27.00	20.25	17.25	25.50	47.8
Total transportation	143.53	145.90	131.65	105.79	93.62	117.45	25.5	58.97	52.76	51.56	46.62	41.10	56.22	36.8
Farm price ³	483.31	415.28	388.33	295.17	331.91	293.60	-11.5	483.22	459.33	442.52	331.55	348.28	322.30	-7.5
Landed cost	626.84	561.18	519.98	400.96	425.53	411.05	-3.4	542.19	512.09	494.08	378.17	389.37	378.52	-2.8
Transport % of landed cost	23.3	26.0	25.3	26.3	22.1	28.6	29.1	11.0	10.3	10.5	12.3	10.6	14.9	40.3
		Z	orth Ceni -	ter PR ¹ - F -US\$/mt-	aranagua -	1 ₂				South 	GO¹ - Sa US\$/mt-	intos² —		
Truck	34.76	32.26	30.98	24.07	21.31	29.29	37.4	55.02	58.90	62.57	39.82	34.66	44.22	27.6
Ocean	33.80	29.50	28.75	19.75	18.38	25.50	38.8	31.75	29.50	27.75	19.75	18.13	24.50	35.2
Total transportation	68.56	61.76	59.73	43.82	39.69	54.79	38.0	86.77	88.40	90.32	59.57	52.78	68.72	30.2
Farm price ³	513.81	470.66	433.91	323.15	340.74	321.54	-5.6	479.80	428.06	401.49	304.36	329.15	301.99	-8.3
Landed cost	582.36	532.42	493.64	366.97	380.43	376.32	-1.1	566.57	516.47	491.81	363.94	381.93	370.71	-2.9
Transport % of landed cost	11.9	11.6	12.1	11.9	10.5	14.6	39.2	15.6	17.1	18.3	16.3	13.9	18.6	33.6

Cost of transporting soybeans from Brazil to Hamburg, Germany

'Producing regions: RS = Rio Grande do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná ²Export ports ³Source: Companhia Nacional de Abastecimento (CONAB) <u>www.conab.gov.br</u> Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

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Transportation costs, from the selected route of the northern and northeastern ports, to Shanghai, China, and Hamburg increased.

Cost of transporting soybeans from the northern and northeastern ports to Shanghai, China

	2015	2016	2017	% Change 2016-17	2015	2016	2017	% Change 2016-17
	I	North MT ¹ —US\$	- Santarém 5/mt—	2		South MA ¹ —US\$	- São Luís ² /mt—	2
Truck	58.12	49.60	55.08	11.0	36.15	31.04	37.69	21.4
Ocean	26.56	21.54	30.75	42.8	26.56	19.48	29.56	51.8
Total transportation	84.68	71.14	85.83	20.7	62.72	50.52	67.25	33.1
Farm price ³	295.17	331.91	293.60	-11.5	314.43	376.89	343.39	-8.9
Landed cost	379.84	403.05	379.43	-5.9	377.14	427.41	410.64	-3.9
Transport % of landed cost	23.3	20.2	22.7	12.0	16.6	12.0	16.4	37.1
	S	outhwest F —US\$	Pl¹ - São Luí 5/mt—	ÍS ²				
Truck	43.0	34.23	44.44	29.8				
Ocean	26.6	19.48	29.56	51.8				
Total transportation	69.6	53.71	74.00	37.8				
Farm price ³	314.9	344.78	283.05	-17.9				
Landed cost	384.5	398.49	357.05	-10.4				

21.0

53.8

13.6

¹Producing regions: MT= Mato Grosso, PI = Piauí, MA = Maranhão ²Export ports

Transport % of landed cost

³Source: Companhia Nacional de Abastecimento (CONAB) <u>www.conab.gov.br</u> Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS Note: Data in bottom table was updated 9-13-18.

18.1

Cost of transporting soybeans from the northern and northeastern ports to Hamburg, Germany

	2015	2016	2017	% Change 2016-17	2015	2016	2017	% Change 2016-17
		North MT¹ —US\$	- Santarém 5/mt—	2		South MA ¹ —US\$	¹ - São Luís ² 5/mt—	2
Truck	58.12	49.60	55.08	11.0	36.15	31.04	37.69	21.4
Ocean	17.00	14.99	23.90	59.4	18.78	11.71	20.20	72.5
Total transportation	75.12	64.59	78.98	22.3	54.94	42.75	57.89	35.4
Farm price ³	295.05	331.91	293.60	-11.5	314.43	376.89	343.39	-8.9
Landed cost	370.16	396.50	372.58	-6.0	369.36	419.64	401.28	-4.4
Transport % of landed cost	20.2	16.4	21.2	29.2	14.9	4.9 10.3 14.4		
	S	outhwest F —US\$	인 ¹ - São Lui 5/mt—	ÍS ²				
Truck	43.04	34.27	44.44	29.7				
Ocean	18.78	11.71	20.20	72.5				
Total transportation	61.83	45.98	64.64	40.6				
Farm price ³	314.90	344.78	283.05	-17.9				
Landed cost	376.72	390.76	347.68	-11.0				

18.9

59.0

¹Producing regions: MT= Mato Grosso, PI = Piauí, MA = Maranhão ²Export ports

Transport % of landed cost

³Source: Companhia Nacional de Abastecimento (CONAB) <u>www.conab.gov.br</u> Source: ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS

16.4

11.9

In 2017, U.S. soybean transportation costs from Iowa through the U.S. Gulf to Hamburg, Germany, as a percentage of total landed costs, increased 2-4 percent due to higher transportation cost. The U.S. soybean transportation costs from Minnesota and Iowa through the U.S. Gulf to Shanghai, as a percentage of total landed costs, increased 12-15 percent compared with 2016.

	2012	2013	2014	2015	2016	2017	% Change 2016-17	2012	2013	2014	2015	2016	2017	% Change 2016-17
						Т	o Hambur	g, Germa	iny					
			Minnea -	polis, M -US\$/mt	innesota :—					Dav -	/enport, –US\$/mt	lowa :—		
Truck	11.29	11.56	13.04	10.23	10.36	12.71	22.7	11.29	11.56	13.04	10.23	10.36	12.71	22.7
Rail ¹	10.86	36.48	42.08	42.09	43.30	45.91	6.0	23.84	27.93	30.77	31.20	11.65	34.98	200.3
Barge ²	28.53	25.79	37.45	27.49	24.32	22.62	-7.0	22.89	21.38	32.80	22.15	18.72	17.60	-6.0
Ocean ³	20.29	22.87	20.24	14.32	13.83	15.46	11.8	20.29	22.87	20.24	14.32	19.20	15.47	-19.4
Total transportation ⁴	68.02	69.34	81.25	62.56	59.33	62.26	4.9	60.52	62.79	73.77	54.50	51.19	54.53	6.5
Farm price ⁵	507.43	511.04	455.47	342.91	335.81	338.20	0.7	510.13	517.78	458.07	344.69	340.89	344.53	1.1
Landed cost	575.45	580.38	536.72	405.47	395.14	400.46	1.3	570.64	580.57	531.84	399.19	392.08	399.06	1.8
Transport % of landed cost	11.9	12.0	15.3	15.3	15.1	15.5	2.4	10.7	10.9	14.1	13.6	13.1	13.6	3.6
	То 5							hai, China	a					
			Minnea –	polis, M -US\$/mt	innesota —			Davenport, Iowa —US\$/mt—						
Truck	11.29	11.56	13.04	14.13	10.36	12.71	22.7	11.29	11.56	13.04	10.23	10.36	12.71	22.7
Rail ¹	31.61	36.48	42.08	42.09	43.30	45.91	6.0	24.16	27.93	30.77	31.20	33.12	34.98	5.6
Barge ²	28.53	25.79	37.45	27.49	24.32	22.62	-7.0	22.89	21.38	32.80	22.15	18.72	17.60	-6.0
Ocean ³	46.98	46.76	45.72	30.09	26.65	38.37	44.0	46.98	46.76	45.72	30.09	26.65	38.37	44.0
Total transportation ⁴	94.71	93.23	106.72	78.33	72.15	85.17	18.0	87.20	86.69	99.25	69.67	64.00	77.43	21.0
Farm price ⁵	507.43	511.04	455.47	342.91	335.81	338.20	0.7	510.13	517.78	458.07	344.69	340.89	344.53	1.1
Landed cost	602.14	604.28	562.19	421.24	407.96	423.37	3.8	597.33	604.46	557.32	414.96	404.90	421.96	4.2
Transport % of landed cost	15.8	15.5	19.1	18.5	17.8	20.1	12.9	14.7	14.4	18.0	16.9	15.9	18.3	15.4

Average cost of transporting U.S. soybeans to Hamburg, Germany, and Shanghai, China

¹Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.

²The Mississippi River closes from Minneapolis to just north of St. Louis during mid-December to late March; The distance by barge between Minneapolis and Davenport to the Port of New Orleans is 1,713 and 1,343 miles, respectively.

³Source: The Baltic Exchange and O'Neil Commodity Consulting; excludes handling charges.

⁴The average of the sum of the total costs may not be equal to the sum of the individual average costs of truck, rail, barge, and ocean because rail is used only in the first quarter.

⁵Source: USDA/NASS/Quick Stats database

The U.S. soybean transportation costs from North and South Dakota, via the Pacific Northwest to Shanghai, China, as a percentage of total landed cost, increased 9-10 percent from a year earlier.

	2013	2014	2015	2016	2017	% Change 2016-17	2013	2014	2015	2016	2017	% Change 2016-17
					To S	Shanghai, C	China via F	NW				
			Farg —US\$	o, ND 5/mt—					Sioux F —US\$	alls, SD 5/mt—		
Truck	11.56	13.04	10.23	10.36	12.71	22.7	11.56	13.04	10.23	10.44	12.71	21.8
Rail ¹	57.92	59.19	55.98	53.04	54.66	3.0	59.38	60.74	57.20	54.02	55.65	3.0
Ocean ²	24.93	24.21	16.34	14.90	20.37	36.7	24.93	24.21	16.34	14.85	20.37	37.2
Total transportation	94.41	96.43	82.55	78.30	87.74	12.1	95.87	97.99	83.77	79.31	88.74	11.9
Farm price ³	497.79	421.91	322.98	327.42	324.57	-0.9	504.56	437.89	329.87	328.98	328.98	0.0
Landed cost	592.20	518.34	405.52	405.72	412.31	1.6	600.43	535.88	413.64	408.29	417.72	2.3
Transport % of landed cost	16.0	18.8	20.4	19.3	21.3	10.2	16.0	18.5	20.3	19.4	21.2	9.3

Average cost of transporting U.S. soybeans to Shanghai, China

¹Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.

²Source: O'Neil Commodity Consulting

³Source: USDA/NASS/Quick Stats database

In 2017, the cost per metric ton to ship soybeans from Sorriso, North Mato Grosso (MT) to Shanghai, China, was \$42.40 more than from Davenport, IA. Sorriso is located 1,190 miles from the port of Santos. Davenport is about 900 miles by truck, 908 miles by rail, and 1,343 miles by barge, from the Port of New Orleans.

Transportation cost differences between Mato Gross (MT) and Iowa (IA) to Shanghai, China



In 2017, the cost of shipping a metric ton of soybeans from Cruz Alta, Northwest Rio Grande do Sul (RS), to Shanghai, China, was \$19.40 less than from Davenport, IA. The cost advantage narrowed from 2016 as an increase in Brazil trucking rates more than offset a bigger rise in ocean freight costs from the U.S. Gulf. The distance from Cruz Alta to the port of Rio Grande is 288 miles.



Transportation cost differences between Rio Grande do Sul (RS) and Iowa (IA) to Shanghai, China

Source: USDA/AMS

During 2017, Sorriso, North MT, soybean shippers to Shanghai paid \$32-\$42 per metric ton more than U.S. exporters, through the U.S. Gulf and PNW routes; \$62 more than the transportation cost paid by Cruz Alta (RS) shippers; and nearly \$53 more than the transportation cost paid by South Maranhão (MA) shippers to São Luís.

Transportation cost differences between selected Brazil-United States Routes to Shanghai, China, 2017



Source: USDA/AMS

In 2017, truck rates (valued in reais) from Cruz Alta, Rio Grande do Sul (RS) to Rio Grande, and from Sorriso, North Mato Grosso (MT) to Santos and Paranaguá; an increase of 10-17 percent compared with 2016.

Route #	Origin ¹ (reference city)	Destination	Distance ² (miles)	2012	2013	2014	2015	2016	2017	% change
					l	Reais/m	etric tor	۱		2016-17
1	Northwest RS ³ (Cruz Alta)	Rio Grande	288	50.35	49.90	57.52	87.26	83.70	97.91	17.0
2	North MT (Sorriso)	Santos	1190	218.00	250.60	243.68	283.84	263.26	296.36	12.6
3	North MT (Sorriso)	Paranaguá	1262	212.49	241.25	236.81	282.66	259.49	285.12	9.9
4	South GO (Rio Verde)	Santos	587	107.31	126.98	146.51	130.98	121.33	140.95	16.2
6	North Center PR (Londrina)	Paranaguá	268	67.92	69.02	72.47	79.44	74.77	93.34	24.8
11	Southeast MT (Primavera do Leste)	Santos	901	164.92	190.65	185.01	193.85	179.27	202.86	13.2
27	North MT (Sorriso)	Itaituba	672	na	na	na	137.56	145.97	190.01	30.2
29	North MT (Sorriso)	Santarém	876	na	na	na	190.47	174.02	175.70	1.0
30	South MA (Balsas)	São Luís	482	na	na	na	119.23	107.94	120.16	11.3
31	Southwest PI (Bom Jesus)	São Luís	606	na	na	na	141.03	119.74	141.67	18.3
32	Southeast PA (Paragominas)	Barcarena	249	na	na	na	65.77	62.95	79.64	26.5
33	East TO(Campos Lindos)	São Luís	842	na	na	na	184.72	175.24	196.74	12.3

Truck rates for selected Brazilian soybean export routes, 2012-2017

¹Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price. ²Distance from the main city of the considered region to the mentioned ports.

³RS = Rio Grande Do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná, MG = Minas Gerais, BA = Bahia, MS = Mato Grosso Do Sul, SP = São Paulo, MA = Maranahão, PI = Piauí, PA = Pará, and TO = Tocantins

Source: ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS

In 2017, selected Brazilian export truck routes, measured in reais (R\$), saw proportionally higher transportation costs, than those estimated in U.S. dollars, due to the appreciation of the Brazilian real (R\$) against the U.S. dollar. Truck rates from Cruz Alta, Rio Grande do Sul (RS) to Rio Grande increased 17 percent. Truck rates from Sorriso, North Mato Grosso (MT) to Santos and Paranaguá increased 10-13 percent. In 2017, the Brazilian real (R\$) appreciated nearly 9 percent against the U.S. dollar, compared with 2016, from R\$3.50 per U.S. dollar to R\$3.19.

Route #	Origin ¹ (reference city)	Destination	Distance ² (miles)	2012	2013	2014	2015	2016	2017	% change
						US\$/me	etric ton			2016-17
1	Northwest RS ³ (Cruz Alta)	Rio Grande	288	25.83	23.26	24.56	26.37	23.85	30.72	28.8
2	North MT (Sorriso)	Santos	1190	111.78	116.40	103.90	86.04	75.49	92.95	23.1
3	North MT (Sorriso)	Paranaguá	1262	108.93	111.93	100.89	85.68	74.42	89.41	20.1
4	South GO (Rio Verde)	Santos	587	55.02	58.90	62.57	39.82	34.66	44.22	27.6
6	North Center PR (Londrina)	Paranaguá	268	34.76	32.26	30.98	24.07	21.31	29.29	37.4
11	Southeast MT (Primavera do Leste)	Santos	901	84.42	88.66	79.00	58.82	51.29	63.63	24.1
27	North MT (Sorriso)	Itaituba	672	na	na	na	41.70	41.72	59.65	43.0
29	North MT (Sorriso)	Santarém	876	na	na	na	58.12	49.60	55.08	11.0
30	South MA (Balsas)	São Luís	482	na	na	na	36.15	31.04	37.69	21.4
31	Southwest PI (Bom Jesus)	São Luís	606	na	na	na	43.04	34.23	44.44	29.8
32	Southeast PA (Paragominas)	Barcarena	249	na	na	na	19.82	17.93	25.00	39.4
33	East TO(Campos Lindos)	São Luís	842	na	na	na	56.78	50.55	61.69	22.1

Truck rates for selected Brazilian soybean export routes, 2012-2017

¹Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price. ²Distance from the main city of the considered region to the mentioned ports.

³RS = Rio Grande Do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná, MG = Minas Gerais, BA = Bahia, MS = Mato Grosso Do Sul, SP = São Paulo, MA = Maranahão, PI = Piauí, PA = Pará, and TO = Tocantins

Source: ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS

The Brazilian soybean export transportation cost index increased, in 2017. The cost of shipping a metric ton (mt) of soybeans, 100 miles by truck, rose from \$6.78 in 2016 to \$8.82 in 2017.



Brazilian soybean export truck cost index

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

Brazil is the largest soybean exporting country, followed by the United States, Argentina, Paraguay, and Canada. In 2017, Santos was the largest Brazil soybean export port, followed by Rio Grande, Paranaguá, São Luís, and São Francisco do Sul. These 5 ports accounted for 75 percent of total exports. Soybean trade is still dominated by the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul, accounting for 66 percent of Brazil's soybean exports. Approximately 26 percent of Brazil's soybean exports were shipped through the northeastern ports of São Luís, Vitória, Salvador, and Barcarena. Nearly 6 percent of Brazil's soybean exports were exported through the Amazon River ports of Manaus and Santarém.



Brazil soybean exports by port

Source: Bureau of Foreign Trade (SECEX), MDIC

In 2017, ocean rates from the Port of Santos to Shanghai, China, increased nearly 62 percent, compared with 2016 rates, averaging \$26.88/mt. Ocean rates to Hamburg increased 35 percent, from 2016 rates, averaging \$24.50/mt. Ocean rates from the southern Brazilian ports, increased 35-41 percent to Hamburg and 56-62 percent to China, due to higher grain exports, increases in bunker fuel prices, and strong iron ore trade.



Brazilian soybean ocean freight from Santos to Shanghai and Hamburg, 2017

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS



Brazilian soybean ocean freight from selected ports to Shanghai, China, 2017

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

The cost to ship 1 mt of soybeans from Brazil to Hamburg, by ocean-going vessel, increased on average 38 percent, from \$18.21/mt to \$25.17/mt.





Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

In 2017, the cost to ship 1 mt of soybeans from Brazil to Shanghai, by ocean vessel, increased nearly 59 percent on average, from \$17.33/mt to \$27.52/mt.



Ocean rates from Brazil to Shanghai, China, increased in 2017

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

In 2017, farm prices in the Brazilian real (R\$) declined, on average, nearly 16 percent. Mato Grosso (MT) and Rio Grande do Sul (RS) farm prices decreased 18 and 15 percent, respectively, in 2017. However, when farm prices were measured in U.S. dollars, they decreased proportionally less, about 0.4 and 18 percent, respectively, from a year earlier. The difference was due to a nearly 9 percent gain in value of the Brazilian real against the U.S. dollar.



Selected Brazilian farm prices

RS = Rio Grande do Sul, MT= Mato Grosso, GO= Goiás, PR=Paraná Source: Companhia Nacional de Abastecimento (CONAB)



Selected Brazilian farm prices

RS = Rio Grande do Sul, MT= Mato Grosso, GO= Goiás, PR=Paraná Source: Companhia Nacional de Abastecimento (CONAB) In 2017, the Brazilian real (R\$) appreciated nearly 9 percent against the U.S. dollar, compared with 2016, from R\$3.50 per U.S. dollar to R\$3.19. Most of the real appreciation occurred in the first half of the year. The currency lost some value during the second half of the year. This may have partly contributed to the higher than usual percentage of soybean shipments that occurred in the September-December period, although crop production was also an all-time high.



Average quarterly exchange rate, real per U.S. dollar

Source: Banco Central do Brasil

More than 60 percent of and U.S. and Brazilian cargo is moved by truck.



U.S.-Brazil modal share for general cargo

*Ocean, air, pipeline, multiplemodes, etc.

Source: U.S. Department of Transportation (DOT), 2009 latest data available and the Confederação Nacional do Transporte (CNT) 2017

Brazil New Hours-of-Service Rule. On July 17, 2012, the Brazilian government implemented the first hoursof-service rules, called the "Driver's Law," to address safety issues. The new law reduced the number of hours a truck driver can work in a 24-hour period, likely raising transportation costs. The law is enforced by the Ministry of Labor and Transportation. Noncompliance with the law would result in a fine to the driver and the vehicle may be withheld until full rest is reached or the driver is replaced.

U.S.-Brazil Hours of Service Rules. The Brazilian rules are based on a 24-hour duty limit. The United States rules are based on a daily window of 14 hours with a maximum of 11 hours of driving and a 60/70-hour weekly on-duty limit (table 1). Brazilian drivers have a daily duty window of 13 hours with a maximum of 10 hours driving limit for every 24 hours of travel and a mandatory 35 hour weekly rest period. The U.S. duty limits are based on 60 hours over 7 consecutive days or 70 hours over 8 consecutive days with a voluntary 34 consecutive hour restart provision to begin a new weekly on-duty limit period. Brazilian rules require a 30-minute break every 4 hours of uninterrupted driving. Effective July 1, 2013, U.S. drivers are required to take a 30-minute break if 8 hours have passed since their last off-duty period.

The United States first hours-of-service rules were issued in 1938. Since then, the law has been revised several times. In 1995, an agricultural exception for the planting and harvesting season was added. The current agricultural exemption states that drivers transporting agricultural commodities or farm supplies for agricultural purposes are exempt from hours-of-service rules within a 150-air-mile radius of the source of the agricultural commodity or the wholesale/retail distribution point of the farm supplies, within or across State lines, during the planting and harvesting seasons as determined by each state.

Regulation	United States	Brazil
Daily duty limit*	14 consecutive hours	13 consecutive hours
Driving limit	Maximum of 11 hours (after 10 consecutive hours off duty) within the 14 hour daily duty limit	10 hours (8 hrs. regular time + 2 hours of compensatory time) within the 13 hours limit
Daily rest requirement	10 hours, not based on a 24-hour period	11 hours every 24 hours
Weekly rest	Voluntary 34 consecutive hour or more restart provision to begin a new 7 or 8 day on-duty** period (see weekly limits)	35 hours
Breaks	30 minute off-duty break before 8 hours have passed since their last of off-duty period. Effective July 1, 2013	30 minute break every 4 hours of driving and 1 hour for meals
Weekly limits	60/70–Duty limit: drivers are not allowed to be on–duty more than 60 hours over 7 consecutive days or 70 hours over 8 consecutive days	
Restart provision	Drivers are allowed to use the voluntary 34-hour restart provision to begin a new 7 or 8 day on-duty**	
Adverse driving conditions exception ¹	2 extra hours more than allowed under normal conditions	1 extra hour

*Include work, meals, and mandatory rest

**On- duty time includes all time drivers are working for a motor carrier, whether paid or not, and all time the driver is doing paid work for anyone else such as time at plant terminal, loading, unloading, handling paper work, drug and alcohol testing, inspecting or servicing the truck (fueling and washing the truck); The restart provision can only be used once per week and must include two periods from 1:00 AM to 5:00 AM, based on home terminal time. It is intended to provide sufficient time for a driver to recuperate from cumulative fatigue if they work beyond the weekly maximum on-duty limits.

¹ Means the driver did not know about the conditions when starting the run such as snow, fog or shutdown traffic due to a crash. It does not include situations that the driver should know about, like congested traffic during typical rush hour.

¹ Means the driver did not know about the conditions when starting the run such as snow, fog or shutdown traffic due to a crash. It does not include situations that the driver should know about, like congested traffic during typical rush hour.

TRANSPORTATION INFRASTRUCTURE DEVELOPMENT

The Brazilian government plans to change the current cargo transportation matrix by developing an integrated intermodal system. The expectation is that within 15 to 20 years, railways' participation will increase from 25 to 35 percent; waterways from 13 to 29 percent; and truck shipments will be reduced by 28 percent, from 58 to 30 percent. To modify the transportation matrix, in January 2007, the Brazilian government created the Growth Acceleration Plan 1 (PAC 1) to promote sustainable social and economic development by generating employment, income, and reducing regional inequalities. During that same year, the PAC 1 was integrated into the National Plan of Logistics and Transportation (PNLT). The Ministry of Transportation and Defense executes the PNLT by allocating funds in three phases, from 2008 to 2023. In March of 2010, the Government announced the second Growth Acceleration Plan (PAC 2), 2011-2014.

In 2015, the Brazilian government created the Integrated Logistics National Plan (PNLI). The PNLI's major objective is to identify, analyze and determine the critical points of the cargo and passenger transportation infrastructure, and propose solutions to the country's demands for transport. The government implemented a strategic planning technique to leverage its existing programs and projects, with important guidelines set by Federal government plans such as the Growth Acceleration Program, the Logistics Investment Program (LIP), and the PNLI, to increase transportation efficiencies. It adjusted the transport matrix by focusing on increasing the capacity of transport routes to achieve greater competitiveness, at national and international levels.

The 2015 transportation assessment report, and the ninth evaluation results of Growth Acceleration Program 2 (PAC 2), 2011-2014, showed that Brazil did not finish the projects as planned. However, the Central West agricultural exporters in Brazil benefited from selected strategic port improvements, extended railways miles, and a new intermodal grain terminal.

In 2016, the Brazilian government launched Project Crescer and the Investment Partnerships Program, to reestablish confidence and restore a favorable investment environment to stimulate the economy. With both projects, the government implemented new decision making processes for prioritization and follow-up, that will be executed through concession, public-private partnership, and privatizations. The government also established guidelines to manage the projects' portfolios with maximum transparency and efficiency.

In March 2017, the Brazilian government narrowed the scope of the infrastructure plan by offering technically and economically feasible projects to the private sector to improve quality of services. The list of infrastructure projects includes port terminals, transmission lines, railways, sanitation companies, and highways, with estimated investments exceeding \$13.2 billion¹ (R\$45 billion).

¹ Exchange rate of \$3.4196 real per U.S. dollar, April 16, 2018

Project Crescer: Selected infrastructure projects that facilitate exports of agricultural products

The plan includes three Railroads:

- The North-South (EF-151) railroad: Porto National, Tocantins (TO)-Estela D'Oeste, São Paulo (SP). This railroad integrates four States: TO, Goiás (GO), Minas Gerais (MG), and SP with access to the northeastern port of Itaquí-Sâo Luis, Maranhão (MA). This is a work in progress, with more than 90 percent of infrastructure finished.
- 2. The West-East Integration (FIOL) Railroad (EF-334): Ilheusin-Caetité-Port of Ilhéus Bahia (BA). It is designed to interconnect the North and Northeast regions of Brazil. FIOL will haul grains from West Bahia (BA) and iron ore typical of the Caetité region, Central BA. The project is being studied.



Source: Projeto Crescer, <u>http://www.projetocrescer.gov.br/projects</u>, accessed April 4, 2017

3. Ferrogrão Railroad (EF-170). The purpose is to consolidate the new Brazilian export rail corridor of the "Arco Norte" by connecting the grain-producing region of the Midwest to the State of Pará, ending at Miritituba Port. The EF-170 is expected to increase transport capacity and competitiveness to the corridor, and alleviate traffic conditions on highway BR-163 by opening a new route for soybean and corn exports.

Port of Santos: The Brazilian government plans to improve efficiency by adding new investments to the "Santos CV's Terminal XXXIX- Caramuru", Ponta da Praia. This will increase capacity from 2.5 to 5 million tons per year. This terminal is the most important area for grain exports at the Port of Santos, São Paulo, which is the top Brazilian public port.

Port of Rio de Janeiro: Consórcio Maravilha (Bunge Alimentos S/A and M. Dias Branco Indústria e Comércio de Alimentos) will build "Terminal RDJ XX - Rio de Janeiro". The terminal will handle solid bulk of plant origin, especially wheat. It is located inside the Port of Rio de Janeiro (RJ). Brazil's wheat production is not enough to satisfy its domestic market. Therefore, the country imports wheat, mostly from Argentina, with a cargo maximum cargo of 30,000 tons/ship.

Private Investment at Miritituba Facilitates Grain Flows through Santarem and Barcarena

On April 25, 2014, Bunge created a new export route from Miritituba to Barcarena (Vila do Conde), adding a new gateway to grain exports from North Mato Grosso (MT). Savings from efficiencies gained at the Miritituba's transshipment terminal offset the cost of shipping grain, through the Panama Canal to China. The Amazon River ports of Santarém and Barcarena also saw increased competitiveness to Europe, Middle East, and Mexico. By August 2017, three barge companies (Betolini, Hidrovias to Brazil, and Companhia Norte de Navegação de Porto (CIANPORT)), and Cargill built additional terminals at Miritituta. CIANPORT is a joint venture between Fiagril (Lucas do Rio Verde) and Agrosoja (Sorriso). Barcarena is MT's second largest soybean export port, after Santos.

Since 2014, North MT shifted soybean shipments to Barcarena, from the ports of Rio Grande (RS), São Francisco do Sul (SC), Vitória (ES), Paranaguá (PR), and São Luís (MA). The channel depth at Barcarena-Vila do Conde is 13.5 meters during the dry season, and 17-17.5 meters during the rainy season. The grain exported through this port uses Panamax vessels. Export capacity is limited to Panamax vessels because the depth of the Quiriri channel to the Atlantic Ocean is 13.3 meters. Post-Panamax vessels require 17 meters channel depth. There is a proposed project to dredge the Quiriri channel to 14.3 meters. Miritituba and Barcarena have static storage capacity of 400,000 and 500,000 metric tons (mt), respectively. Both have a long-term export capacity of about 15-18 million mt.

Brazilian Northern Arc ports



Source: USDA/Agricultural Marketing Service (AMS) and Foreign Agricultural Service (FAS)

The Northern Arc ports complex includes: Itacoatiara/Manaus (Amazon River), Santarém (Amazon River), Barcarena (Pará River), São Luís (Maranhão, MA), Porto Velho (MT) and Miritituba (PA) (Barge transshipment terminals).

BR-163 Status

The distance by truck from Sorriso, North MT, the largest grain producing state of Brazil, to Miritituba is 663 miles (1,067 km), via BR-163. Currently, it takes 3 days to ship grain to Miritituba because of the poor condition of the last 62 miles (100 km of unpaved road) of BR-163, connecting Sorriso to Miritituba. Travel time will be reduced to 1.5 days after paving of this section is finished.

The Brazilian government announced that the last 62 miles of BR-163 connecting Sorriso to Miritituba will be finished in two sections:

- The junction between BR 230, "Rodovia Transamazônica" (PA), and Vila Planalto is under construction (22 miles)
- The Army Engineer Construction Battalion (BEC) will pave the remaining 40 miles, from Novo Progresso to Igarapé do Lauro, between September and December of 2018.



Source: Ministry of Transport, Ports and Civil Aviation, <u>http://www.transportes.gov.br/</u> <u>ultimas-noticias/5075-at%C3%A9-o-final-de-2018,-br-163-pa-estar%C3%A1-pavimentadaat%C3%A9-miritituba.html</u>, accessed April 17, 2018

Brazil Modal share for general cargo, 2017-2025



Source: : Brazil Ministry of Transportation, National Plan of Logistics & Transportation (PNLT) and Confederação Nacional do Transporte (CNT) 2017

TRANSPORTATION INDICATORS

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

					20)17				
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
		Nort -	h MT ¹ - Sa -US\$/mt-	ntos² –			North -	MT ¹ - Para -US\$/mt-	naguá² –	
Truck	93.28	90.63	102.87	85.01	92.95	90.67	87.47	95.36	84.12	89.41
Ocean	18.50	29.00	30.00	30.00	26.88	20.50	30.50	31.00	31.50	28.38
Total transportation	111.78	119.63	132.87	115.01	119.82	111.17	117.97	126.36	115.62	117.78
Farm price ³	314.10	275.60	288.62	296.10	293.60	314.10	275.60	288.62	296.10	293.60
Landed cost	425.88	395.23	421.49	411.11	413.43	425.27	393.57	414.98	411.72	411.38
Transport % of landed cost	26.2	30.3	31.5	28.0	29.0	26.1	30.0	30.4	28.1	28.7
		Southe	ast MT ¹ - -US\$/mt-	Santos ²		I	North Cen –	tral PR ¹ - F -US\$/mt-	Paranaguá —	2
Truck	66.68	61.94	67.29	58.60	63.63	31.26	28.25	30.69	26.94	29.29
Ocean	18.50	29.00	30.00	30.00	26.88	20.50	30.50	31.00	31.50	28.38
Total transportation	85.18	90.94	97.29	88.60	90.50	51.76	58.75	61.69	58.44	57.66
Farm price ³	314.10	275.60	288.62	296.10	293.60	344.08	304.50	313.53	324.03	321.54
Landed cost	399.27	366.54	385.91	384.70	384.11	395.85	363.25	375.23	382.47	379.20
Transport % of landed cost	21.3	24.8	25.2	23.0	23.6	13.1	16.2	16.4	15.3	15.2
		Sout -	h GO¹ - Sa -US\$/mt-	ntos² –			Northwe	st RS ¹ - Rio -US\$/mt-	o Grande ²	
Truck	46.97	43.39	45.99	40.52	44.22	33.20	30.66	30.00	29.03	30.72
Ocean	18.50	29.00	30.00	30.00	26.88	18.00	29.50	31.00	30.70	27.30
Total transportation	65.47	72.39	75.99	70.52	71.09	51.20	60.16	61.00	59.73	58.02
Farm price ³	332.40	281.73	291.58	302.26	301.99	347.99	302.06	317.17	321.99	322.30
Landed cost	397.86	354.12	367.57	372.78	373.08	399.19	362.22	378.16	381.72	380.32
Transport % of landed cost	16.5	20.4	20.7	18.9	19.1	12.8	16.6	16.1	15.6	15.3

¹Producing regions: RS = Rio Grande Do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná ²Export ports

³Source: Companhia Nacional de Abastecimento (CONAB) www.conab.gov.br; na: not available

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

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

	2017											
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg		
	North MT ¹ - Santos ² —US\$/mt—						North MT ¹ - Paranaguá ² —US\$/mt—					
Truck	93.28	90.63	102.87	85.01	92.95	90.67	87.47	95.36	84.12	89.41		
Ocean	21.00	24.00	26.00	27.00	24.50	22.00	25.00	27.00	28.00	25.50		
Total transportation	114.28	114.63	128.87	112.01	117.45	112.67	112.47	122.36	112.12	114.91		
Farm price ³	314.10	275.60	288.62	296.10	293.60	314.10	275.60	288.62	296.10	293.60		
Landed cost	428.38	390.23	417.49	408.11	411.05	426.77	388.07	410.98	408.22	408.51		
Transport % of landed cost	26.7	29.4	30.9	27.4	28.6	26.4	29.0	29.8	27.5	28.2		
		Southe	ast MT ¹ - : US\$/mt-	Santos ² —		North Central PR ¹ - Paranaguá ² —US\$/mt—						
Truck	66.68	61.94	67.29	58.60	63.63	31.26	28.25	30.69	26.94	29.29		
Ocean	21.00	24.00	26.00	27.00	24.50	22.00	25.00	27.00	28.00	25.50		
Total transportation	87.68	85.94	93.29	85.60	88.13	53.26	53.25	57.69	54.94	54.79		
Farm price ³	314.10	275.60	288.62	296.10	293.60	344.08	304.50	313.53	324.03	321.54		
Landed cost	401.77	361.54	381.91	381.70	381.73	397.35	357.75	371.23	378.97	376.32		
Transport % of landed cost	21.8	23.8	24.4	22.4	23.1	13.4	14.9	15.5	14.5	14.6		
		Sout -	h GO¹ - Sa –US\$/mt-	ntos² —		Northwest RS ¹ - Rio Grande ² —US\$/mt—						
Truck	46.97	43.39	45.99	40.52	44.22	33.20	30.66	30.00	29.03	30.72		
Ocean	21.00	24.00	26.00	27.00	24.50	22.00	25.00	27.00	28.00	25.50		
Total transportation	67.97	67.39	71.99	67.52	68.72	55.20	55.66	57.00	57.03	56.22		
Farm price ³	332.40	281.73	291.58	302.26	301.99	347.99	302.06	317.17	321.99	322.30		
Landed cost	400.36	349.12	363.57	369.78	370.7	403.19	357.72	374.16	379.02	378.52		
Transport % of landed cost	17.0	19.3	19.8	18.3	18.6	13.7	15.6	15.2	15.0	14.9		

¹Producing regions: RS = Rio Grande Do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná ²Export ports

³Source: Companhia Nacional de Abastecimento (CONAB) www.conab.gov.br; na: not available Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

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

	2017											
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg		
		North –	MT ¹ - San -US\$/mt-	tarém² –		South MA ¹ - São Luís ² —US\$/mt—						
Truck	53.28	53.69	58.19	55.15	55.08	38.56	38.89	39.78	33.52	37.69		
Ocean	24.00	33.50	31.00	34.50	30.75	23.50	30.25	31.00	33.50	29.56		
Total transportation	77.28	87.19	89.19	89.65	85.83	62.06	69.14	70.78	67.02	67.25		
Farm price ³	314.10	275.60	288.62	296.10	293.60	356.01	327.17	340.58	349.81	343.39		
Landed cost	391.38	362.78	377.81	385.75	379.43	418.07	396.30	411.37	416.83	410.64		
Transport % of landed cost	19.7	24.0	23.6	23.2	22.7	14.8	17.4	17.2	16.1	16.4		
		Southw -	/est Pl ¹ - S –US\$/mt-	ão Luís² —								
Truck	45.60	44.05	48.27	39.83	44.44							
Ocean	23.50	30.25	31.00	33.50	29.56							
Total transportation	69.10	74.30	79.27	73.33	74.00							
Farm price ³	210.49	304.16	306.34	311.19	283.05							
Landed cost	279.59	378.46	385.61	384.52	357.05							
Transport % of landed cost	24.7	19.6	20.6	19.1	21.0							

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

²Export ports

³Source: Companhia Nacional de Abastecimento (CONAB) www.conab.gov.br; na: not available

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

Note: Data in bottom table was updated 9-13-18.

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

	2017									
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
		North -	South MA ¹ - São Luís ² —US\$/mt—							
Truck	53.28	53.69	58.19	55.15	55.08	38.56	38.89	39.78	33.52	37.69
Ocean	21.00	23.60	25.00	26.00	23.90	17.60	20.00	21.20	22.00	20.20
Total transportation	74.28	77.29	83.19	81.15	78.98	56.16	58.89	60.98	55.52	57.89
Farm price ³	314.10	275.60	288.62	296.10	293.60	356.01	327.17	340.58	349.81	343.39
Landed cost	388.38	352.88	371.81	377.25	372.58	412.17	386.05	401.57	405.33	401.28
Transport % of landed cost	19.1	21.9	22.4	21.5	21.2	13.6	15.3	15.2	13.7	14.4
		Southw -	/est Pl ¹ - S –US\$/mt-	ão Luís² —						
Truck	45.60	44.05	48.27	39.83	44.44					
Ocean	17.60	20.00	21.20	22.00	20.20					
Total transportation	63.20	64.05	69.47	61.83	64.64					
Farm price ³	210.49	304.16	306.34	311.19	283.05	n 				
Landed cost	273.69	368.21	375.81	373.01	347.68					
Transport % of landed cost	23.1	17.4	18.5	16.6	18.9					

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

²Export ports

³Source: Companhia Nacional de Abastecimento (CONAB) www.conab.gov.br; na: not available

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS

Truck rates for selected Brazilian soybean export transportation routes, 2017

					Freight Price (US\$)					
Route #	Origin ¹	Destination	Distance	Share	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	
	(reference city)		(innes)	(/0)	(per 100 miles)⁴					
1	Northwest RS5 (Cruz Alta)	Rio Grande	288	11.8	11.53	10.65	10.42	10.08	10.67	
2	North MT (Sorriso)	Santos	1,190	3.2	7.84	7.62	8.64	7.14	7.81	
3	North MT (Sorriso)	Paranaguá	1,262	3.0	7.18	6.93	7.56	6.67	7.08	
4	South GO (Rio Verde)	Santos	587	4.3	8.00	7.39	7.84	6.90	7.53	
5	South GO (Rio Verde)	Paranaguá	726	3.5	7.82	7.50	8.18	7.05	7.64	
6	North Central PR (Londrina)	Paranaguá	268	3.5	11.67	10.54	11.45	10.05	10.93	
7	Western Central PR (Mamborê)	Paranaguá	311	2.8	10.89	10.05	11.05	9.52	10.38	
8	Triangle MG (Uberaba)	Santos	339	2.3	11.17	10.29	11.07	9.53	10.51	
9	West PR (Assis Chateaubriand)	Paranaguá	377	2.7	9.84	9.02	9.50	8.45	9.20	
10	West Extreme BA (São Desidério)	Salvador	535	5.7	8.41	8.79	8.89	7.78	8.46	
11	Southeast MT (Primavera do Leste)	Santos	901	2.7	7.40	6.88	7.47	6.50	7.06	
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.5	6.66	6.48	7.11	6.33	6.64	
13	Southwest MS (Maracaju)	Paranaguá	612	3.1	8.48	7.92	8.45	7.61	8.11	
14	Southwest MS (Maracaju)	Santos	652	2.9	8.14	7.87	8.53	7.23	7.94	
15	West PR (Assis Chateaubriand)	Santos	550	1.8	8.45	7.98	8.76	7.45	8.16	
16	East GO (Cristalina)	Santos	585	1.8	9.02	8.60	9.17	7.96	8.69	
17	North PR (Cornélio Procópio)	Paranaguá	306	1.9	9.64	8.74	9.49	8.19	9.01	
18	Eastern Central PR (Castro)	Paranaguá	130	2.3	16.61	14.74	15.91	13.72	15.24	
19	South Central PR (Guarapuava)	Paranaguá	204	2.2	14.14	13.51	14.43	12.18	13.57	
20	North Central MS (São Gabriel do Oeste)	Santos	720	2.1	7.14	6.80	7.33	6.36	6.91	
21	Ribeirão Preto SP (Guairá)	Santos	314	0.0	9.47	8.65	9.25	8.00	8.84	
22	Northeast MT (Canarana)	Santos	950	2.7	8.00	8.09	8.07	6.63	7.70	
23	East MS (Chapadão do Sul)	Santos	607	0.0	7.27	6.84	7.35	6.42	6.97	
24	Northeast MT (Canarana)	Paranaguá	1,075	3.0	6.90	7.42	7.72	6.45	7.12	
25	Western Central RS (Tupanciretã)	Rio Grande	273	3.4	10.14	9.55	8.24	9.13	9.27	
26	Southwest PR(Chopinzinho)	Paranaguá	291	1.8	14.04	13.55	13.84	11.97	13.35	
27	North MT (Sorriso)	Itaituba	672	5.7	9.05	9.38	9.77	7.32	8.88	
28	North MT (Sorriso)	Porto Velho	632	6.0	7.44	7.49	7.92	6.62	7.37	
29	North MT (Sorriso)	Santarém	876	4.3	6.08	6.13	6.64	6.30	6.29	
30	South MA (Balsas)	São Luís	482	2.2	8.01	8.07	8.26	6.96	7.83	
31	Southwest PI (Bom Jesus)	São Luís	606	2.2	7.53	7.27	7.97	6.57	7.33	
32	Southeast PA (Paragominas)	Barcarena	249	1.1	10.96	9.99	10.03	9.26	10.06	
33	East TO (Campos Lindos)	São Luís	842	1.5	7.46	8.47	7.13	6.25	7.33	
	Average		587	100.0	9.18	8.82	9.18	8.08	8.82	

¹Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available

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

³Share is measured as a percentage of total production

⁴US\$ per metric ton (average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to the U.S. dollar)

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, TO = Tocantins

Source: ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS

Truck rates for selected Brazilian soybean export transportation routes, 2013-2017

			Distance (miles) ²	Share	2013	2014	2015	2016	2017	Percent
Route	Origin ¹	Destination				change				
#	(reference city)			(%)"			2016-18			
1	Northwest RS5 (Cruz Alta)	Rio Grande	288	11.5	23.26	24.56	26.4	23.8	30.72	28.8
2	North MT (Sorriso)	Santos	1,190	3.2	116.40	103.90	86.0	75.5	92.95	23.1
3	North MT (Sorriso)	Paranaguá	1,262	3.1	111.93	100.89	85.7	74.4	89.41	20.1
4	South GO (Rio Verde)	Santos	587	5.6	58.90	62.57	39.8	34.7	44.22	27.6
5	South GO (Rio Verde)	Paranaguá	726	4.5	68.08	60.73	49.7	43.8	55.45	26.7
6	North Central PR (Londrina)	Paranaguá	268	3.9	32.26	30.98	24.1	21.3	29.29	37.4
7	Western Central PR (Mamborê)	Paranaguá	311	3.0	33.23	33.68	27.0	23.7	32.28	36.1
8	Triangle MG (Uberaba)	Santos	339	2.8	40.42	57.45	31.8	27.1	35.64	31.3
9	West PR (Assis Chateaubriand)	Paranaguá	377	3.0	39.53	43.83	30.1	26.9	34.69	29.0
10	West Extreme BA (São Desidério)	Salvador	535	4.1	56.96	54.80	40.7	35.3	45.29	28.1
11	Southeast MT (Primavera do Leste)	Santos	901	3.0	88.66	79.00	58.8	51.3	63.63	24.1
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.8	75.43	67.65	61.6	53.5	64.78	21.2
13	Southwest MS (Maracaju)	Paranaguá	612	2.8	57.46	55.70	43.3	38.6	49.65	28.7
14	Southwest MS (Maracaju)	Santos	652	2.7	66.82	66.79	46.4	40.7	51.77	27.2
15	West PR (Assis Chateaubriand)	Santos	550	2.1	46.89	43.84	39.2	34.5	44.87	29.9
16	East GO (Cristalina)	Santos	585	1.9	67.47	69.48	45.7	40.3	50.83	26.1
17	North PR (Cornélio Procópio)	Paranaguá	306	2.2	38.48	37.73	22.6	20.0	27.58	37.7
18	Eastern Central PR (Castro)	Paranaguá	130	2.7	25.08	24.65	15.1	12.7	19.82	56.6
19	South Central PR (Guarapuava)	Paranaguá	204	2.3	30.46	29.08	22.2	20.1	27.67	37.7
20	North Central MS (São Gabriel do Oeste)	Santos	720	1.9	64.58	64.67	44.9	39.1	49.73	27.1
21	Ribeirão Preto SP (Guairá)	Santos	314	0.0	35.15	34.91	23.3	20.3	27.76	36.5
22	Northeast MT (Canarana)	Santos	950	2.8	99.10	87.11	63.7	60.6	73.12	20.7
23	East MS (Chapadão do Sul)	Santos	607	0.0	69.28	71.05	38.3	32.7	42.31	29.6
24	Northeast MT (Canarana)	Paranaguá	1,075	2.4	53.29	56.47	70.3	60.2	76.55	27.2
25	Western Central RS (Tupanciretã)	Rio Grande	273	2.6	28.20	26.44	21.7	19.6	25.30	28.9
26	Southwest PR(Chopinzinho)	Paranaguá	291	1.8	36.59	37.05	30.3	26.4	38.85	47.2
27	North MT (Sorriso)	Itaituba	672	5.7	na	na	41.7	41.7	59.65	43.0
28	North MT (Sorriso)	Porto Velho	632	6.1	na	na	40.3	40.5	46.56	15.0
29	North MT (Sorriso)	Santarém	876	4.4	na	na	58.1	49.6	55.08	11.0
30	South MA (Balsas)	São Luís	482	2.0	na	na	36.2	31.0	37.69	21.4
31	Southwest PI (Bom Jesus)	São Luís	606	1.3	na	na	43.0	34.2	44.44	29.8
32	Southeast PA (Paragominas)	Barcarena	249	0.6	na	na	19.8	17.9	25.00	39.4
33	East TO (Campos Lindos)	São Luís	842	1.4	na	na	56.8	50.5	61.69	22.1
	Average		587	100.0	58.24	57.03	45.0	39.8	51.79	30.1

¹Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available

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

³Share is measured as a percentage of total production

⁴US\$ per metric ton (average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to the U.S. dollar)

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, TO = Tocantins

Source: ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS



Truck rates for selected southern Brazilian soybean export transportation route

Source:ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS





Source:ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS



Source: ESALQ/USP (University of São Paulo, Brazil) and USDA/AMS



Brazilian soybean export increases and truck cost declines for selected routes

Source: ESALQ/ USP (University of São Paulo, Brazil) and USDA/AMS. Secretariat of Foreign Trade (SECEX), MDIC
Monthly Brazilian soybean export truck transportation cost index

Month	Freight price* (per 100 miles)	Index variation (%) (Base: prior month)	Index value (Base: Jan. 05 = 100)	Month	Freight price* (per 100 miles)	Index variation (%) (Base: prior month)	Index value (Base: Jan. 05 = 100)
Jan-10	9.17	1.7	158.10	Jan-14	8.86	-0.6	152.73
Feb-10	9.99	8.9	172.16	Feb-14	10.34	16.7	178.24
Mar-10	10.77	7.8	185.67	Mar-14	11.61	12.3	200.13
Apr-10	10.91	1.3	188.10	Apr-14	11.35	-2.2	195.65
May-10	10.80	-1.1	186.10	May-14	10.90	-4.0	187.89
Jun-10	10.61	15.7	182.95	Jun-14	10.34	-5.1	178.24
Jul-10	10.86	2.3	187.14	Jul-14	10.16	-1.7	175.21
Aug-10	11.21	3.3	193.23	Aug-14	10.10	-0.6	174.08
Sep-10	11.46	2.2	197.57	Sep-14	9.66	-4.3	166.54
Oct-10	11.51	0.4	198.41	Oct-14	8.77	-9.3	151.13
Nov-10	10.86	-5.6	187.20	Nov-14	8.36	-4.6	144.16
Dec-10	10.72	-1.3	184.79	Dec-14	7.96	-4.9	137.15
Jan-11	10.84	1.1	186.89	Jan-15	8.01	0.7	138.15
Feb-11	11.21	3.4	193.30	Feb-15	8.02	0.1	138.29
Mar-11	12.07	7.6	208.04	Mar-15	8.32	3.7	143.44
Apr-11	13.30	10.2	229.22	Apr-15	9.00	8.2	155.13
May-11	12.01	-9.7	207.04	May-15	8.39	-6.8	144.58
Jun-11	12.25	2.0	211.20	Jun-15	8.01	-4.5	138.12
Jul-11	12.72	3.9	219.34	Jul-15	7.56	-5.7	130.25
Aug-11	12.64	-0.7	217.84	Aug-15	7.38	-2.4	127.15
Sep-11	11.43	-9.6	196.95	Sep-15	6.60	-10.5	113.78
Oct-11	11.09	-3.0	191.10	Oct-15	6.70	1.5	115.43
Nov-11	10.70	-3.4	184.52	Nov-15	7.08	5.8	122.08
Dec-11	10.04	-6.2	173.00	Dec-15	6.76	-4.5	116.56
Jan-12	10.20	1.7	175.90	Jan-16	6.42	-5.1	110.63
Feb-12	10.76	5.4	185.45	Feb-16	6.73	4.8	115.98
Mar-12	10.55	-2.0	181.82	Mar-16	7.79	15.8	134.33
Apr-12	10.45	-1.0	180.06	Apr-16	8.30	6.5	143.05
May-12	9.64	-7.7	166.20	May-16	7.28	-12.3	125.43
Jun-12	9.37	-2.9	161.44	Jun-16	7.16	-1.5	123.51
Jul-12	9.76	4.2	168.16	Jul-16	7.46	4.2	128.64
Aug-12	10.17	4.3	175.33	Aug-16	7.33	-1.7	126.41
Sep-12	10.30	1.3	177.54	Sep-16	6.35	-13.3	109.53
Oct-12	10.13	-1.6	174.66	Oct-16	5.88	-7.5	101.35
Nov-12	9.84	-2.8	169.69	Nov-16	5.00	-14.9	86.21
Dec-12	9.73	-1.1	167.74	Dec-16	5.47	9.4	94.32
Jan-13	10.11	3.9	174.31	Jan-17	7.32	33.8	126.20
Feb-13	10.79	6.7	185.96	Feb-17	9.85	34.6	169.85
Mar-13	11.14	3.3	192.04	Mar-17	10.38	5.3	178.90
Apr-13	10.95	-1.7	188.71	Apr-17	9.52	-8.3	164.05
May-13	10.40	-5.0	179.31	May-17	8.75	-8.0	150.90
Jun-13	9.49	-8.8	163.61	Jun-17	8.18	-6.5	141.04
Jul-13	9.65	1.7	166.41	Jul-17	8.74	6.8	150.66
Aug-13	9.80	1.5	168.95	Aug-17	9.85	12.7	169.76
Sep-13	10.21	4.2	176.02	Sep-17	8.97	-9.0	154.55
Oct-13	10.17	-0.4	175.28	Oct-17	8.64	-3.6	148.93
Nov-13	9.29	-8.6	160.18	Nov-17	8.36	-3.2	144.11
Dec-13	8.91	-4.1	153.63	Dec-17	7.23	-13.5	124.63

Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Shanghai, China (US\$/metric ton)*

Port	1st qtr 2011	2nd qtr 2011	3rd qtr 2011	4th qtr 2011	2011 Average
Santos	50.00	50.05	52.31	49.65	50.50
Paranagua	56.25	57.62	59.61	55.80	57.32
Rio Grande	50.50	50.60	53.02	50.26	51.10
Port	1st qtr 2012	2nd qtr 2012	3rd qtr 2012	4th qtr 2012	2012 Average
Santos	46.62	51.35	50.42	50.42	49.70
Paranagua	52.32	57.63	55.42	55.42	55.20
Rio Grande	47.92	52.78	49.02	49.02	49.69
Port	1st qtr 2013	2nd qtr 2013	3rd qtr 2013	4th qtr 2013	2013 Average
Santos	52.34	34.50	34.50	42.50	40.96
Paranagua	56.03	36.75	36.75	46.00	43.88
Rio Grande	51.34	35.25	35.25	44.25	41.52
Port	1st qtr 2014	2nd qtr 2014	3rd qtr 2014	4th qtr 2014	2014 Average
Santos	44.83	38.07	34.00	30.50	36.85
Paranagua	47.22	41.13	36.00	32.50	39.21
Rio Grande	44.83	38.75	32.50	30.50	36.65
Port	1st qtr 2015	2nd qtr 2015	3rd qtr 2015	4th qtr 2015	2015 Average
Santos	29.50	22.50	23.25	20.00	23.81
Paranagua	31.50	23.50	24.18	20.50	24.92
Rio Grande	29.50	25.00	25.75	21.00	25.31
Santarém	32.00	25.00	25.75	23.50	26.56
São Luís	32.00	25.00	25.75	23.50	26.56
Barcarena	32.00	25.00	25.75	23.50	26.56
Port	1st qtr 2016	2nd qtr 2016	3rd qtr 2016	4th qtr 2016	2016 Average
Santos	17.50	16.50	12.50	20.00	16.63
Paranagua	18.00	18.50	14.50	21.50	18.13
Rio Grande	18.50	17.00	13.00	20.50	17.25
Santarém	22.00	21.00	19.40	23.75	21.54
São Luís	20.00	18.40	17.50	22.00	19.48
Barcarena	22.50	21.50	20.00	23.75	21.94
Port	1st qtr 2017	2nd qtr 2017	3rd qtr 2017	4th qtr 201	2017 Average
Santos	18.50	29.00	30.00	30.00	26.88
Paranagua	20.50	30.50	31.00	31.50	28.38
Rio Grande	18.00	29.50	31.00	30.70	27.30
Santarém	24.00	33.50	31.00	34.50	30.75
São Luís	23.50	30.25	31.00	33.50	29.56
Barcarena	24.00	33.50	31.00	34.50	30.75

*Correspond to the average actual values negotiated between shippers and carriers and weighted according to the magnitude of the shipped volumes; na: not available

Source: Sistema de Informações de Fretes, SIFRECA, ESALQ/USP (University of São Paulo, Brazil)

Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Hamburg, Germany (US\$/metric ton)*

Port	1st qtr 2011	2nd qtr 2011	3rd qtr 2011	4th qtr 2011	2011 Average
Santos	34.96	35.00	36.65	32.00	34.65
Paranagua	33.86	36.00	37.29	32.63	34.95
Rio Grande	35.43	36.00	37.81	35.22	36.12
Port	1st qtr 2012	2nd qtr 2012	3rd qtr 2012	4th qtr 2012	2012 Average
Santos	32.00	35.00	32.00	28.00	31.75
Paranagua	31.58	35.00	34.30	34.30	33.80
Rio Grande	32.08	36.50	32.00	32.00	33.15
Port	1st qtr 2013	2nd qtr 2013	3rd qtr 2013	4th qtr 2013	2013 Average
Santos	30.00	29.00	29.00	30.00	29.50
Paranagua	30.00	29.00	29.00	30.00	29.50
Rio Grande	30.00	29.00	29.00	30.00	29.50
Port	1st qtr 2014	2nd qtr 2014	3rd qtr 2014	4th qtr 2014	2014 Average
Santos	31.00	30.00	26.00	24.00	27.75
Paranagua	31.00	30.00	28.00	26.00	28.75
Rio Grande	31.00	30.00	24.50	22.50	27.00
Port	1st qtr 2015	2nd qtr 2015	3rd qtr 2015	4th qtr 2015	2015 Average
Santos	22.00	21.00	19.00	17.00	19.75
Paranagua	22.00	21.00	19.00	17.00	19.75
Rio Grande	22.00	21.00	19.00	17.00	19.75
Santarém	20.00	14.50	13.50	20.00	17.00
São Luís	20.00	18.25	16.38	20.50	18.78
Barcarena	20.00	16.00	15.20	21.00	18.05
Port	1st qtr 2016	2nd qtr 2016	3rd qtr 2016	4th qtr 2016	2016 Average
Santos	16.00	17.00	16.50	23.00	18.13
Paranagua	16.00	17.00	16.50	24.00	18.38
Rio Grande	16.00	17.00	16.50	23.00	18.13
Santarém	11.03	14.13	15.00	19.80	14.99
São Luís	8.25	11.00	11.80	15.80	11.71
Barcarena	9.60	12.45	13.20	17.35	13.15
Port	1st qtr 2017	2nd qtr 2017	3rd qtr 2017	4th qtr 201	2017 Average
Santos	21.00	24.00	26.00	27.00	24.50
Paranagua	22.00	25.00	27.00	28.00	25.50
Rio Grande	22.00	25.00	27.00	28.00	25.50
Santarém	21.00	23.60	25.00	26.00	23.90
São Luís	17.60	20.00	21.20	22.00	20.20
Barcarena	18.00	20.60	21.80	22.70	20.78

*Correspond to the average actual values negotiated between shippers and carriers and weighted according to the magnitude of the shipped volumes; na: not available

Source: Sistema de Informações de Fretes, SIFRECA, ESALQ/USP (University of São Paulo, Brazil)

SOYBEAN PRODUCTION



*Data based on calendar year, January-December **Forecast, August 2018 Source: Companhia Nacional de abastecimento (CONAB)

Year*	Area harvested	Beginning stocks	Production	Imports	Total supply	Exports	Crush	Domestic consumption	Ending stocks
	1,000 hectares		1,000 metric tons						
2005/06	22,229	2,688	57,000	40	59,728	24,770	28,756	31,506	3,452
2006/07	20,700	3,452	59,000	108	62,560	23,805	31,511	34,261	4,494
2007/08	21,300	4,494	61,000	83	65,577	24,515	31,895	34,695	6,367
2008/09	21,700	6,367	57,800	124	64,291	28,041	30,779	33,579	2,671
2009/10	23,500	2,671	69,000	150	71,821	29,188	35,700	38,550	4,083
2010/11	24,200	4,083	75,300	40	79,423	33,789	37,264	40,164	5,470
2011/12	25,000	5,470	66,500	298	72,268	31,905	36,230	39,130	1,233
2012/13	27,700	1,233	82,000	240	83,473	42,826	36,432	39,378	1,269
2013/14	30,100	1,269	86,700	579	88,548	45,747	38,195	41,345	1,456
2014/15	32,100	1,456	97,200	329	98,985	54,635	40,339	43,550	800
2015/16	33,300	800	96,500	362	97,662	52,100	39,967	43,332	2,230
2016/17	33,900	2,230	114,600	267	117,097	68,807	42,312	45,715	2,575
2017/18	35,100	2,575	119,500	425	122,500	74,100	43,200	46,750	1,650
2018/19	37,500	1,650	120,500	225	122,375	74,400	42,700	46,290	1,685

Brazil soybean supply and distribution

*Data based on Brazil's local February/January Marketing Year (MY).

Where February 2012 - January 2013 is the 2011/12 MY.

**Forecast,August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade Data/Reports/Oilseeds

EXPORTS



Top to Dialinan Soy Sean enpoining states	Тор	15	Brazilian	soybean	exporting	states
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Chata	2015	2016	2017	Denk
State		капк		
Mato Grosso	14,514,829	15,222,273	18,017,456	1
Rio Grande Do Sul	10,653,865	9,529,430	12,349,501	2
Paraná	7,779,670	7,970,946	10,924,399	3
Goiás	3,225,232	3,549,416	4,805,409	4
Mato Grosso Do Sul	3,447,470	2,892,712	3,642,153	5
São Paulo	2,655,176	3,152,092	3,408,327	6
Bahia	2,609,868	1,402,068	3,096,844	7
Minas Gerais	1,957,116	2,281,776	2,626,070	8
Tocantins	1,570,491	1,081,074	2,014,962	9
Maranhão	1,781,110	941,587	1,887,820	10
Santa Catarina	1,509,219	1,564,279	1,844,618	11
Pará	830,509	825,297	1,172,575	13
Rondônia	762,629	766,114	878,079	12
Piauí	736,989	260,652	821,018	14
Distrito Federal	227,077	44,640	263,976	15
Others	61,352	93,108	394,497	
Total	54,322,601	51,577,465	68,147,705	

Source: Bureau of Foreign Trade (SECEX), MDIC





Source: Bureau of Foreign Trade (SECEX), MDIC



Brazil average monthly soybean exports

Source: Bureau of Foreign Trade (SECEX), MDIC

Main export routes for soybeans



Brazilian Institute of Geography and Statistics– Produção Agricola Municipal, Lloyd's Ports, and World Wildlife Fund (WWF) Source: USDA/Agricultural Marketing Service & Foreign Agricultural Service

World export routes for Brazilian soybeans



Source: USDA/Agricultural Marketing Service & Foreign Agricultural Service



Top 5 Brazilian soybean export destinations

Source: Bureau of Foreign Trade (SECEX), MDIC

In 2017, Brazil was the leading soybean exporter, followed by the United States, Argentina, Paraguay, and Canada. USDA forecasts that Brazil will sustain its leadership position in 2018.



Top 5 world soybean exporting countries

*Forecast August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade/Reports/PSD Reports/Oilseeds

EXPORTS TO CHINA

China is Brazil's largest soybean buyer, accounting for 79 percent of total soybean exports in 2017. Brazil soybean exports to China usually peak in May and finish by the end of October. Nearly 85 percent of Brazil soybean exports to China originated from Mato Grosso, Rio Grande do Sul, Paraná, Goiás, Mato Grosso do Sul, São Paulo, Bahia, and Minas Gerais in 2017.



Brazil average monthly soybean exports to China

Source: Bureau of Foreign Trade (SECEX), MDIC

China's share of Brazilian soybean exports increased 40 percent to 53.8 mmt (valued at US\$20.3 billion), from 38.6 mmt in 2016. Mato Grosso is the top soybean-exporting state to China, followed by Rio Grande do Sul, Paraná, Goiás, and São Paulo.

State	2015	2016	2017	9/ shows
State		% snare		
Mato Grosso	9,226,007	9,669,725	11,777,815	21.9
Rio Grande Do Sul	9,418,569	8,280,180	11,683,395	21.7
Paraná	7,012,820	7,111,926	9,677,753	18.0
Goiás	2,669,456	2,781,661	4,144,828	7.7
Mato Grosso Do Sul	2,988,704	2,419,221	2,971,048	5.5
São Paulo	2,135,690	2,572,214	2,926,939	5.4
Bahia	1,747,933	772,705	2,472,074	4.6
Minas Gerais	1,499,642	1,824,378	2,337,977	4.3
Santa Catarina	1,292,269	1,164,155	1,472,302	2.7
Tocantins	890,953	617,190	1,450,727	2.7
Maranhão	1,045,910	513,741	1,307,617	2.4
Piauí	518,260	188,824	580,826	1.1
Pará	241,590	318,454	567,784	1.1
Distrito Federal	168,524	39,953	209,552	0.4
Rondonia	65,232	257,295	140,063	0.3
Others	3,948	32,287	76,284	0.1
Brazil exports to China	40,925,507	38,563,909	53,796,980	
Brazil total exports	54,322,601	51,577,465	68,147,705	78.9

Top 15 Brazilian soybean exporting states to China

Source: Secretariat of Foreign Trade (SECEX), MDIC

Тор	15	Mato	Groso	(MT)	soybean	exports	destinations
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Charles -	2015	2016	2017	0/ share	Daula
State		metric ton		% snare	капк
China	9,226,007	9,669,725	11,777,815	65.4	1
Spain	986,513	1,011,000	1,177,825	6.5	2
Netherlands	445,503	573,992	838,675	4.7	3
Thailand	635,042	547,487	803,644	4.5	4
Russia	369,443	508,405	610,694	3.4	5
Iran	179,450	333,488	490,405	2.7	6
United Kingdom	187,362	263,668	329,957	1.8	7
Norway	322,499	253,851	240,625	1.3	8
Taiwan	314,198	238,936	237,731	1.3	9
Turkey	88,559	156,856	189,895	1.1	10
France	112,007	182,252	139,220	0.8	11
Pakistan	12,893	12,704	136,075	0.8	12
Mexico	0	61,558	132,914	0.7	13
Italy	62,625	284,208	130,625	0.7	14
Saudi Arabia	240,347	246,429	113,046	0.6	15
Others	1,332,380	877,714	668,311	3.7	
Mato Grosso total	14,514,829	15,222,273	18,017,456	100.0	
		2015	2016	2017	
MT % share of Brazil exports to C	hina	22.5	25.1	21.9	
Brazil exports to China		40,925,507	38,563,909	53,796,980	1
Brazil total exports		54,322,601	51,577,465	68,147,705	1
China % share of Brazil total expo	orts	75.3	75.2	78.9	1

Source: Secretariat of Foreign Trade (SECEX), MDIC

Soybean trade to China is dominated by the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul, accounting for 75 percent of Brazil's soybean exports to China. In the past, China preferred to buy soybeans from the southern ports of Santos, Paranaguá, Rio Grande, Sâo Francisco do Sul, and Vitória via Cape of Good Hope in South Africa to Shanghai, because it was cheaper than the remote ports of the Amazon River and the Northeast. For example, by buying soybeans from Santos, China saves 7-8 days in shipping costs compared to Manaus; and 2-3 days compared to Itaquí/São Luis. However, infrastructure improvements increased competitiveness of the Amazon River and Northeast ports, especially the port of São Luís. The northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 24 percent of exports to China. The Amazon River ports of Manaus and Santarém exported 1 percent to China.

Douto	2015	2016	2017				
Ports	metric ton						
Santos	10,819,783	11,825,003	14,183,986				
Rio Grande	10,080,780	8,414,709	11,901,538				
Paranaguá	7,518,588	7,213,409	10,026,648				
São Luís	2,938,010	2,246,318	4,246,740				
São Francisco do Sul	4,080,459	3,539,198	3,984,947				
Subtotal	35,437,619	33,238,637	44,343,859				
Others	5,487,888	5,325,272	9,453,121				
Total exports to China	40,925,507	38,563,909	53,796,980				
Brazil total exports	54,322,601	51,577,465	68,147,705				
Dorte	2014	2016	2017				
PULS	% share of exports to China						
Santos	26.4	30.7	26.4				
Rio Grande	24.6	21.8	22.1				
Paranaguá	18.4	18.7	18.6				
São Luís	7.2	5.8	7.9				
São Francisco do Sul	10.0	9.2	7.4				
Subtotal	86.6	86.2	82.4				
Others	13.4	13.8	17.6				
Total exports to China	100	100	100				
Deute	2014	2016	2017				
PULS	% share of Brazil total exports						
Santos	19.9	22.9	20.8				
Rio Grande	18.6	16.3	17.5				
Paranaguá	13.8	14.0	14.7				
São Luís	5.4	4.4	6.2				
São Francisco do Sul	7.5	6.9	5.8				
Subtotal	65.2	64.4	65.1				
Others	10.1	10.3	13.9				
Total exports to China	75.3	74.8	78.9				

Total Brazilian soybean exports by port to China, 2014-17

Source: Bureau of Foreign Trade (SECEX), MDIC



Source: Bureau of Foreign Trade (SECEX), MDIC

Distance from selected Brazilian ports to Shanghai, China and Hamburg, Germany

Brazilian port	Region	Route through	Destination	Nautical miles	Days at sea*
Santos, SP	South	Good Hope	Shanghai, China	11,056	32.22
Santos, SP	South	Good Hope	Hamburg, Germany	5,683	16.22
Rio Grande, RS	South	Good Hope	Shanghai, China	11,129	33.03
Rio Grande, RS	South	Panama Canal	Shanghai, China	13,564	40.09
Rio Grande, RS	South	Cape Horn	Shanghai, China	11,397	33.22
Rio Grande, RS	South	Cape Horn	Hamburg, Germany	6,204	18.11
Paranaguá, PR	South	Good Hope	Shanghai, China	11,111	33.02
Paranaguá, PR	South	Panama Canal	Shanghai, China	13,165	39.04
Paranaguá, PR	South	Panama Canal	Hamburg, Germany	5,805	17.07
São Francisco do Sul, SC	South	Good Hope	Shanghai, China	11,111	33.4
São Francisco do Sul, SC	South	Good Hope	Hamburg, Germany	5,805	17.1
Vitória, ES	Southeast	Good Hope	Shanghai, China	10,857	32.08
Vitória, ES	Southeast	Panama Canal	Shanghai, China	12,587	37.11
Vitória, ES	Southeast	Panama Canal	Hamburg, Germany	5,227	15.13
Salvador, BA	Northeast	Good Hope	Shanghai, China	10,997	32.18
Salvador, BA	Northeast	Panama Canal	Shanghai, China	12,170	36.05
Salvador, BA	Northeast	Panama Canal	Hamburg, Germany	4,811	14.08
Aratu, BA	Northeast	Good Hope	Shanghai, China	10,997	32.18
Aratu, BA	Northeast	Panama Canal	Shanghai, China	12,170	36.05
Aratu, BA	Northeast	Panama Canal	Hamburg, Germany	4,811	14.08
Itaquí/Sâo Luís - Ponta de Madeira (MA)	Northeast	Good Hope	Shanghai, China	11,708	34.2
Itaquí/Sâo Luís - Ponta de Madeira (MA)	Northeast	Panama Canal	Shanghai, China	11,087	33
Itaquí/Sâo Luís - Ponta de Madeira (MA)	Northeast	Panama Canal	Hamburg, Germany	4,361	13
Santarém, (PA)** Reference point for Itaituba/Miritituba	North	Good Hope	Shanghai, China	12,305	37.8
Santarém, (PA)** Reference point for Itaituba/Miritituba	North	Panama Canal	Shanghai, China	11,200	33.1
Santarém, (PA)** Reference point for Itaituba/Miritituba	North	Panama Canal	Hamburg, Germany	4,750	14.18
Manaus, (AM)	North	Good Hope	Shanghai, China	12,880	38.04
Manaus, (AM)	North	Panama Canal	Shanghai, China	10,926	32.12
Manaus, (AM)	North	Panama Canal	Hamburg, Germany	5,283	15.17
Barcarena, (PA)**	North	Good Hope	Shanghai, China	11,905	35.6
Barcarena, (PA)**	North	Panama Canal	Shanghai, Chin	10,950	32.6
Barcarena, (PA)**	North	Panama Canal	Hamburg, Germany	4,510	13.6

*Vessel speed: 14 knots

**Barcarena is located 49 nm from Belém; Itaituba is located 140 nm from Santarém.

Source: http://sea-distances.com/ and 1Ports.com

In 2017, China was the major destination of Brazilian soybeans through the port of Santos, Brazil's largest soybean exporting port, followed by Thailand, Taiwan, South Korea, and Iran. The peak of soybean shipments to China, from Santos, usually occurs March thru May. The majority of soybean exports, through Santos, were originated from Mato Grosso (51%), São Paulo (18%), Goiás (14%), Minas Gerais (9%), Mato Grosso do Sul (5%), and Paraná (2%).





Source: Bureau of Foreign Trade (SECEX), MDIC



Port of Santos soybean average monthly exports to China

Source: Secretaria de Comércio Exterior (SECEX)

China was the major destination of Brazilian soybeans via the port of Rio Grande followed by Iran, Vietnam, Taiwan, and Italy. The peak of soybean shipments to China through the port of Rio Grande is from April—August. The majority of soybean exports through the Port of Rio Grande originated from Rio Grande do Sul (97%) followed by Paraná (1%), Mato Grosso do Sul (0.7%), São Paulo (0.7%), and Mato Grosso (0.5%).





China was the top Brazilian soybean export destination through the Port of Paranaguá, followed by Pakistan, Vietnam, South Korea, and Iran. The peak of soybean shipments to China from Paranaguá is during March—June. More than two-thirds of Paranaguá exports were originated from Paraná (72%), followed by Mato Grosso do Sul (12%), Mato Grosso (6%), Santa Catarina (5%), Goiás (2%), and São Paulo (2%).



Port of Paranaguá soybean average monthly exports to China

Source: Bureau of Foreign Trade (SECEX), MDIC

Source: Bureau of Foreign Trade (SECEX), MDIC

China was top Brazilian soybean export destination through the Port of São Luís, followed by Iran, Vietnam, Taiwan, and Italy. São Luís is the top northeastern soybean exporting port, accounting for 9 percent of Brazilian total soybean exports and nearly 8 percent of exports to China, followed by Vitória, Salvador, Barcarena, Santarém, and Manaus. These 5 ports accounted for 25 percent of exports to China. About 60 percent of exports of the port of São Luís originated from Maranhão (30%) and Tocantins (29%), followed by Mato Grosso (22%), Piauí (12%), and Pará (5%).





Source: Secretaria de Comércio Exterior (SECEX)

TRANSPORTATION MODES

Brazilian ports



Sources: Companhia Nacional de Abastecimento (CONAB) and Ministério dos Transportes, Brazil

Major rivers of the Amazonian Basin



Source: National Agency for Waterway Transportation (ANTAQ)

Brazil has 39,060 miles of river-lake surface water and 27,280 miles of navigable rivers, but only 8,060 miles are commercially navigated.

Brazil waterway system

Extension	Miles			
River-lake surface water	39,060			
National river network	27,280			
Naturally navigable waterways	17,980 (100%)			
Commercial navigations	8,060 (45%)			
Vessel owned	1,148			

Sources: Confederação Nacional do Transporte (CNT) and National Agency for Waterway Transporation (ANTAQ)

Brazilian river system



Source: National Agency for Waterway Transportation (ANTAQ)

Brazilian river system

The Port of Manaus access channel is 1,640 ft wide and 114.8 ft deep. Porto Velho's access channel depth varies from 8.2 to 57.4 ft. The Port of Santarém's access channel is 5,904 ft wide and 49.2 ft deep.



Sources: Ministério dos Transportes, Brazil and Companhia Nacional de Abastecimento (CONAB)

Brazilian river basins

Brazil's river system comprises eight basins: Amazônica, Northeast, Tocantins Araguaia, São Francisco, East, Tietê-Paraná, Paraguay, and South. The Amazônica and Paraguay Basin account for 72 percent of the total area of the Brazilian basins. The Paraguay Basin serves Argentina, Brazil, Bolivia, Paraguay, and Uruguay. Its navigable portion is comparable with the Mississippi River in the United States and the Rhine River in Europe.



Source: Ministério dos Transportes, Brazil

Brazilian multimodal transportation system



Source: Agência Nacional de Transportes Aquavárious

Major Brazilian highways



Source: Confederação Nacional do Transporte

The Brazilian highway system extends 978,423 miles (1,578,102 kilometers), with nearly 86 percent paved. The United States public roads system consists of 4,112,543 miles (6,618,481 kilometers) with 67 percent paved.

	Paved roads	Unpaved roads	Total
Federal	40,629	6,652	47,281
State and County	91,798	839,345	931,143
Subtotal	132,426	845,997	978,423
%	85.9	14.1	
<u>Plan</u>			97,532
Total			1,075,955

Brazil highway system extension, in miles, 2017

Source: Confederação Nacional do Transporte (CNT) Note: Table updated 9-13-18.

U.S highway system	extension and	condition, 2016
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	Extension ¹ (in miles)	% Paved ²	% Unpaved ²
Rural	2,913,729	56	44
Urban	1,198,815	94	6
Total	4,112,543	67	33

¹Table HM-20 Public road length in 2016. Includes the States and the District of Columbia. September 2017. ²Includes the 50 States and the District of Columbia. Some differences from other tables may be noted because these are estimated from sample and summary data; some States may have missing/incomplete data. Table HM-12 Public road length -2016 miles by type of surface and ownership/functional system. National summary. September 2017. Source: Highway Statistics 2016. U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: Annual Issues), <u>https://www.fhwa.dot.gov/policyinformation/statistics/2016/</u>.





Source: Confederação Nacional do Transporte

State of Pará highways condition classification



Source: Confederação Nacional do Transporte

Northern region highways condition classification



Source: Confederação Nacional do Transporte

Midwestern region highways condition classification



Source: Confederação Nacional do Transporte

Northeastern region highways condition classification



Source: Confederação Nacional do Transporte

Southern region highways condition classification



Source: Confederação Nacional do Transporte



Source: Confederação Nacional do Transporte

Brazilian highways

The 2017 Confederação Nacional do Transporte (CNT) survey of the overall highway condition in Brazil shows that 38.2 percent of the roads ranged from good to excellent in 2017 compared to 41.8 percent in 2016. Still, 61.8 percent ranged from acceptable to very bad. The survey also shows that half of the paved roads were in good to excellent condition; 59.2 percent of traffic road signs had problems; and 86 percent of the paved roads evaluated were two lanes. The survey sample of paved roads increased 2.5 percent from 64,021 miles in 2016 to 65,605 miles in 2017.



Brazilian highway conditions, 2015-2017

Source: Confederação Nacional do Transporte





Source: Confederação Nacional do Transporte



Source: Confederação Nacional do Transporte

The CNT estimates that, due to the poor conditions of the paved roads, the 2017 marginal operational cost of cargo trucks is 27.7 percent higher than a paved road under optimal conditions. Overall, the 2017 additional operational cargo cost (27.7 percent) was higher than 2016 (24.9 percent) and 2015 (25.8 percent). This cost decreased only in the North, by 2 percent. For example, according to CNT, if the cost of shipping a metric ton of soybeans from Sorriso, North MT, to Santos is \$100 per metric ton (mt), the 2017 optimal cost should be \$72.3/mt.



Cost increases due to poor road pavement conditions, 2015-2017
Brazilian railway expansion: ongoing projects

The Brazilian railroad system consists of 12 railroads with an extension of 18,957 miles, mostly concentrated in the South, Southeast, and Northeast.



Source: Agência Nacional de Transportes Terrestres (ANTT)

Brazilian rail system: gauge sizes

The gauge system (distance between two rails) varies by region, creating difficulties in integrating the system in areas like the North American region, which uses a standard gauge. There are three types of gauges: metric (39"), broad (63") and mixed (39"-63"). The metric gauge accounts for 74 percent of the total Brazilian rail miles, and predominates in the Southern region. The broad gauge accounts for 25 percent of total railroads and prevails in the Southeast region, leaving about 2 percent as mixed gauge.



Source: National Association of Rail Transporters (ANTF)

REFERENCE **M**ATERIAL

Year*	Area Harvested	Beginning Stocks	Production	Imports	Total Supply	Exports	Crush	Domestic Consumption	Ending Stocks
2005/06	28,834	6,960	83,507	92	90,559	25,579	47,324	52,751	12,229
2006/07	30,190	12,229	87,001	246	99,476	30,386	49,198	53,473	15,617
2007/08	25,959	15,617	72,859	269	88,745	31,538	49,081	51,627	5,580
2008/09	30,222	5,580	80,749	361	86,690	34,817	45,230	48,112	3,761
2009/10	30,907	3,761	91,470	397	95,628	40,798	47,673	50,724	4,106
2010/11	31,003	4,106	90,663	393	95,162	40,959	44,851	48,351	5,852
2011/12	29,856	5,852	84,291	439	90,582	37,186	46,348	48,786	4,610
2012/13	30,814	4,610	82,791	1,103	88,504	36,129	45,967	48,550	3,825
2013/14	30,858	3,825	91,389	1,953	97,167	44,594	47,192	50,069	2,504
2014/15	33,423	2,504	106,878	904	110,286	50,136	50,975	54,962	5,188
2015/16	33,076	5,188	106,857	641	112,686	52,870	51,335	54,462	5,354
2016/17	33,466	5,354	116,920	606	122,880	58,960	51,742	55,712	8,208
2017/18	36,228	8,208	119,518	599	128,325	57,425	55,520	59,209	11,691
2018/19**	35,961	11,691	124,808	680	137,179	56,064	56,064	59,763	21,352

United States: soybean supply and distribution (1,000 metric tons)

*Data based on Local Marketing Year (MY). Soybeans are on a September/August MY

**Forecast, August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade Data/Reports/Oilseeds

Soybean production

(1,000 metric tons)

Country	2014/15	2015/16	2016/17	2017/18	2018/19**
United States	106,878	106,857	116,920	119,518	124,808
Brazil	97,200	96,500	114,600	119,500	120,500
Argentina	61,450	58,800	55,000	37,000	57,000
China	12,154	11,785	12,900	14,200	14,500
India	8,711	6,929	10,992	8,350	10,800
Paraguay	8,154	9,217	10,200	10,000	9,800
Canada	6,045	6,456	6,597	8,000	7,300
Other	19,365	19,033	20,906	20,135	22,396
Total	319,957	315,577	348,115	336,703	367,104

*Most countries are on an October/September Marketing Year (MY). The United States, Mexico, and Thailand are on a September/August MY. Canada is on an August/July MY. Paraguay is on a March/February MY and Turkey is on an March/February MY.

**Forecast, August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade/Reports/Oilseeds

Soybean imports (1,000 metric tons)

Country	2014/15	2015/16	2016/17	2017/18	2018/19**
China	78,350	83,230	93,495	96,000	95,000
European Union	13,914	15,120	13,422	14,100	15,800
Mexico	3,819	4,126	4,126	4,600	4,750
Japan	3,004	3,186	3,175	3,250	3,300
Thailand	2,411	2,798	3,077	3,150	3,250
Egypt	1,947	1,300	2,115	3,050	3,150
Indonesia	2,006	2,274	2,649	2,700	2,900
Turkey	2,197	2,283	2,271	2,600	2,600
Taiwan	2,520	2,476	2,566	2,550	2,580
Iran	1,311	1,864	1,904	2,300	2,450
Other	12,883	14,681	15,523	19,177	19,049
Total	124,362	133,338	144,323	153,477	154,829

*Most countries are on an October/September Marketing Year (MY). The United States, Mexico, and Thailand are on a September/August MY. Canada is on an August/July MY. Paraguay is on a March/February MY and Turkey is on an March/February MY.

**Forecast, August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade/Reports/Oilseeds

Soybean exports (1,000 metric tons)

Country	2014/15	2015/16	2016/17	2017/18	2018/19**
Brazil	50,612	54,383	63,137	75,500	75,000
United States	50,136	52,870	58,960	57,425	56,064
Argentina	10,575	9,922	7,026	3,100	8,000
Paraguay	4,576	5,400	6,129	6,250	5,900
Canada	3,763	4,236	4,591	5,500	5,500
Other	6,548	5,705	7,502	5,928	7,499
Total	126,210	132,516	147,345	153,703	157,963

*Most countries are on an October/September Marketing Year (MY). The United States, Mexico, and Thailand are on a September/August MY. Canada is on an August/July MY. Paraguay is on a March/February MY and Turkey is on an March/February MY.

**Forecast, August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade/Reports/Oilseeds

Soybean crush (1,000 metric tons)

Country	2014/15	2015/16	2016/17	2017/18	2018/19**
China	74,500	81,500	88,000	91,000	95,000
United States	50,975	51,335	51,742	55,520	56,064
Argentina	40,235	43,267	43,303	37,770	43,000
Brazil	40,435	39,747	40,411	43,000	42,700
European Union	14,450	14,950	14,400	14,900	16,300
India	7,700	5,500	9,000	7,600	9,000
Mexico	4,175	4,400	4,600	5,000	5,200
Russia	3,600	4,000	4,400	4,650	5,100
Paraguay	3,700	3,800	3,750	3,700	3,950
Egypt	1,950	1,150	2,200	3,050	3,100
Iran	1,450	1,950	2,050	2,450	2,600
Bolivia	2,450	2,550	2,050	2,550	2,350
Japan	2,150	2,283	2,392	2,350	2,350
Pakistan	500	1,250	1,680	2,050	2,300
Taiwan	1,980	1,980	2,045	2,080	2,100
Other	14,560	15,362	15,323	16,691	17,554
Total	264,810	275,024	287,346	294,361	308,668

*Most countries are on an October/September Marketing Year (MY). The United States, Mexico, and Thailand are on a September/August MY. Canada is on an August/July MY. Paraguay is on a March/February MY and Turkey is on an March/February MY.

**Forecast, August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade/Reports/Oilseeds

Soybean ending stocks (1,000 metric tons)

Country	2014/15	2015/16	2016/17	2017/18	2018/19**
Argentina	31,750	33,650	35,470	30,800	34,100
Brazil	19,078	18,558	26,462	24,150	23,800
United States	5,188	5,354	8,208	11,691	21,352
China	17,009	16,910	20,391	23,481	20,781
European Union	843	1559	1131	1073	1398
Other	4,096	4,414	5,003	4,415	4,508
Total	77,964	80,445	96,665	95,610	105,939

*Most countries are on an October/September Marketing Year (MY). The United States, Mexico, and Thailand are on a September/August MY. Canada is on an August/July MY. Paraguay is on a March/February MY and Turkey is on an March/February MY.

**Forecast, August 10, 2018

Source: USDA/Foreign Agricultural Service/Market and Trade/Reports/Oilseeds

Quarterly costs of transporting U.S. soybeans to Hamburg, Germany, via U.S. Gulf

	Minneapolis, Minnesota (US\$/mt)						
	2017 1st qtr	2017 2nd qtr	2017 3rd qtr	2017 4th qtr	2017 Average		
Truck	11.14	12.30	13.02	14.39	12.71		
Rail**	45.91	-	-	-	45.91		
Barge ¹	9.54	21.97	27.02	31.93	22.62		
Ocean ²	14.77	14.49	15.03	17.54	15.46		
Total transportation	81.36	48.76	55.07	63.86	62.26		
Farm price ³	348.82	338.16	333.76	332.04	338.20		
Landed cost	430.18	386.92	388.83	395.90	400.46		
Transport % of landed cost	18.9	12.6	14.2	16.1	15.5		
	Davenport, Iowa (US\$/mt)						
		Daven	port, Iowa (U	\$\$/mt)			
	2017 1st qtr	Daven 2017 2nd qtr	port, Iowa (U 2017 3rd qtr	S\$/mt) 2017 4th qtr	2017 Average		
Truck	2017 1st qtr 11.14	Daven 2017 2nd qtr 12.30	port, Iowa (US 2017 3rd qtr 13.02	5\$/mt) 2017 4th qtr 14.39	2017 Average 12.71		
Truck Rail**	2017 1st qtr 11.14 34.98	Daven 2017 2nd qtr 12.30	port, Iowa (U 2017 3rd qtr 13.02 -	S\$/mt) 2017 4th qtr 14.39	2017 Average 12.71 34.98		
Truck Rail** Barge ¹	2017 1st qtr 11.14 34.98 9.54	Daven 2017 2nd qtr 12.30 - 15.83	port, Iowa (U 2017 3rd qtr 13.02 - 20.11	S\$/mt) 2017 4th qtr 14.39 - 24.92	2017 Average 12.71 34.98 17.60		
Truck Rail** Barge ¹ Ocean ²	2017 1st qtr 11.14 34.98 9.54 14.77	Daven 2017 2nd qtr 12.30 - 15.83 14.49	port, Iowa (U 2017 3rd qtr 13.02 - 20.11 15.03	S\$/mt) 2017 4th qtr 14.39 - 24.92 17.59	2017 Average 12.71 34.98 17.60 15.47		
Truck Rail** Barge ¹ Ocean ² Total transportation	2017 1st qtr 11.14 34.98 9.54 14.77 70.43	Daven 2017 2nd qtr 12.30 - 15.83 14.49 42.62	port, Iowa (US 2017 3rd qtr 13.02 - 20.11 15.03 48.16	S\$/mt) 2017 4th qtr 14.39 - 24.92 17.59 56.90	2017 Average 12.71 34.98 17.60 15.47 54.53		
Truck Rail** Barge ¹ Ocean ² Total transportation Farm price ³	2017 1st qtr 11.14 34.98 9.54 14.77 70.43 353.60	Daven 2017 2nd qtr 12.30 - 15.83 14.49 42.62 335.71	port, Iowa (U 2017 3rd qtr 13.02 - 20.11 15.03 48.16 351.27	S\$/mt) 2017 4th qtr 14.39 - 24.92 17.59 56.90 337.55	2017 Average 12.71 34.98 17.60 15.47 54.53 344.53		
Truck Rail** Barge ¹ Ocean ² Total transportation Farm price ³ Landed cost	2017 1st qtr 11.14 34.98 9.54 14.77 70.43 353.60 424.03	Daven 2017 2nd qtr 12.30 - 15.83 14.49 42.62 335.71 378.33	port, Iowa (U 2017 3rd qtr 13.02 - 20.11 15.03 48.16 351.27 399.43	S\$/mt) 2017 4th qtr 14.39 - 24.92 17.59 56.90 337.55 394.45	2017 Average 12.71 34.98 17.60 15.47 54.53 344.53 399.06		

**Rail service is required due to seasonal closure of the Minneapolis segment of the Mississippi River.

¹The Mississippi River closes from Minneapolis to just north of St. Louis during mid-December to late March.

²Source: O'Neil Commodity Consulting; Excludes handling charges.

³Source: USDA/NASS

Note: Numbers in last row of this table were rounded to one decimal on 9-13-18.

	Minneapolis, Minnesota (US\$/mt)					
	2017 1st qtr	2017 2nd qtr	2017 3rd qtr	2017 4th qtr	2017 Average	
Truck	11.14	12.30	13.02	14.39	12.71	
Rail**	45.91	-	-	-	45.91	
Barge ¹	9.54	21.97	27.02	31.93	22.62	
Ocean ²	35.17	37.15	38.37	42.78	38.37	
Total transportation	101.76	71.42	78.41	89.10	85.17	
Farm price ³	348.82	338.16	333.76	332.04	338.20	
Landed cost	450.58	409.58	412.17	421.14	423.37	
Transport % of landed cost	22.6	17.4	19.0	21.2	20.1	
		Daven	port, Iowa (US	5\$/mt)		
	2017 1st qtr	Daven 2017 2nd qtr	port, Iowa (US 2017 3rd qtr	\$\$/mt) 2017 4th qtr	2017 Average	
Truck	2017 1st qtr 11.14	Daven 2017 2nd qtr 12.30	port, Iowa (US 2017 3rd qtr 13.02	5\$/mt) 2017 4th qtr 14.39	2017 Average 12.71	
Truck Rail**	2017 1st qtr 11.14 34.98	Daven 2017 2nd qtr 12.30	port, Iowa (US 2017 3rd qtr 13.02 -	5\$/mt) 2017 4th qtr 14.39	2017 Average 12.71 34.98	
Truck Rail** Barge ¹	2017 1st qtr 11.14 34.98 9.54	Daven 2017 2nd qtr 12.30 - 15.83	port, Iowa (US 2017 3rd qtr 13.02 - 20.11	5\$/mt) 2017 4th qtr 14.39 - 24.92	2017 Average 12.71 34.98 17.60	
Truck Rail** Barge ¹ Ocean ²	2017 1st qtr 11.14 34.98 9.54 35.17	Daven 2017 2nd qtr 12.30 - 15.83 37.15	port, Iowa (US 2017 3rd qtr 13.02 - 20.11 38.37	5\$/mt) 2017 4th qtr 14.39 - 24.92 42.78	2017 Average 12.71 34.98 17.60 38.37	
Truck Rail** Barge ¹ Ocean ² Total transportation	2017 1st qtr 11.14 34.98 9.54 35.17 90.83	Daven 2017 2nd qtr 12.30 - 15.83 37.15 65.28	port, Iowa (US 2017 3rd qtr 13.02 - 20.11 38.37 71.50	5\$/mt) 2017 4th qtr 14.39 - 24.92 42.78 82.09	2017 Average 12.71 34.98 17.60 38.37 77.43	
Truck Rail** Barge ¹ Ocean ² Total transportation Farm price ³	2017 1st qtr 11.14 34.98 9.54 35.17 90.83 353.60	Daven 2017 2nd qtr 12.30 - 15.83 37.15 65.28 335.71	port, Iowa (US 2017 3rd qtr 13.02 - 20.11 38.37 71.50 351.27	5\$/mt) 2017 4th qtr 14.39 - 24.92 42.78 82.09 337.55	2017 Average 12.71 34.98 17.60 38.37 77.43 344.53	
Truck Rail** Barge ¹ Ocean ² Total transportation Farm price ³ Landed cost	2017 1st qtr 11.14 34.98 9.54 35.17 90.83 353.60 444.43	Daven 2017 2nd qtr 12.30 - 15.83 37.15 65.28 335.71 400.99	port, Iowa (US 2017 3rd qtr 13.02 - 20.11 38.37 71.50 351.27 422.77	5\$/mt) 2017 4th qtr 14.39 - 24.92 42.78 82.09 337.55 419.64	2017 Average 12.71 34.98 17.60 38.37 77.43 344.53 421.96	

Quarterly costs of transporting U.S. soybeans to Shanghai, China, via U.S. Gulf

**Rail service is required due to seasonal closure of the Minneapolis segment of the Mississippi River.

¹The Mississippi River closes from Minneapolis to just north of St. Louis during mid-December to late March.

²Source: O'Neil Commodity Consulting; Excludes handling charges

³Source: USDA/NASS

	Fargo, North Dakota (US\$/mt)						
	2017 1st qtr	2017 2nd qtr	2017 3rd qtr	2017 4th qtr	2017 Average		
Truck	11.14	12.30	13.02	14.39	12.71		
Rail**	54.77	54.62	54.62	54.62	54.66		
Ocean ¹	18.27	19.01	20.16	24.05	20.37		
Total transportation	84.18	85.93	87.80	93.06	87.74		
Farm price ²	338.16	316.61	319.06	324.45	324.57		
Landed cost	422.34	402.54	406.86	417.51	412.31		
Transport % of landed cost	19.9	21.3	21.6	22.3	21.3		
	Sioux Falls, South Dakota (US\$/mt)						
		Sioux Falls	, South Dakota	a (US\$/mt)			
	2017 1st qtr	Sioux Falls 2017 2nd qtr	, South Dakota 2017 3rd qtr	a (US\$/mt) 2017 4th qtr	2017 Average		
Truck	2017 1st qtr 11.14	Sioux Falls 2017 2nd qtr 12.30	, South Dakota 2017 3rd qtr 13.02	a (US\$/mt) 2017 4th qtr 14.39	2017 Average 12.71		
Truck Rail**	2017 1st qtr 11.14 55.78	Sioux Falls 2017 2nd qtr 12.30 55.61	, South Dakota 2017 3rd qtr 13.02 55.61	a (US\$/mt) 2017 4th qtr 14.39 55.61	2017 Average 12.71 55.65		
Truck Rail** Ocean ¹	2017 1st qtr 11.14 55.78 18.27	Sioux Falls 2017 2nd qtr 12.30 55.61 19.01	, South Dakota 2017 3rd qtr 13.02 55.61 20.16	a (US\$/mt) 2017 4th qtr 14.39 55.61 24.05	2017 Average 12.71 55.65 20.37		
Truck Rail** Ocean ¹ Total transportation	2017 1st qtr 11.14 55.78 18.27 85.19	Sioux Falls 2017 2nd qtr 12.30 55.61 19.01 86.92	, South Dakota 2017 3rd qtr 13.02 55.61 20.16 88.79	a (US\$/mt) 2017 4th qtr 14.39 55.61 24.05 94.05	2017 Average 12.71 55.65 20.37 88.74		
Truck Rail** Ocean ¹ Total transportation Farm price ²	2017 1st qtr 11.14 55.78 18.27 85.19 340.86	Sioux Falls 2017 2nd qtr 12.30 55.61 19.01 86.92 324.20	, South Dakota 2017 3rd qtr 13.02 55.61 20.16 88.79 325.55	a (US\$/mt) 2017 4th qtr 14.39 55.61 24.05 94.05 325.30	2017 Average 12.71 55.65 20.37 88.74 328.98		
Truck Rail** Ocean ¹ Total transportation Farm price ² Landed cost	2017 1st qtr 11.14 55.78 18.27 85.19 340.86 426.05	Sioux Falls 2017 2nd qtr 12.30 55.61 19.01 86.92 324.20 411.12	, South Dakota 2017 3rd qtr 13.02 55.61 20.16 88.79 325.55 414.34	a (US\$/mt) 2017 4th qtr 14.39 55.61 24.05 94.05 325.30 419.35	2017 Average 12.71 55.65 20.37 88.74 328.98 417.72		

Quarterly costs of transporting U.S. soybeans to Shanghai, China, via PNW

**Rail service is required due to seasonal closure of the Minneapolis segment of the Mississippi River.

¹Source: O'Neil Commodity Consulting; Excludes handling charges.

²Source: USDA/NASS

Note: Tables updated on 9-13-18 due to incorrect addition of barge data. That data was removed and remaining table data was updated.

Average quarterly exchange rate

Quarter	Real per US\$
1st	1.6673
2nd	1.5962
3rd	1.6357
4th	1.8012
2011 Avg	1.6751
1st	1.7701
2nd	1.9641
3rd	2.0288
4th	2.0576
2012 Avg	1.9551
1st	1.9977
2nd	2.0673
3rd	2.2880
4th	2.2735
2013 Avg	2.1566
1st	2.2735
2nd	2.2296
3rd	2.2745
4th	2.5437
2014 Avg	2.3303
1st	2.8637
2nd	3.0722
3rd	3.5480
4th	3.8426
2015 Avg	3.3316
1st	3.8999
2nd	3.5076
3rd	3.2912
4th	3.2953
2016 Avg	3.4985
1st	3.1429
2nd	3.2137
3rd	3.1639
4th	3.2506
2017 Avg	3.1928

Source:Banco Central do Brasil

Selected quarterly Brazilian farm prices (US\$/metric ton)*

Quarter	Rio Grande do Sul	Mato Grosso	Goiás	Paraná			
1st	431.68	406.96	441.07	459.96			
2nd	425.42	386.58	413.15	435.53			
3rd	428.53	416.62	417.65	440.47			
4th	377.84	358.24	379.70	390.69	1		
2011 Avg	415.87	392.10	412.89	431.66]		
1st	405.07	377.70	401.58	428.80			
2nd	448.47	448.29	428.40	475.69]		
3rd	557.90	570.66	566.91	593.20	1		
4th	521.43	536.60	522.33	557.54]		
2012 Avg	483.22	483.31	479.80	513.81			
1st	460.13	419.35	445.56	476.22			
2nd	459.96	391.58	419.62	461.97			
3rd	448.29	404.93	405.90	453.28	1		
4th	458.54	426.00	442.20	481.71			
2013 Avg	456.73	410.46	428.32	468.29			
1st	482.75	375.58	420.52	463.81	1		
2nd	464.19	417.02	441.74	471.00	1		
3rd	455.08	398.98	394.07	416.92	1		
4th	368.05	361.74	349.62	383.90			
2014 Avg	442.52	388.33	401.49	433.91	1		
Quarter	Rio Grande do Sul	Mato Grosso	Goiás	Paraná	Piauí	Pará	Maranhão
1st	336.85	312.34	329.95	340.69	330.99	357.47	326.75
2nd	360.56	295.94	310.64	333.27	300.93	312.03	310.26
3rd	314.06	285.95	287.19	313.28	314.26	288.72	293.97
4th	314.70	286.43	289.68	305.35	313.41	284.75	326.72
2015 Avg	331.55	295.17	304.36	323.15	314.90	310.74	314.43
1st	308.73	268.28	278.59	298.84	281.05	264.90	310.69
2nd	358.57	347.59	337.86	353.78	342.05	329.13	378.45
3rd	373.12	367.25	359.07	362.80	378.98	384.42	447.42
4th	352.69	344.51	341.08	347.53	377.05	355.82	370.99
2016 Avg	348.28	331.91	329.15	340.74	344.78	333.57	376.89
1st	347.99	314.10	332.40	344.08	210.49	362.30	356.01
2nd	302.06	275.60	281.73	304.50	304.16	313.78	327.17
3rd	317.17	288.62	291.58	313.53	306.34	324.84	340.58
4th	321.99	296.10	302.26	324.03	311.19	339.05	349.81
2017 Avg	322.30	293.60	301.99	321.54	283.05	334.99	343.39

Source: Companhia Nacional de Abastecimento (CONAB) www.conab.gov.br

Major river export routes



Source: National Agency for Waterway Transportation (ANTAQ)

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