United States Department of Agriculture

Grain Transportation Report

A weekly publication of the Agricultural Marketing Service
www.ams.usda.gov/GTR

Contact Us

April 20, 2023

Contents

The next release is April 27, 2023

WEEKLY HIGHLIGHTS

High Risk for Flooding on the Upper Mississippi River

The National Oceanic and Atmospheric Administration (NOAA) warned the northern portion of the Upper Mississippi River could be facing the highest flood levels since 2001, because of high snowmelt in the area. At St. Paul, MN, the river reaches flood stage at 14-feet. As of April 19, the river is expected to crest at 18.4-feet on April 25. According to American Commercial Barge Line, the high-water event is expected to close the locks from lock 3 (near St Paul, MN) through lock 17 (in southern Iowa). The high water is expected to last between 12-15 days. According to industry estimates, some locks further south along the Mid-Mississippi River could be closed in the beginning of May and stay closed until mid-May. Many barge companies are working with shippers to move freight early to limit their commitments and redirecting empty barges to other markets not affected by the high water.

FMC to Hold Partly Public Meeting on May 3

The Federal Maritime Commission (FMC) will hold its Sunshine Act Meeting on May 3 at 10am. Convened in person at the Federal Maritime Commission Hearing Room in Washington, DC, the meeting is partly open to the public and can be viewed on FMC's YouTube Channel. The portions open to the public include an update on the Maritime Transportation Data Initiative from Commissioner Carl Bentzel, a staff briefing on the Ocean Shipping Reform Act of 2022, and an update from the Bureau of Enforcement, Investigations, and Compliance. Over the past weeks, FMC has worked to ensure that the demurrage and detention practices of the 11 largest ocean carriers align with a recent precedential FMC case and with the Commission's most up-to-date policy (see *Grain Transportation Report*, second highlight, April 6, 2023).

USDA Awards $3 Million To Expand Biodiesel Availability in Northwest

The U.S. Department of Agriculture (USDA) recently awarded $3.1 million to Tidewater Terminal Company, Inc., to expand the availability of biodiesel throughout central and eastern Washington and Oregon and northern Idaho. Combined with $3 million in matching funds from Tidewater Terminal Company, the grant will upgrade Tidewater's Snake River Terminal in Pasco, WA. The upgrades will enable the terminal to receive neat biodiesel by railcar, store it in two 400,000-gallon tanks, and blend and offload it for delivery through an expanded truck rack. The project aims to help farmers access cost-effective, clean biodiesel fuel to reduce the carbon footprint of the wheat, barley, and potato harvests. The terminal is the only multimodal facility in the area with access to rail, barge, and pipeline. It will provide capacity to blend more than 2 million gallons of biodiesel a month. The terminal is projected to reduce carbon dioxide emissions by 212 million pounds, including a 30-percent reduction in emissions by BNSF Railroad.

Snapshots by Sector

Export Sales

For the week ending April 06, **unshipped balances** of wheat, corn, and soybeans for marketing year (MY) 2022/23 totaled 23.56 million metric tons (mmt), down 33 percent from the same time last year and down 3 percent from last week. Net **corn export sales** for MY 2022/23 were 0.528 mmt, down 58 percent from last week. Net **soybean export sales** were 0.365 mmt, up significantly from last week. Net weekly **wheat export sales** were 0.136 mmt, down 30 percent from last week.

Rail

U.S. Class I railroads originated 20,105 **grain carloads** during the week ending April 8. This was a 3-percent decrease from the previous week, 17 percent less than last year, and 15 percent lower than the 3-year average.

Average April **shuttle secondary railcar bids/offers** (per car) were $163 below tariff for the week ending April 13. This was $49 more than last week and $3,063 lower than this week last year.

Barge

For the week ending April 15, **barged grain movements** totaled 755,822 tons. This was 11 percent higher than the previous week and 13 percent lower than the same period last year.

For the week ending April 15, 470 grain barges **moved down river**—27 more than last week. There were 697 grain barges **unloaded** in the New Orleans region, 18 percent more than last week.

Ocean

For the week ending April 13, 25 **oceangoing grain vessels** were loaded in the Gulf—22 percent fewer than the same period last year. Within the next 10 days (starting April 14), 31 vessels were expected to be loaded—47 percent fewer than the same period last year.

As of April 13, the rate for shipping a metric ton (mt) of grain from the U.S. Gulf to Japan was $55.75. This was relatively unchanged from the previous week. The rate from the Pacific Northwest to Japan was $30.00 per mt, unchanged from the previous week.

Fuel

For the week ending April 17, the U.S. average **diesel fuel price** increased 1.8 cents from the previous week to $4.116 per gallon, 98.5 cents below the same week last year.

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Feature Article/Calendar

Fertilizer Transportation: Background, Trends, and 2023 Outlook

As a key agronomic input, fertilizer supports the growth of new grain. With a similar synergy, fertilizer transportation supports the cost effectiveness of shipping harvested grain: for "headhaul" grain shipments (to a destination), fertilizer shipments often serve as a "backhaul" (back to origin). Following a general overview of fertilizer transportation in the United States, this article provides updates on recent rail, truck, and barged fertilizer trends. It also examines the current outlook for fertilizer transportation and spring planting ahead of the new marketing year.

Fertilizer Production and Transportation Background

To varying degrees, each grain crop uses the three major fertilizer types: nitrogen, phosphate, and potash.[1] In general, corn requires the most fertilizer—particularly, nitrogen, along with lesser amounts of potash and phosphate. Wheat typically requires nitrogen and phosphate applications (though less than corn), and soybeans require the least fertilizer. The United States is both a major producer and major importer of fertilizer. From 2018 to 2021, the United States produced an annual average of 13.3 million metric tons (mmt) of nitrogen, and it imported about 2.2 mmt annually—primarily, from Trinidad and Tobago and Canada.

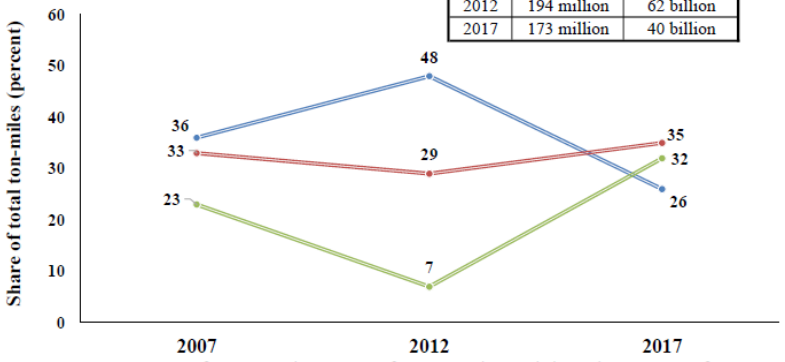
As is the case with nitrogen, the United States meets most of its own phosphate needs—mainly, from mining operations in Florida and North Carolina. To obtain potash, however, the Nation depends heavily on imports. Between 2018 and 2021, the U.S. consumed approximately 6 mmt of potash annually (primarily for fertilizer), and over 90 percent of it was imported.[2]

In the past decade or so, as U.S. production of nitrogen fertilizer has risen, the Nation has relied less on imports. In 2010, the United States produced 8.3 mmt of nitrogen, and net imports accounted for 40 percent of U.S. consumption.[3] By 2020, production was 14 mmt, and imports were only 11 percent of consumption. In 2010, most domestic production was in Louisiana, Texas, and Oklahoma. These locales produced the most nitrogen fertilizer because of their proximity to production of natural gas—the major nitrogen fertilizer feedstock. However, since 2010, several nitrogen plants have opened in Iowa, and as of October 2022, Iowa had the third-largest nitrogen producing capacity, behind only Louisiana and Oklahoma.[4]

Fertilizer Transportation Modes. Following production or import, fertilizer is transported as either liquid or dry bulk through an interconnected system of rail, barge, truck, and pipeline. According to the *Commodity Flow Survey* (CFS), in 2017, trucks hauled the vast majority of the total fertilizer tonnage (77 percent), mainly for short haul movements. Lesser amounts were transported by the following mode categories: multimodal, 10 percent; rail, 7 percent; water, 7 percent; and pipeline, less than 1 percent.[5] In previous editions of the CFS, railroads typically hauled more fertilizer ton-miles than trucks, but by 2017, trucks hauled a greater share (35 percent) of fertilizer ton-miles than any other mode (fig. 1). Because trucks tend to travel shorter distances than rail or barge, the rise in truck's modal share signifies distances for fertilizer shipments have become shorter over time.

Figure 1. Modal share (ton-miles) of fertilizer transportation

	Total tons	Total ton-miles
2007	150 million	59 billion
2012	194 million	62 billion
2017	173 million	40 billion



Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Department of Commerce, U.S. Census Bureau.

One possible reason for the trend toward shipping shorter distances involves liability surrounding the transport of hazardous materials. Several fertilizers—particularly a form of nitrogen called anhydrous ammonia—are classified as toxic by inhalation hazards (TIH) by the Federal Government. In the railroads' view, the small risk of a rare, but costly catastrophic accident involving TIH materials outweighs the benefits of carrying TIH materials. Over the last several decades, tariffs for transporting TIH materials have grown faster than tariffs for non-hazardous materials.[6] The railroads argue that the price premiums for hazardous materials, such as anhydrous ammonia, are necessary, given the risk involved. However, shippers argue the railroads' steeply rising tariffs for TIH materials amount to a refusal of service and violate the railroads' common carrier obligation. The increased price of rail TIH shipments may have contributed to the decline in rail's market share of fertilizer transportation.

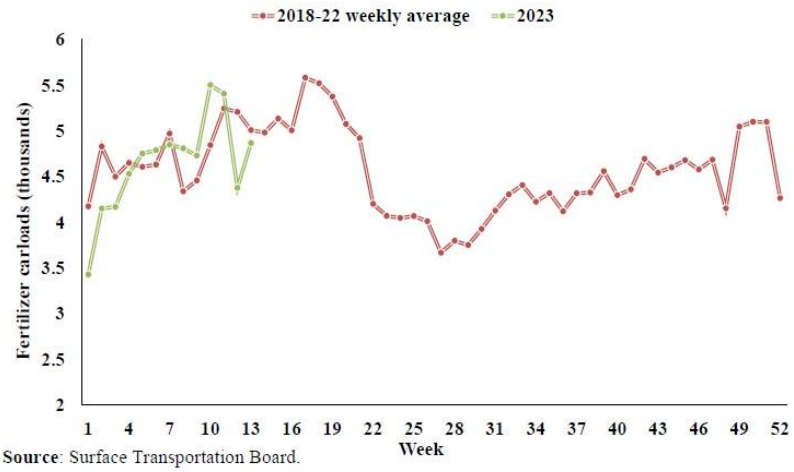
[1] USDA, National Agricultural Statistics Service (NASS), Agricultural Chemical Use Program surveys for corn (2021), soybeans (2020), and wheat (2019).
[2] U.S. Geological Survey (USGS), *Mineral Commodity Summaries 2023*, January 31, 2023.
[3] Import shares are based on "net import reliance," which USGS calculated as imports minus exports plus adjustments for government and industry stock changes.
[4] USGS, *Mineral Commodity Summaries* and *Minerals Yearbook*, various issues.
[5] U.S. Department of Transportation (DOT)'s Bureau of Transportation Statistics and U.S. Census Bureau, *2017 Commodity Flow Survey*, July 2020.
[6] In an analysis conducted by DOT on Surface Transportation Board (STB) waybill data, they found that between 1995 and 2014, revenue per ton-mile for anhydrous ammonia rose about 300 percent. In contrast, revenue per ton-mile for all traffic only rose about 150 percent.

A Look at Recent Fertilizer Metrics

Fertilizer movements by rail. According to STB data, rail carloadings of fertilizer (available on AgTransport) tend to follow a pattern shaped by grain planting, growing, and harvest seasons. Carloads generally increase in early spring, peaking around May. Then, after declining in late spring and early summer, they pick up again through late summer and fall (fig. 2).

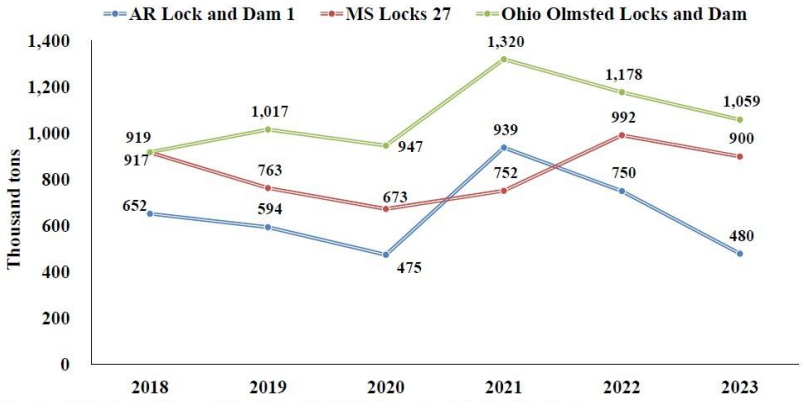
Over the first 12 weeks of 2023, U.S. Class I railroads originated 55,500 carloads of fertilizer. These were 7 percent fewer than the same period last year and 2 percent below the prior 5-year average. These dips were consistent with the decline of rail traffic as a whole, partly due to extreme weather around the country (*Grain Transportation Report*, April 13, 2023). According to service metrics from STB (available on AgTransport), the number of fertilizer cars not moved in over 48 hours averaged 864 each week for the first 12 weeks of 2023. This represented an improvement from last year's average (926 per week), but it was still considerably above the 5-year average (714 per week).

Figure 2. Weekly originated fertilizer carloads



Source: Surface Transportation Board.

Figure 3. Upbound barge shipments of fertilizer during first 12 weeks of the year



Source: U.S. Army Corps of Engineers Lock Performance Monitoring System.

Fertilizer movements by barge. While grain originates on farms and elevators in the interior and travels down the Mississippi River System (MRS) for export, fertilizer typically follows the opposite path—originating near the U.S. Gulf coast and traveling up the MRS into the interior for consumption. Similar to rail, barged fertilizer movements are highest in the spring and fall.

Over the first 12 weeks of 2023, 2.4 million tons of fertilizer traveled upbound through Arkansas Lock and Dam 1, Lock 27 on the Mississippi River (near St. Louis, Missouri), and the Olmsted Locks and Dam on the Ohio River (fig. 3). Taken together, the data from these sites—at major confluences of the MRS—provide an estimate of total upbound fertilizer transportation for the MRS. The 2.4 million tons of estimated total upbound fertilizer in the first 12 weeks of 2023 was down 16 percent from the same period last year and 5 percent below the 5-year average. In part, fertilizer volumes may have been constrained by tight barge supplies stemming from winter weather during the quarter (*Grain Transportation Report*, April 13, 2023).

Looking Ahead

On March 31, NASS published the 2023 *Prospective Plantings* report based on a survey of producers across the Nation. U.S. producers intend to plant 240.9 million acres of grain (corn, soybeans, wheat, sorghum, barley, and oats) in 2023. If actualized, this would be 3 percent higher than 2022 grain plantings, and it would be the largest planted area since 2014.[7]

It is unclear how the planting projections will translate into fertilizer transportation demand in the coming months. All else equal, the higher 2023 plantings imply a greater demand for fertilizer and fertilizer transportation this spring. Transportation issues through first quarter 2023 and expectations of lower fertilizer prices to come may have created pent-up demand. If so, that excess demand will raise fertilizer shipments in the coming months to cover plantings. However, fertilizer carryover from last year may have been strong for two reasons: actual spring plantings last year were less than expected, and fertilizer was pre-purchased in anticipation of a potential rail strike at the end of the year.[8] In the next few months, fertilizer transportation demand will depend on how much fertilizer is currently in storage and the degree to which weather allows for the additional plantings. *Austin.Hunt@usda.gov*

[7] At the commodity level, producers intend to plant 92.0 million acres of corn, up 4 percent over last year; 87.5 million acres of soybeans, up slightly from last year; and 49.9 million acres of wheat, up 9 percent from last year. Estimated total fertilizer needs for the 2023 corn, soybean, and wheat crops are 17.1 billion pounds of nitrogen, 7.6 billion pounds of phosphate, and 8.4 billion pounds of potash. These estimates are computed by multiplying intended crop acres by nutrient "pounds per acre" and "percent of acres with nutrient" from NASS's Agricultural Chemical Use surveys for corn (2021), soybeans (2020), and wheat (2019).

[8] The estimates from the 2022 *Prospective Plantings* report exceeded actual 2022 acres by 1 percent for corn, 4 percent for soybeans, and 3.5 percent for wheat.

Grain Transportation Indicators

Table 1

Grain transport cost indicators[1]

	Truck	Rail		Barge	Ocean	
For the week ending		Non-Shuttle	Shuttle		Gulf	Pacific
04/19/23	276	324	248	259	249	213
04/12/23	275	324	246	295	248	213

[1]Indicator: Base year 2000 = 100. Weekly updates include truck = diesel ($/gallon); rail = near-month secondary rail market bid and monthly tariff rate with fuel surcharge ($/car); barge = Illinois River barge rate (index = percent of tariff rate); ocean = routes to Japan ($/metric ton); n/a = not available due to holiday.

Source: USDA, Agricultural Marketing Service.

Table 2

Market Update: U.S. origins to export position price spreads ($/bushel)

Commodity	Origin–destination	4/14/2023	4/7/2023
Corn	IL–Gulf	-0.93	-0.97
Corn	NE–Gulf	-0.78	-0.78
Soybean	IA–Gulf	-1.38	-1.44
HRW	KS–Gulf	-2.16	-2.17
HRS	ND–Portland	-1.85	-1.84

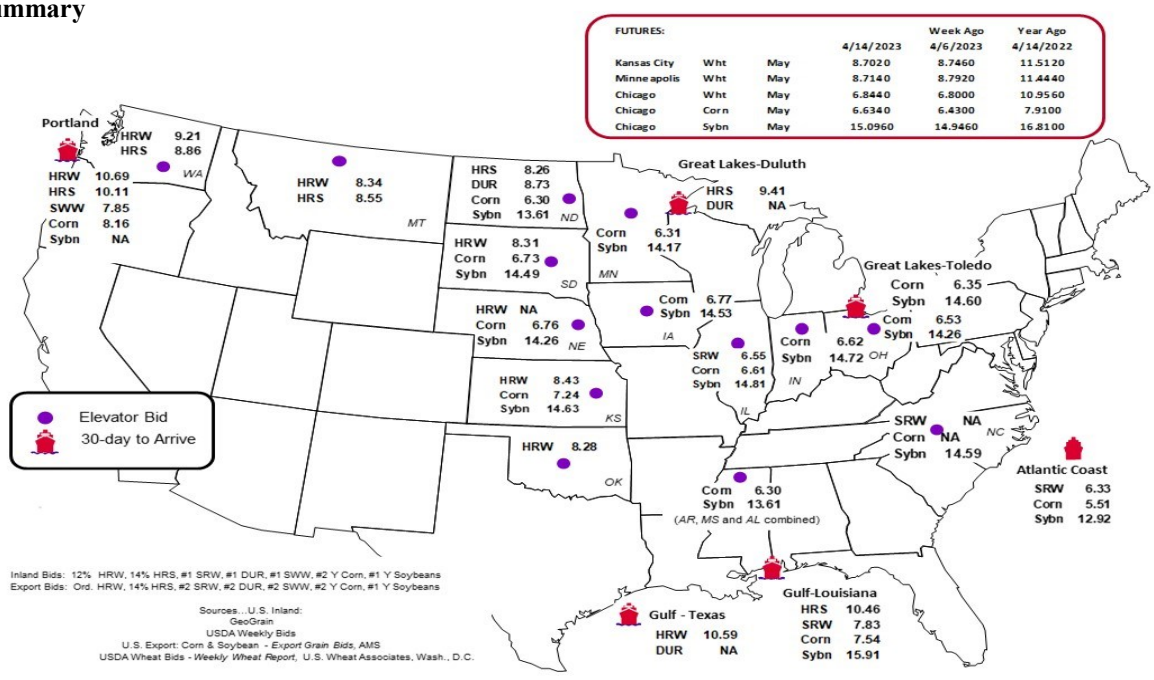
Note: nq = no quote; n/a = not available; HRW = hard red winter wheat; HRS = hard red spring wheat.

Source: USDA, Agricultural Marketing Service.

The **grain bid summary** illustrates the market relationships for commodities. Positive and negative adjustments in differential between terminal and futures markets, and the relationship to inland market points, are indicators of changes in fundamental market supply and demand. The map may be used to monitor market and time differentials.

Figure 1

Grain bid summary



Rail Transportation

Table 3

Class I rail carrier grain car bulletin (grain carloads originated)

For the week ending:	East		West			U.S. total	Canada	
4/8/2023	CSXT	NS	BNSF	KCS	UP		CN	CP
This week	1,739	2,338	8,800	1,352	5,876	20,105	5,566	4,627
This week last year	2,040	2,439	12,048	1,289	6,447	24,263	3,963	4,338
2023 YTD	28,684	37,337	138,255	18,649	79,900	302,825	72,961	64,255
2022 YTD	26,274	32,511	164,821	18,083	86,319	328,008	49,420	52,696
2023 YTD as % of 2022 YTD	109	115	84	103	93	92	148	122
Last 4 weeks as % of 2022*	104	98	73	109	97	86	141	121
Last 4 weeks as % of 3-yr. avg.**	108	96	71	118	95	85	109	94
Total 2022	93,313	130,421	570,232	66,338	296,945	1,157,249	214,291	214,010

*The past 4 weeks of this year as a percent of the same 4 weeks last year.

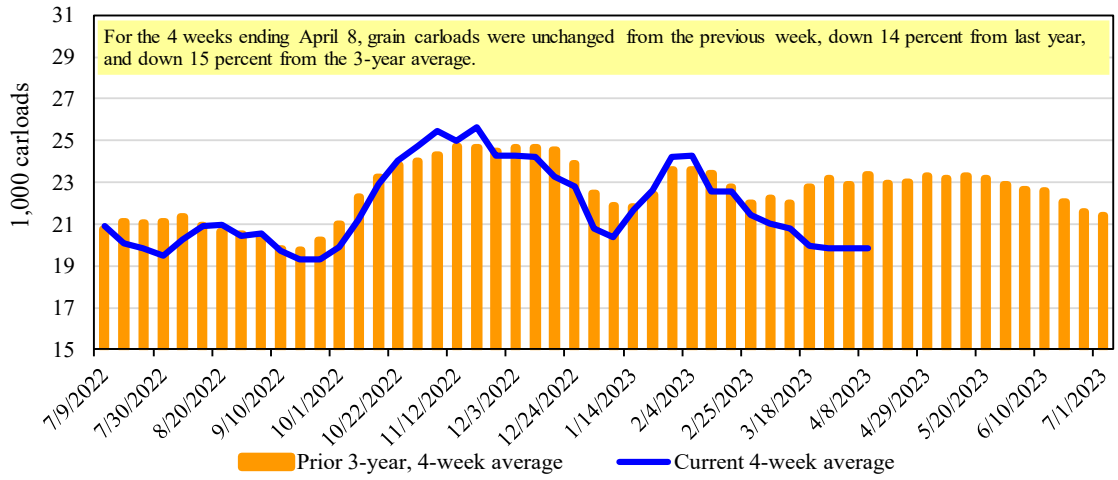
**The past 4 weeks as a percent of the same period from the prior 3-year average. YTD = year-to-date; avg. = average; yr. = year.

Note: NS = Norfolk Southern; KCS = Kansas City Southern; UP = Union Pacific; CN = Canadian National; CP = Canadian Pacific.

Source: Association of American Railroads.

Figure 2

Total weekly U.S. Class I railroad grain carloads



Source: Association of American Railroads.

Table 4

Railcar auction offerings[1] ($/car)[2]

For the week ending:		Delivery period							
4/13/2023		Apr-23	Apr-22	May-23	May-22	Jun-23	Jun-22	Jul-23	Jul-22
BNSF[3]	COT grain units	no bids	no offer	0	no offer	0	no offer	no bids	no bids
	COT grain single-car	no offer	no offer	0	no offer	0	no offer	0	0
UP[4]	GCAS/Region 1	no offer	no offer	no offer	no offer	no offer	no offer	n/a	n/a
	GCAS/Region 2	no offer	no offer	no offer	no offer	no offer	no offer	n/a	n/a

[1]Auction offerings are for single-car and unit train shipments only.

[2]Average premium/discount to tariff, last auction. n/a = not available.

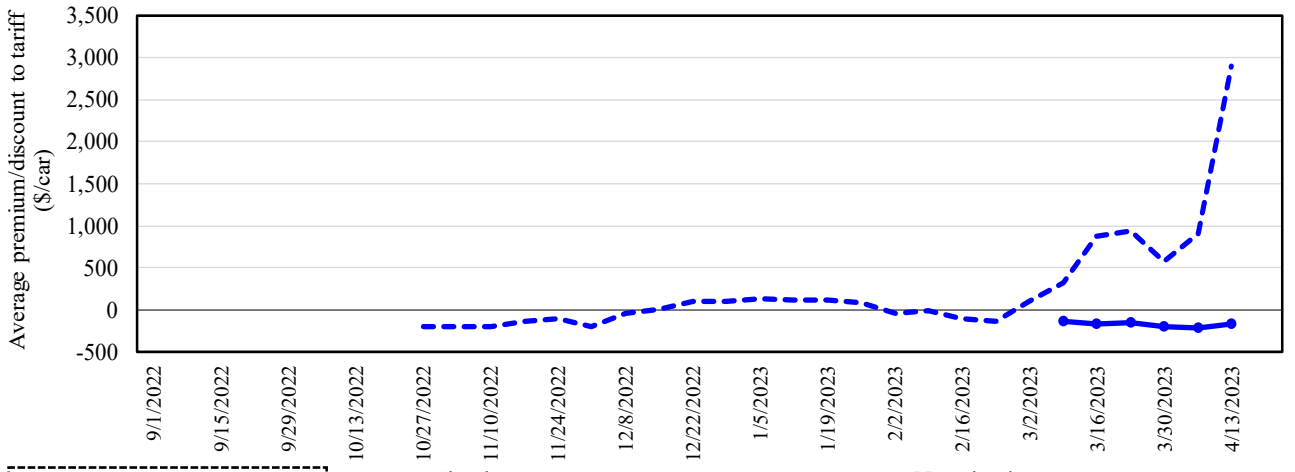
[3]BNSF - COT = BNSF Railway Certificate of Transportation; north grain and south grain bids were combined effective the week ending 6/24/06.

[4]UP - GCAS = Union Pacific Railroad Grain Car Allocation System.
Region 1 includes: AR, IL, LA, MO, NM, OK, TX, WI, and Duluth, MN.
Region 2 includes: CO, IA, KS, MN, NE, WY, and Kansas City and St. Joseph, MO.

Source: USDA, Agricultural Marketing Service.

The **secondary rail market** information reflects trade values for service that was originally purchased from the railroad carrier as some form of guaranteed freight. The **auction and secondary rail** values are indicators of rail service quality and demand/ supply.

Figure 3
Secondary market bids/offers for railcars to be delivered in April 2023

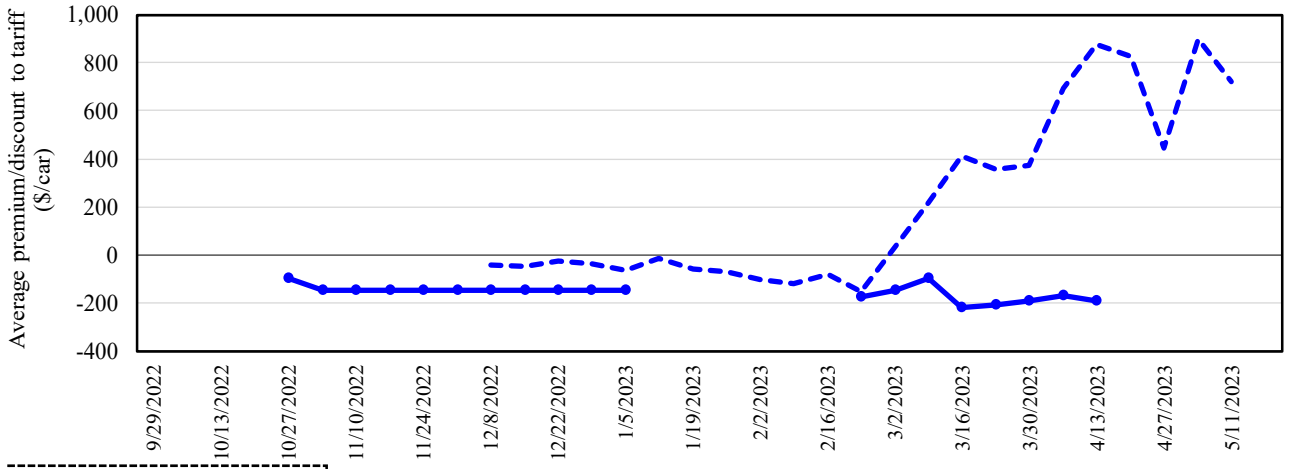


4/13/2023	BNSF	UP
Non-shuttle	n/a	n/a
Shuttle	$0	-$325

There were no non-shuttle bids/offers this week.
Average shuttle bids/offers rose $49 this week and are $20 below the peak.

Note: Non-shuttle bids include unit-train and single-car bids. n/a = not available; avg. = average; yr. = year; BNSF = BNSF Railway; UP = Union Pacific Railroad.
Source: USDA, Agricultural Marketing Service.

Figure 4
Secondary market bids/offers for railcars to be delivered in May 2023



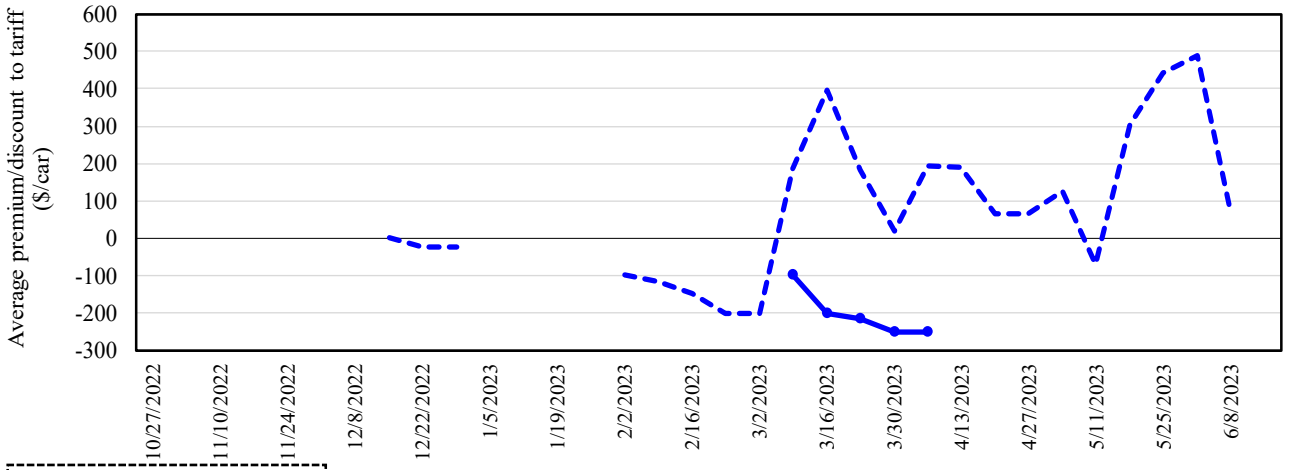
4/13/2023	BNSF	UP
Non-shuttle	n/a	n/a
Shuttle	-$81	-$300

There were no non-shuttle bids/offers this week.
Average shuttle bids/offers fell $22 this week and are $91 below the peak.

Note: Non-shuttle bids include unit-train and single-car bids. n/a = not available; avg. = average; yr. = year; BNSF = BNSF Railway; UP = Union Pacific Railroad.
Source: USDA, Agricultural Marketing Service.

Figure 5

Secondary market bids/offers for railcars to be delivered in June 2023



4/13/2023	BNSF	UP
Non-shuttle	n/a	n/a
Shuttle	n/a	n/a

There were no non-shuttle bids/offers this week.
There were no shuttle bids/offers this week.

Note: Non-shuttle bids include unit-train and single-car bids. n/a = not available; avg. = average; yr. = year; BNSF = BNSF Railway; UP = Union Pacific Railroad.
Source: USDA, Agricultural Marketing Service.

Table 5

Weekly secondary railcar market ($/car)[1]

	For the week ending: 4/13/2023	Delivery period					
		Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
Non-shuttle	**BNSF-GF**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
	Change from last week	n/a	n/a	n/a	n/a	n/a	n/a
	Change from same week 2022	n/a	n/a	n/a	n/a	n/a	n/a
	UP-Pool	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
	Change from last week	n/a	n/a	n/a	n/a	n/a	n/a
	Change from same week 2022	n/a	n/a	n/a	n/a	n/a	n/a
Shuttle	**BNSF-GF**	**0**	**(81)**	**n/a**	**n/a**	**(200)**	**125**
	Change from last week	106	57	n/a	n/a	0	92
	Change from same week 2022	(2,050)	(1,869)	n/a	n/a	(200)	(219)
	UP-Pool	**(325)**	**(300)**	**n/a**	**n/a**	**n/a**	**n/a**
	Change from last week	(8)	(100)	n/a	n/a	n/a	n/a
	Change from same week 2022	(4,075)	(3,675)	n/a	n/a	n/a	n/a

[1]Average premium/discount to tariff, $/car-last week.

Note: Bids listed are market indicators only and are not guaranteed prices. n/a = not available; GF = guaranteed freight; Pool = guaranteed pool; BNSF = BNSF Railway; UP = Union Pacific Railroad.

Data from James B. Joiner Co., Tradewest Brokerage Co.

Source: USDA, Agricultural Marketing Service.

Table 6

Tariff rail rates for unit and shuttle train shipments[1]

April 2023	Origin region[3]	Destination region[3]	Tariff rate/car	Fuel surcharge per car	Tariff plus surcharge per: metric ton	Tariff plus surcharge per: bushel[2]	Percent change Y/Y[4]
Unit train							
Wheat	Wichita, KS	St. Louis, MO	$3,695	$238	$39.05	$1.06	1
	Grand Forks, ND	Duluth-Superior, MN	$3,858	$89	$39.20	$1.07	6
	Wichita, KS	Los Angeles, CA	$7,490	$459	$78.94	$2.15	5
	Wichita, KS	New Orleans, LA	$4,600	$418	$49.83	$1.36	5
	Sioux Falls, SD	Galveston-Houston, TX	$7,226	$377	$75.50	$2.05	4
	Colby, KS	Galveston-Houston, TX	$4,850	$458	$52.71	$1.43	4
	Amarillo, TX	Los Angeles, CA	$5,121	$638	$57.19	$1.56	2
Corn	Champaign-Urbana, IL	New Orleans, LA	$4,000	$473	$44.42	$1.13	2
	Toledo, OH	Raleigh, NC	$8,551	$525	$90.13	$2.29	6
	Des Moines, IA	Davenport, IA	$2,655	$100	$27.36	$0.69	6
	Indianapolis, IN	Atlanta, GA	$6,593	$394	$69.38	$1.76	7
	Indianapolis, IN	Knoxville, TN	$5,564	$255	$57.79	$1.47	7
	Des Moines, IA	Little Rock, AR	$4,250	$294	$45.13	$1.15	7
	Des Moines, IA	Los Angeles, CA	$6,130	$857	$69.38	$1.76	6
Soybeans	Minneapolis, MN	New Orleans, LA	$3,856	$715	$45.39	$1.24	8
	Toledo, OH	Huntsville, AL	$7,037	$374	$73.59	$2.00	5
	Indianapolis, IN	Raleigh, NC	$7,843	$532	$83.17	$2.26	6
	Indianapolis, IN	Huntsville, AL	$5,689	$253	$59.00	$1.61	7
	Champaign-Urbana, IL	New Orleans, LA	$4,865	$473	$53.01	$1.44	6
Shuttle train							
Wheat	Great Falls, MT	Portland, OR	$4,393	$264	$46.25	$1.26	7
	Wichita, KS	Galveston-Houston, TX	$4,311	$206	$44.85	$1.22	-1
	Chicago, IL	Albany, NY	$7,090	$495	$75.33	$2.05	7
	Grand Forks, ND	Portland, OR	$6,051	$456	$64.62	$1.76	6
	Grand Forks, ND	Galveston-Houston, TX	$5,399	$475	$58.33	$1.59	6
	Colby, KS	Portland, OR	$5,923	$752	$66.28	$1.80	2
Corn	Minneapolis, MN	Portland, OR	$5,660	$555	$61.72	$1.57	8
	Sioux Falls, SD	Tacoma, WA	$5,620	$509	$60.86	$1.55	8
	Champaign-Urbana, IL	New Orleans, LA	$4,170	$473	$46.11	$1.17	8
	Lincoln, NE	Galveston-Houston, TX	$4,360	$296	$46.24	$1.17	9
	Des Moines, IA	Amarillo, TX	$4,670	$370	$50.05	$1.27	7
	Minneapolis, MN	Tacoma, WA	$5,660	$551	$61.68	$1.57	8
	Council Bluffs, IA	Stockton, CA	$5,580	$570	$61.07	$1.55	8
Soybeans	Sioux Falls, SD	Tacoma, WA	$6,350	$509	$68.11	$1.85	7
	Minneapolis, MN	Portland, OR	$6,400	$555	$69.07	$1.88	7
	Fargo, ND	Tacoma, WA	$6,250	$452	$66.56	$1.81	7
	Council Bluffs, IA	New Orleans, LA	$5,095	$545	$56.01	$1.52	5
	Toledo, OH	Huntsville, AL	$5,277	$374	$56.12	$1.53	7
	Grand Island, NE	Portland, OR	$5,730	$769	$64.54	$1.76	10

[1]A unit train refers to shipments of at least 25 cars. Shuttle train rates are generally available for qualified shipments of 75-120 cars that meet railroad efficiency requirements.

[2]Approximate load per car = 111 short tons (100.7 metric tons): corn 56 pounds per bushel (lbs/bu), wheat and soybeans 60 lbs/bu.

[3]Regional economic areas are defined by the Bureau of Economic Analysis (BEA).

[4]Percentage change year over year (Y/Y) calculated using tariff rate plus fuel surcharge.

Source: BNSF Railway, Canadian National Railway, CSX Transportation, and Union Pacific Railroad.

Table 7

Tariff rail rates for U.S. bulk grain shipments to Mexico

Date: December 2021							
Commodity	Origin state	Destination region	Tariff rate per car[1]	Fuel surcharge per car[2]	Tariff rate plus fuel surcharge per: metric ton[3]	bushel[3]	Percent change[4] Y/Y
Wheat	MT	Chihuahua, CI	$7,699	$0	$78.67	$2.14	4
	OK	Cuautitlan, EM	$6,900	$230	$72.85	$1.98	6
	KS	Guadalajara, JA	$7,619	$719	$85.19	$2.32	7
	TX	Salinas Victoria, NL	$4,420	$138	$46.57	$1.27	4
Corn	IA	Guadalajara, JA	$9,102	$663	$99.77	$2.53	6
	SD	Celaya, GJ	$8,300	$0	$84.81	$2.15	2
	NE	Queretaro, QA	$8,322	$462	$89.75	$2.28	5
	SD	Salinas Victoria, NL	$6,905	$0	$70.55	$1.79	0
	MO	Tlalnepantla, EM	$7,687	$450	$83.14	$2.11	5
	SD	Torreon, CU	$7,825	$0	$79.95	$2.03	2
Soybeans	MO	Bojay (Tula), HG	$8,647	$614	$94.63	$2.57	5
	NE	Guadalajara, JA	$9,207	$646	$100.67	$2.74	5
	IA	El Castillo, JA	$9,510	$0	$97.17	$2.64	1
	KS	Torreon, CU	$8,109	$466	$87.61	$2.38	5
Sorghum	NE	Celaya, GJ	$7,932	$597	$87.15	$2.21	6
	KS	Queretaro, QA	$8,108	$287	$85.77	$2.18	3
	NE	Salinas Victoria, NL	$6,713	$231	$70.94	$1.80	3
	NE	Torreon, CU	$7,225	$438	$78.29	$1.99	6

[1]Rates are based upon published tariff rates for high-capacity shuttle trains. Shuttle trains are available for qualified shipments of 75-110 cars that meet railroad efficiency requirements.

[2]Fuel surcharge adjusted to reflect the change in Ferrocarril Mexicano, S.A. de C.V railroad fuel surcharge policy as of 10/01/2009.

[3]Approximate load per car = 97.87 metric tons: Corn & Sorghum 56 lbs/bu, Wheat & Soybeans 60 lbs/bu.

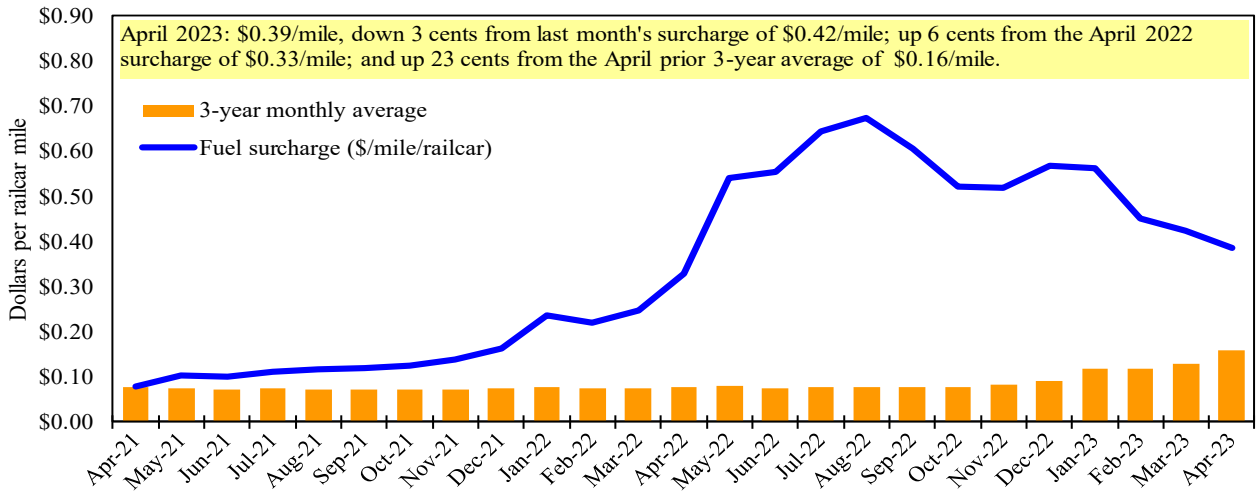
[4]Percentage change calculated using tariff rate plus fuel surchage; Y/Y = year over year.

[5] As of January 1, 2022, both BNSF and Union Pacific changed their billing and reporting of rates to Mexico. As we incorporate the change, Table 7 updates will be delayed.

Sources: BNSF Railway, Union Pacific Railroad, Kansas City Southern.

Figure 6

Railroad fuel surcharges, North American weighted average[1]

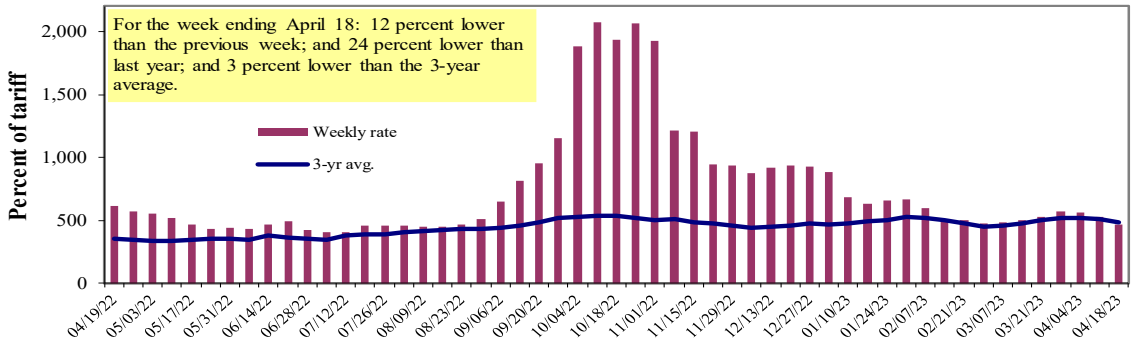


[1] Weighted by each Class I railroad's proportion of grain traffic for the prior year.

Sources: BNSF Railway, Canadian National Railway, CSX Transportation, Canadian Pacific Railway, Union Pacific Railroad, Kansas City Southern Railway, Norfolk Southern Corporation.

Barge Transportation

Figure 7
Illinois River barge freight rate[1,2]



[1]Rate = percent of 1976 tariff benchmark index (1976 = 100 percent); [2]4-week moving average of the 3-year average.
Source: USDA, Agricultural Marketing Service.

Table 8
Weekly barge freight rates: Southbound only

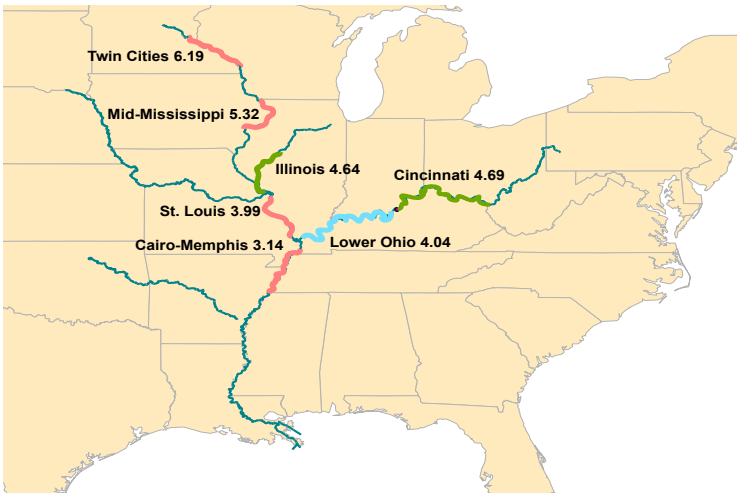
		Twin Cities	Mid-Mississippi	Lower Illinois River	St. Louis	Cincinnati	Lower Ohio	Cairo-Memphis
Rate[1]	4/18/2023	546	510	467	345	371	371	305
	4/11/2023	580	550	531	381	419	419	323
$/ton	4/18/2023	33.80	27.13	21.67	13.77	17.40	14.99	9.58
	4/11/2023	35.90	29.26	24.64	15.20	19.65	16.93	10.14
Current week % change from the same week:								
	Last year	-25	-23	-24	-31	-41	-41	-37
	3-year avg. [2]	-2	3	-3	-6	-11	-11	-8
Rate[1]	May	522	497	458	341	363	363	291
	July	501	474	459	347	363	363	289

[1]Rate = percent of 1976 tariff benchmark index (1976 = 100 percent); [2]4-week moving average; ton = 2,000 pounds; "-" data not available.
Source: USDA, Agricultural Marketing Service.

Figure 8
Benchmark tariff rates

Calculating barge rate per ton:
(Rate * 1976 tariff benchmark rate per ton)/100

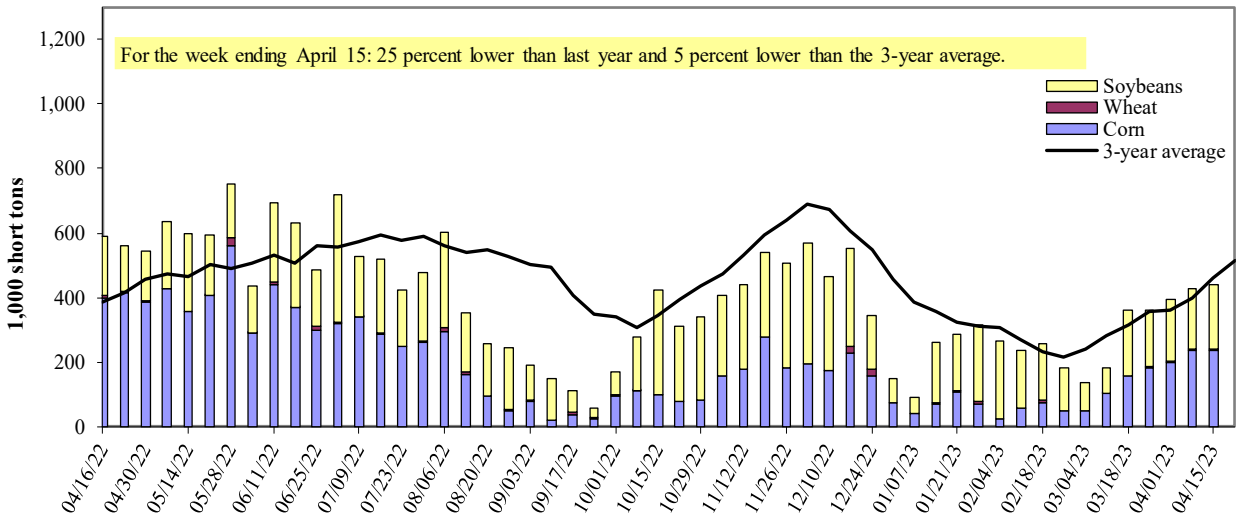
Select applicable index from market quotes are included in tables on this page. The 1976 benchmark rates per ton are provided in map.



Map Credit: USDA, Agricultural Marketing Service

Figure 9

Barge movements on the Mississippi River[1] (Locks 27 - Granite City, IL)



[1] The 3-year average is a 4-week moving average.

Note: The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers.

Table 9

Barged grain movements (1,000 tons)

For the week ending 04/15/2023	Corn	Wheat	Soybeans	Other	Total
Mississippi River					
Rock Island, IL (L15)	34	0	50	0	84
Winfield, MO (L25)	155	2	134	0	291
Alton, IL (L26)	217	2	183	6	408
Granite City, IL (L27)	236	5	198	6	444
Illinois River (La Grange)	86	0	39	6	131
Ohio River (Olmsted)	187	13	100	4	303
Arkansas River (L1)	0	7	1	0	8
Weekly total - 2023	423	25	298	10	756
Weekly total - 2022	539	65	258	8	870
2023 YTD[1]	3,827	388	4,306	134	8,656
2022 YTD[1]	5,260	480	3,549	91	9,380
2023 as % of 2022 YTD	73	81	121	147	92
Last 4 weeks as % of 2022[2]	85	64	104	96	90
Total 2022	16,437	1,594	14,464	232	32,727

[1] Weekly total, YTD (year-to-date), and calendar year total include MI/27, OH/Olmsted, and AR/1; Other refers to oats, barley, sorghum, and rye. Total may not add exactly due to rounding.

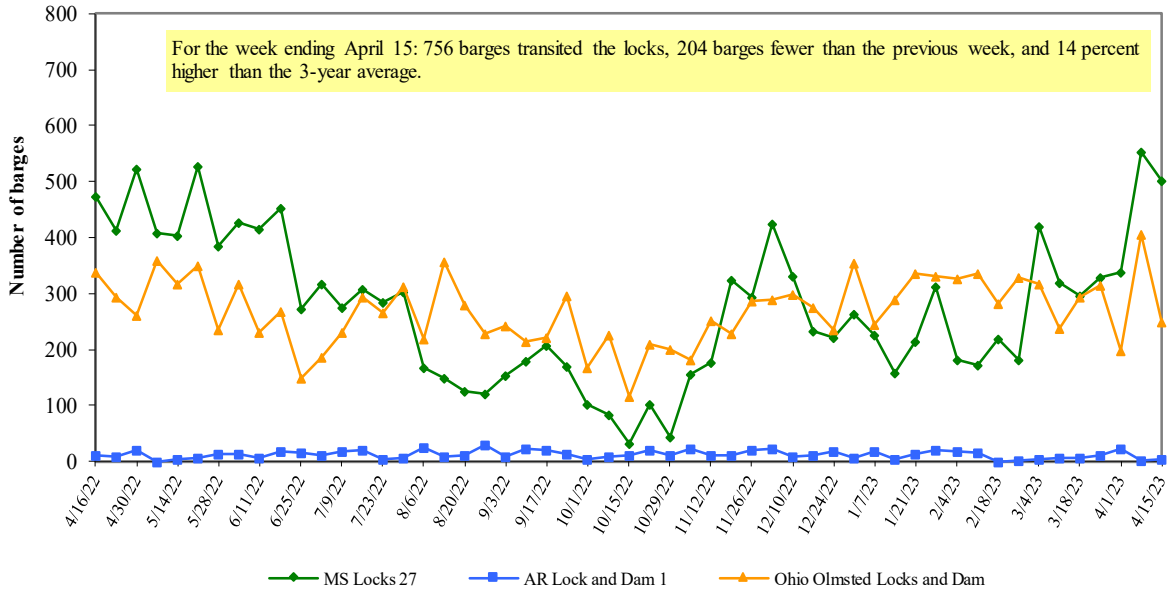
[2] As a percent of same period in 2022.

Note: L (as in "L15") refers to a lock, locks, or locks and dam facility. The U.S. Army Corps of Engineers has recently migrated its lock and vessel database database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers.

Figure 10

Upbound empty barges transiting Mississippi River Locks 27, Arkansas River Lock and Dam 1, and Ohio River Olmsted Locks and Dam

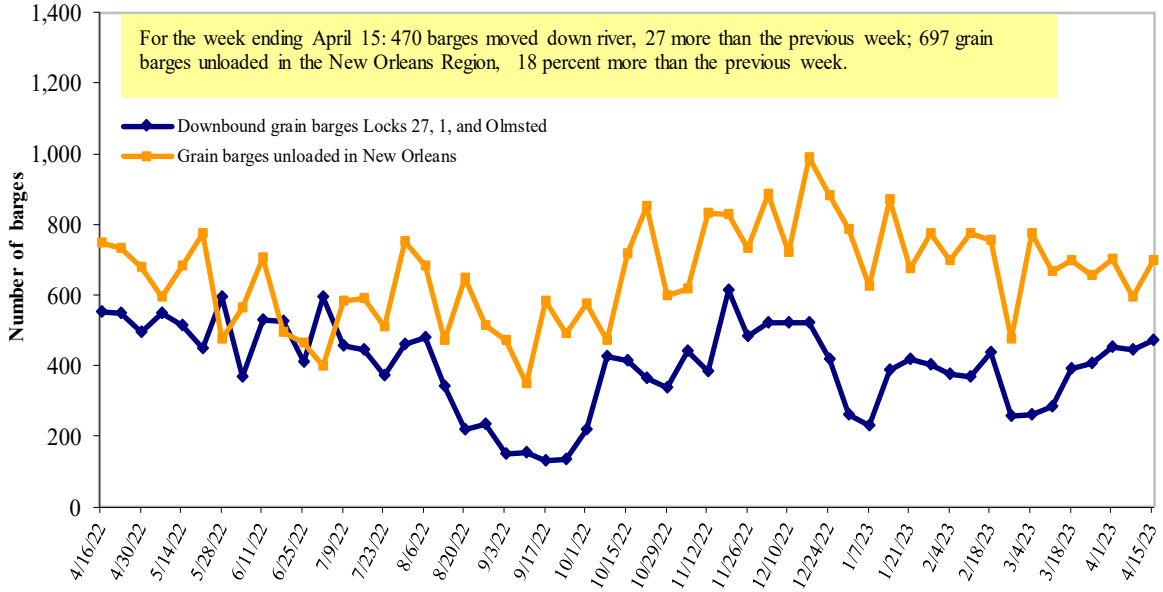


Note: The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers.

Figure 11

Grain barges for export in New Orleans region



Note: Olmsted = Olmsted Locks and Dam. The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers and USDA, Agricultural Marketing Service.

Truck Transportation

The **weekly diesel price** provides a proxy for trends in U.S. truck rates as diesel fuel is a significant expense for truck grain movements.

Table 10

Retail on-highway diesel prices, week ending 4/17/2023 (U.S. $/gallon)

Region	Location	Price	Change from Week ago	Change from Year ago
I	East Coast	4.198	-0.001	-0.953
	New England	4.540	-0.028	-0.637
	Central Atlantic	4.486	0.003	-0.849
	Lower Atlantic	4.056	0.001	-0.977
II	Midwest	4.027	0.059	-0.894
III	Gulf Coast	3.876	-0.007	-0.979
IV	Rocky Mountain	4.104	0.009	-0.990
V	West Coast	4.692	-0.007	-1.103
	West Coast less California	4.456	0.010	-0.822
	California	4.963	-0.026	-1.287
Total	United States	4.116	0.018	-0.985

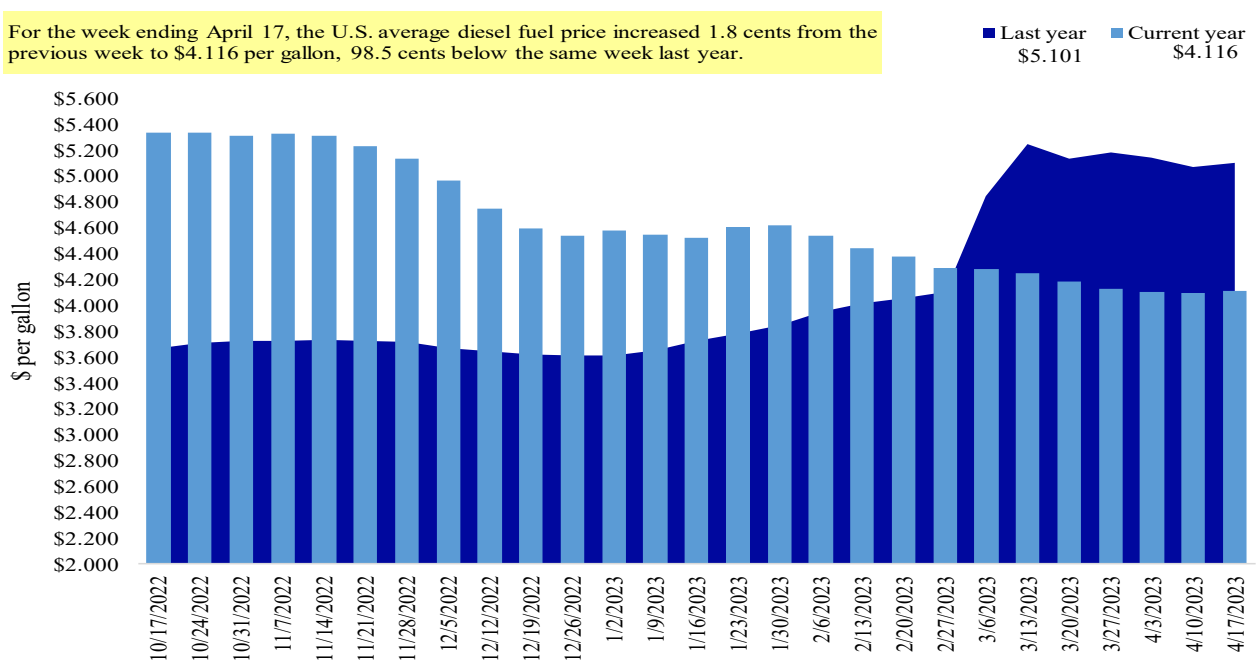
[1]Diesel fuel prices include all taxes. Prices represent an average of all types of diesel fuel.

Note: On June 13, the Energy Information Administration implemented a new methodology to estimate weekly on-highway diesel fuel prices.

Source: U.S. Department of Energy, Energy Information Administration.

Figure 12

Weekly diesel fuel prices, U.S. average



Note: On June 13, 2022 the Energy Information Administration implemented a new methodology to estimate weekly on-highway diesel fuel prices.

Source: U.S. Department of Energy, Energy Information Administration, Retail On-Highway Diesel Prices.

Grain Exports

Table 11

U.S. export balances and cumulative exports (1,000 metric tons)

	Wheat						Corn	Soybeans	Total
For the week ending	HRW	SRW	HRS	SWW	DUR	All wheat			
Export balances[1]									
4/6/2023	596	455	883	603	52	2,589	16,443	4,531	23,562
This week year ago	1,334	487	817	439	16	3,092	20,396	11,507	34,996
Cumulative exports-marketing year[2]									
2022/23 YTD	4,374	2,365	4,659	3,971	320	15,688	21,297	45,750	82,735
2021/22 YTD	6,214	2,348	4,504	2,906	174	16,146	35,374	45,128	96,648
YTD 2022/23 as % of 2021/22	70	101	103	137	184	97	60	101	86
Last 4 wks. as % of same period 2021/22	47	99	109	156	458	89	81	45	70
Total 2021/22	7,172	2,786	5,254	3,261	196	18,669	59,764	57,189	135,622
Total 2020/21	8,422	1,790	7,500	6,438	656	24,807	66,958	60,571	152,335

[1] Current unshipped (outstanding) export sales to date.

[2] Shipped export sales to date.

Note: marketing year: wheat = 6/01-5/31, corn and soybeans = 9/01-8/31. YTD = year-to-date; wks. = weeks; HRW= hard red winter; SRW = soft red w
HRS= hard red spring; SWW= soft white wheat; DUR= durum.

Source: USDA, Foreign Agricultural Service.

Table 12

Top 5 importers[1] of U.S. corn

For the week ending 4/6/2023	Total commitments[2]		% change	Exports[3]
	2022/23 current MY	2021/22 last MY	current MY from last MY	3-yr. avg. 2019-21
	1,000 mt -			-1,000 mt -
Mexico	13,843	15,415	(10)	15,227
China	8,241	12,778	(36)	12,616
Japan	5,059	8,599	(41)	10,273
Columbia	1,710	3,879	(56)	4,398
Korea	714	877	(19)	2,563
Top 5 importers	**29,567**	**41,548**	(29)	**45,077**
Total U.S. corn export sales	**37,740**	**55,769**	(32)	**56,665**
% of YTD current month's export projection	80%	89%		
Change from prior week[2]	**528**	**1,333**		
Top 5 importers' share of U.S. corn export sales	78%	74%		80%
USDA forecast April 2023	**47,074**	**62,875**	(25)	
Corn use for ethanol USDA forecast, April 2023	**133,350**	**135,281**	(1)	

[1]Based on USDA, Foreign Agricultural Service (FAS) marketing year ranking reports for 2021/22; marketing year (MY) = Sep 1 - Aug 31.

[2]Cumulative exports (shipped) + outstanding sales (unshipped), FAS weekly export sales report, or export sales query. Total commitments change (net sales) from prior week could include revisions from previous week's outstanding sales or accumulated sales.

[3]FAS marketing year ranking reports (carryover plus accumulated export); yr. = year; avg. = average; YTD = year to date.

Note: A red number in parentheses indicates a negative number; mt = metric ton.

Source: USDA, Foreign Agricultural Service.

Table 13

Top 5 importers[1] of U.S. soybeans

For the week ending 4/6/2023	Total commitments[2]		% change	Exports[3]
	2022/23 current MY	2021/22 last MY	current MY from last MY	3-yr. avg. 2019-21
	1,000 mt -			-1,000 mt -
China	31,005	29,183	6	27,283
Mexico	4,189	4,933	(15)	4,929
Egypt	1,099	3,585	(69)	3,553
Japan	1,860	1,947	(4)	2,266
Indonesia	1,245	1,285	(3)	2,116
Top 5 importers	**39,397**	**40,934**	(4)	**40,147**
Total U.S. soybean export sales	**50,281**	**56,636**	(11)	**54,231**
% of projected exports	92%	96%		
change from prior week[2]	**365**	**549**		
Top 5 importers' share of U.S. soybean export sales	78%	72%		**74%**
USDA forecast, April 2023	**54,905**	**58,801**	(7)	

[1]Based on USDA, Foreign Agricultural Service (FAS) marketing year ranking reports for 2021/22; marketing year (MY) = Sep 1 - Aug 31.

[2]Cumulative exports (shipped) + outstanding sales (unshipped), FAS weekly export sales report, or export sales query. Total commitments change (net sales) from prior week could include revisions from previous week's outstanding sales or accumulated sales.

[3]FAS marketing year ranking reports (carryover plus accumulated export); yr. = year; avg. = average; YTD = year to date.

Note: A red number in parentheses indicates a negative number; mt = metric ton.

Source: USDA, Foreign Agricultural Service.

Table 14

Top 10 importers[1] of all U.S. wheat

For the week ending 4/6/2023	Total commitments[2]		% change	Exports[3]
	2022/23 current MY	2021/22 last MY	current MY from last MY	3-yr. avg. 2019-21
	1,000 mt -			-1,000 mt -
Mexico	3,189	3,544	(10)	3,566
Philippines	2,251	2,718	(17)	2,985
Japan	2,101	2,359	(11)	2,453
China	1,098	848	30	1,537
Nigeria	753	1,987	(62)	1,528
Korea	1,259	1,255	0	1,459
Taiwan	810	916	(12)	1,106
Indonesia	345	122	183	711
Thailand	627	557	12	703
Colombia	527	701	(25)	621
Top 10 importers	**12,960**	**15,007**	(14)	**16,669**
Total U.S. wheat export sales	**18,277**	**19,238**	(5)	**22,763**
% of projected exports	87%	88%		
change from prior week[2]	**136**	**96**		
wheat export sales	71%	78%		73%
USDA forecast, April 2023	**21,117**	**21,798**	(3)	

[1] Based on USDA, Foreign Agricultural Service(FAS) marketing year ranking reports for 2020/21; Marketing year (MY) = Jun 1 - May 31.

[2] Cumulative exports (shipped) + outstanding sales (unshipped), FAS weekly export sales report, or export sales query. The total commitments change (net sales) from prior week could include revisions from the previous week's outstanding and/or accumulated sales.

[3] FAS marketing year ranking reports (carryover plus accumulated export); yr. = year; avg. = average.

Note: A red number in parentheses indicates a negative number.

Source: USDA, Foreign Agricultural Service.

Table 15

Grain inspections for export by U.S. port region (1,000 metric tons)

Port regions	For the week ending 04/13/23	Previous week*	Current week as % of previous	2023 YTD*	2022 YTD*	2023 YTD as % of 2022 YTD	Last 4-weeks as % of: Last year	Last 4-weeks as % of: Prior 3-yr. avg.	2022 total*
Pacific Northwest									
Wheat	60	229	26	3,410	3,091	110	80	54	9,836
Corn	267	70	382	1,277	3,783	34	43	40	9,615
Soybeans	72	70	102	3,441	4,038	85	25	53	14,178
Total	**399**	**369**	**108**	**8,128**	**10,912**	**74**	**50**	**47**	**33,629**
Mississippi Gulf									
Wheat	98	34	289	845	1,206	70	74	102	4,053
Corn	787	559	141	7,343	12,898	57	70	72	30,781
Soybeans	390	516	76	11,273	8,394	134	110	167	31,283
Total	**1,275**	**1,109**	**115**	**19,460**	**22,498**	**86**	**83**	**96**	**66,116**
Texas Gulf									
Wheat	28	84	33	669	911	73	65	55	3,421
Corn	0	0	n/a	68	214	32	0	0	648
Soybeans	0	0	n/a	52	2	n/a	n/a	0	685
Total	**28**	**84**	**33**	**789**	**1,127**	**70**	**50**	**45**	**4,754**
Interior									
Wheat	64	49	131	773	899	86	85	86	2,912
Corn	140	196	71	2,760	2,676	103	94	91	8,961
Soybeans	76	86	89	2,235	2,252	99	67	76	7,109
Total	**280**	**330**	**85**	**5,768**	**5,828**	**99**	**82**	**85**	**18,982**
Great Lakes									
Wheat	3	12	27	79	29	272	463	165	395
Corn	0	0	n/a	0	18	0	0	0	158
Soybeans	0	28	0	31	50	61	57	170	760
Total	**3**	**41**	**8**	**109**	**97**	**113**	**77**	**119**	**1,312**
Atlantic									
Wheat	0	1	0	38	4	842	n/a	436	169
Corn	0	0	n/a	44	69	63	17	40	309
Soybeans	16	12	125	1,096	983	112	50	77	2,867
Total	**16**	**14**	**113**	**1,178**	**1,056**	**111**	**47**	**75**	**3,345**
U.S. total from ports*									
Wheat	253	410	62	5,812	6,140	95	79	66	20,786
Corn	1,194	824	145	11,492	19,658	58	66	66	50,471
Soybeans	554	713	78	18,127	15,719	115	82	124	56,882
Total	**2,000**	**1,948**	**103**	**35,431**	**41,517**	**85**	**73**	**79**	**128,139**

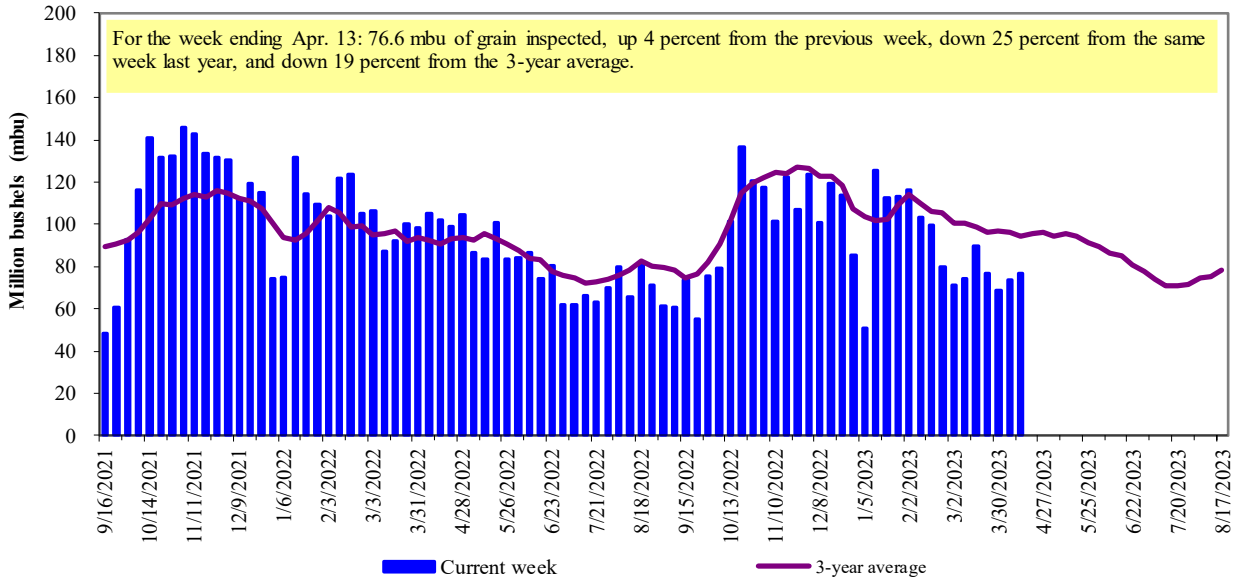
*Data includes revisions from prior weeks; some regional totals may not add exactly due to rounding.

Source: USDA, Federal Grain Inspection Service; YTD= year-to-date; n/a = not applicable or no change.

The United States exports approximately one-quarter of the grain it produces. On average, this includes nearly 45 percent of U.S.-grown wheat, 50 percent of U.S.-grown soybeans, and 20 percent of the U.S.-grown corn. Approximately 55 percent of the U.S. export grain shipments departed through the U.S. Gulf region in 2019.

Figure 13

U.S. grain inspected for export (wheat, corn, and soybeans)

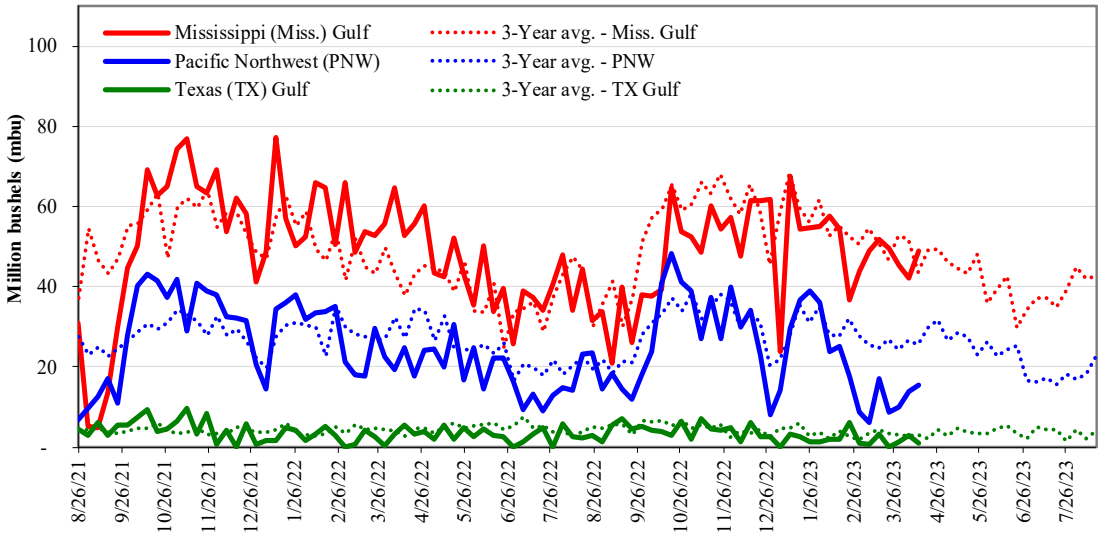


Note: 3-year average consists of 4-week running average.

Source: USDA, Federal Grain Inspection Service.

Figure 14

U.S. Grain inspections: U.S. Gulf and PNW[1] (wheat, corn, and soybeans)



Week ending 04/13/23 inspections (mbu):		Percent change	MS Gulf	TX	U.S. Gulf	PNW
MS Gulf:	48.9	Last wk:	up 16	down 67	up 10	up 12
PNW:	15.3	Last Year (same wk):	down 7	down 81	down 14	down 38
TX Gulf:	1.0	3-yr avg. (4-wk. mov. Avg):	unchanged	down 67	down 4	down 41

Source: USDA, Federal Grain Inspection Service.

Table 16

Weekly port region grain ocean vessel activity (number of vessels)

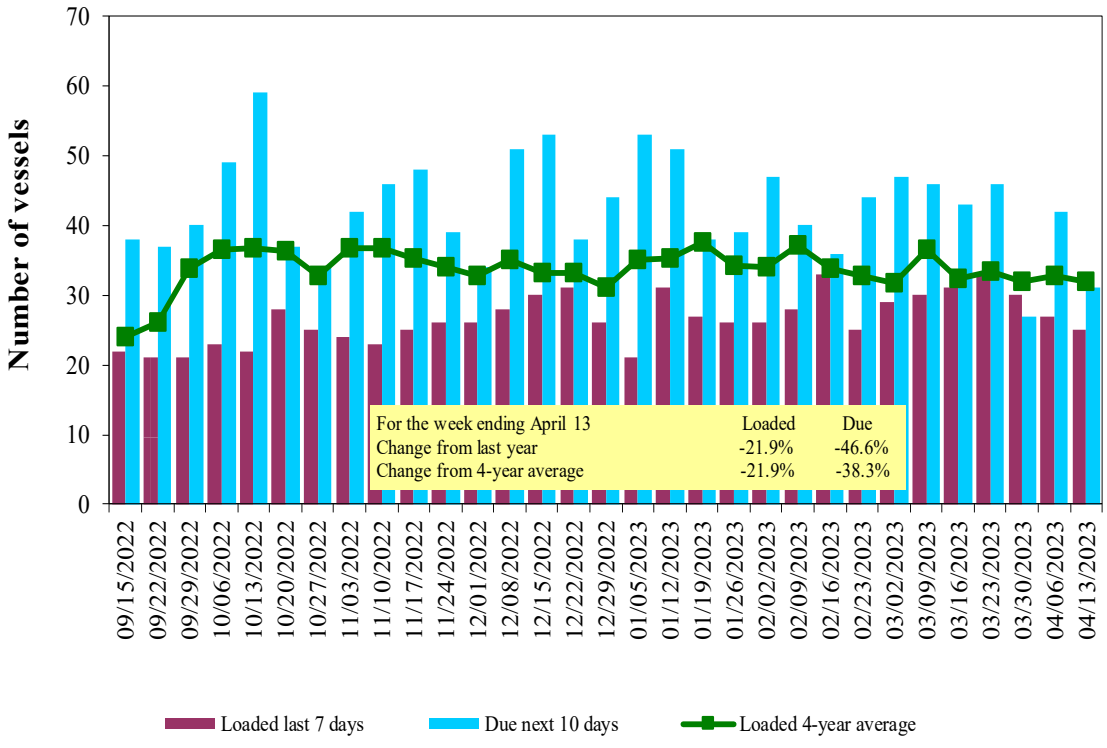
	Gulf			Pacific Northwest
Date	In port	Loaded 7-days	Due next 10-days	In port
4/13/2023	14	25	31	7
4/6/2023	14	27	42	6
2022 range	(14…61)	(18…39)	(28...62)	(5…23)
2022 average	30	28	44	13

Note: The data is voluntarily collected and may not be complete.

Source: USDA, Agricultural Marketing Service.

Figure 15

U.S. Gulf[1] vessel loading activity

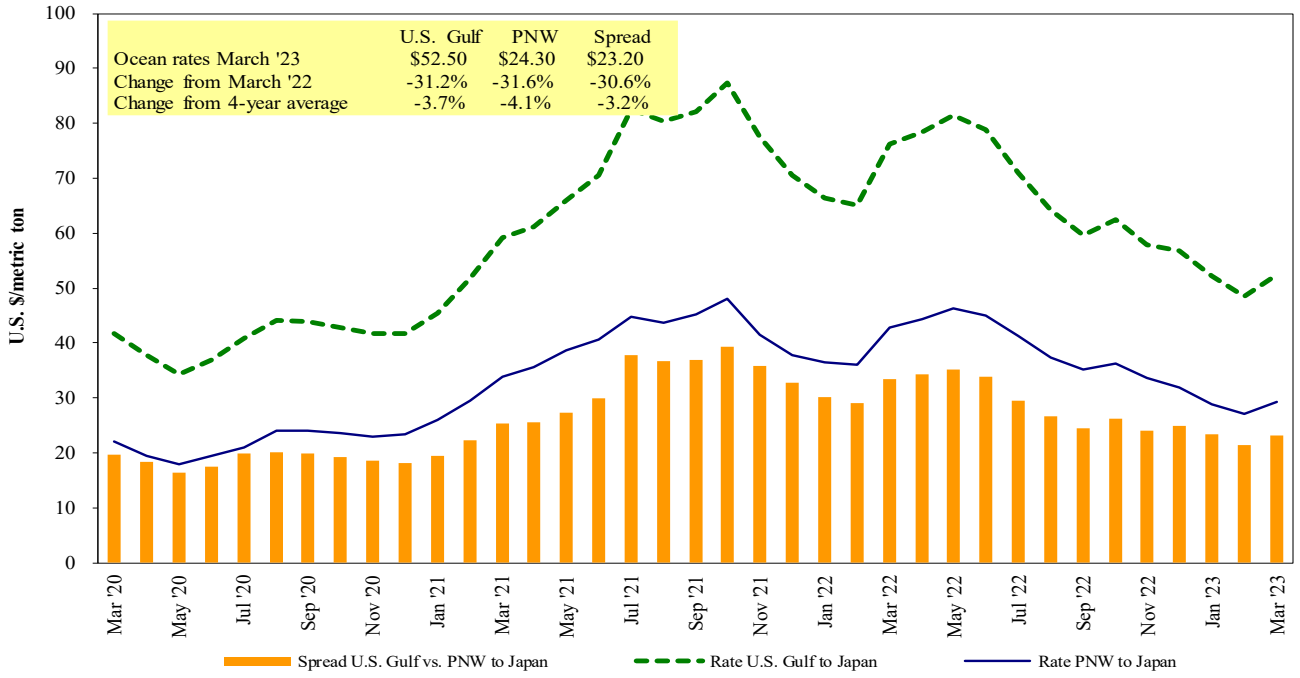


[1]U.S. Gulf includes Mississippi, Texas, and East Gulf.

Source: USDA, Agricultural Marketing Service.

Figure 16

Grain vessel rates, U.S. to Japan



Note: PNW = Pacific Northwest.

Source: O'Neil Commodity Consulting.

Table 17

Ocean freight rates for selected shipments, week ending 04/15/2023

Export region	Import region	Grain types	Loading date	Volume loads (metric tons)	Freight rate (US$/metric ton)
U.S. Gulf	Japan	Heavy grain	May 2, 2023	50,000	56.70
U.S. Gulf	Japan	Heavy grain	May 1, 2023	50,000	54.80
U.S. Gulf	Japan	Heavy grain	Nov 1/10, 2022	50,000	79.25
U.S. Gulf	S. China	Corn	Aug 1/10, 2022	68,000	71.00
U.S. Gulf	Kenya	Sorghum	Feb 15/25, 2023	22,820	63.30*
U.S. Gulf	Djibouti	Wheat	Nov 5/15, 2022	22,500	102.88*
PNW	N. China	Heavy grain	Apr 21/27, 2023	63,000	28.00
PNW	N. China	Heavy grain	May 1/4, 2023	66,000	29.00
WC US	Japan	Wheat	Feb 1/Mar 1, 2023	34,500	47.75
Brazil	N. China	Heavy grain	Apr 21/30, 2023	66,000	40.60
Brazil	Vietnam	Heavy grain	Apr 11/29, 2023	66,000	37.00
Australia	Vietnam	Heavy grain	Feb 24/Apr 9, 2023	60,000	20.80

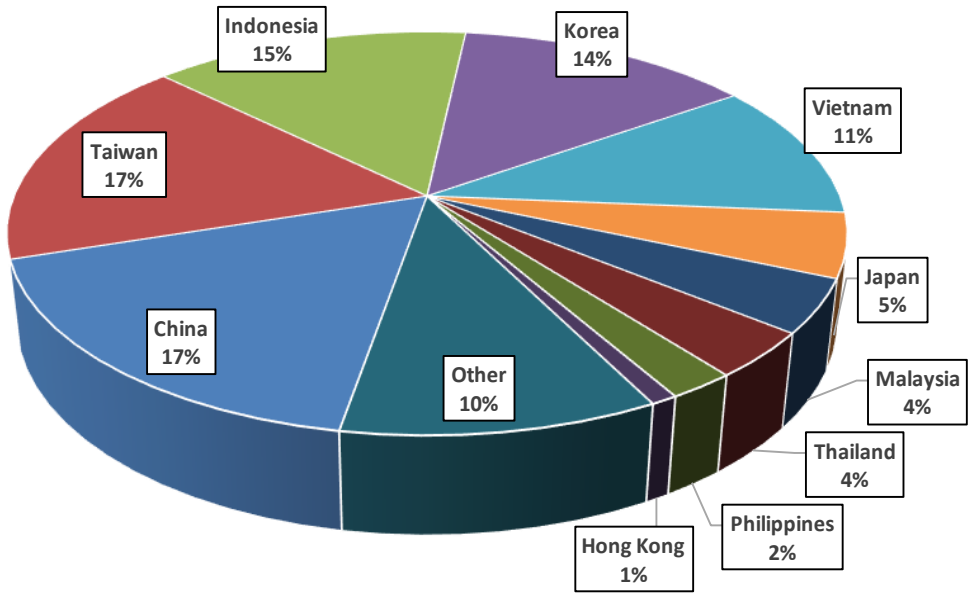
*50 percent of food aid from the United States is required to be shipped on U.S.-flag vessels.

Note: Rates shown are per metric ton (2,204.62 lbs. = 1 metric ton), free on board (F.O.B), except where otherwise indicated; op = option.

Source: Maritime Research, Inc.

In 2020, containers were used to transport 10 percent of total U.S. waterborne grain exports. Approximately 66 percent of U.S. waterborne grain exports in 2020 went to Asia, of which 14 percent were moved in containers. Approximately 95 percent of U.S. waterborne containerized grain exports were destined for Asia.

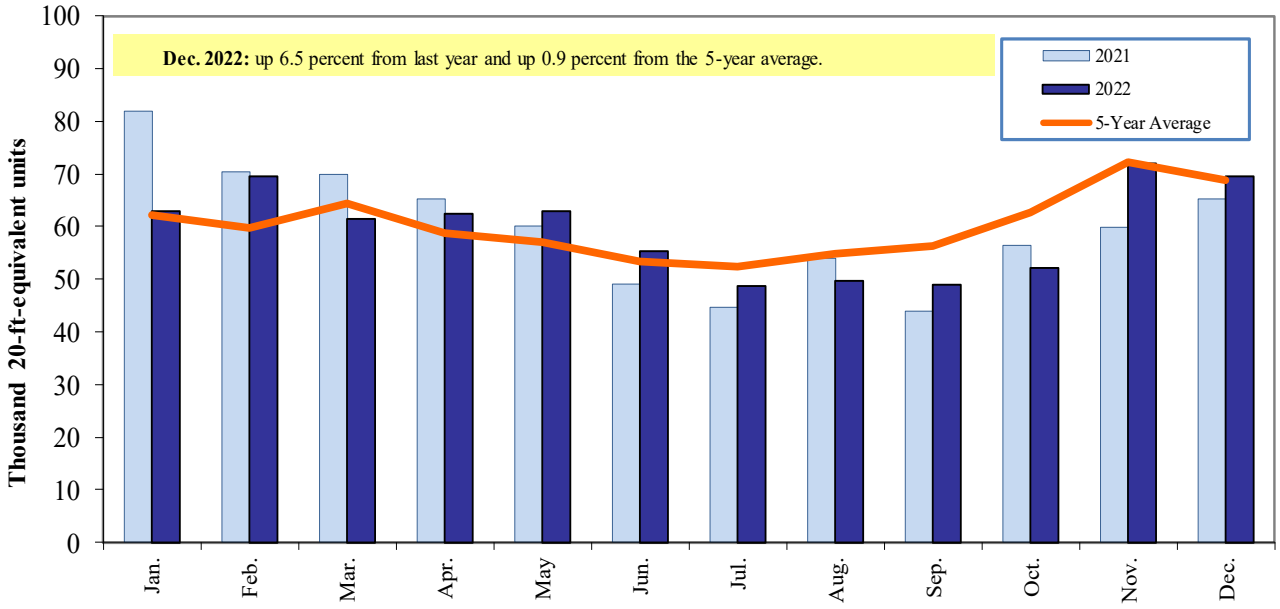
Figure 17
Top 10 destination markets for U.S. containerized grain exports, Jan-Dec 2022



Note: The following Harmonized Tariff Codes are used to calculate containerized grains movements: '1001', '100190', '1002', '100200', '1003', '100300', '1004', '100400', '1005', '100590', '1007', '100700', '110100', '1102', '110220', '110290', '1201', '120100', '120190', '120810', '230210', '230310', '230330', '2304', and '230990'.

Source: USDA, Agricultural Marketing Service, Transportation Services Division analysis of PIERS data.

Figure 18
Monthly shipments of U.S. containerized grain exports



Note: The following Harmonized Tariff Codes are used to calculate containerized grains movements: '1001', '100190', '1002', '100200', '1003', '100300', '1004', '100400', '1005', '100590', '1007', '100700', '110100', '1102', '110220', '110290', '1201', '120100', '120190', '120810', '230210', '230310', '230330', '2304', and '230990'.

Source: USDA, Agricultural Marketing Service, Transportation Services Division analysis of PIERS data.

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