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Sugar and Sweeteners Outlook: November 2023

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In this report:

Mexico's 2023/24 Sugar Production Reduced; Larger U.S. Sugar Production in 2023/24 Offsets Lower Imports

In the November 2023 *World Agricultural Supply and Demand Estimates* (*WASDE*), Mexico's sugar production in 2023/24 is reduced from last month by 245,000 metric tons (MT), actual weight to 5.330 million amid widespread drought conditions. The reduced production forecast translates to lower exports to the United States and deliveries to the Industria Manufacturera, Maquiladora y de Servicios de Exportación (IMMEX) program and implies higher imports into Mexico to maintain adequate inventory before the 2024/25 sugar campaign.

The U.S. 2023/24 sugar supply is raised from last month by 12,345 short tons, raw value (STRV) to 14.234 million on higher sugar production offsetting lower beginning stocks and imports. Both the Louisiana cane sugar and U.S. beet sugar production are increased mostly on higher yield forecasts by the USDA, National Agricultural Statistics Service (NASS). The increase in high-tier tariff raw sugar imports is countered by lower imports from Mexico and the Philippines due to its government's decision to allocate all production to the domestic market rather than allocate any to its raw sugar World Trade Organization (WTO) tariff-rate quota (TRQ). With total use unchanged at 12.665 million STRV, ending stocks are increased by 12,345 STRV to 1.569 million STRV. The stocks-to-use ratio is 12.4 percent, up 0.1 percentage point from last month's 12.3 percent.

U.S. Outlook Summary

U.S. Supply in 2023/24 Increased Marginally; Balance Sheet in 2022/23 Finalized

In the November 2023 *WASDE,* the U.S. 2023/24 sugar supply is raised from last month by 12,345 STRV to 14.234 million on higher sugar production offsetting lower beginning stocks and imports (table 1). Cane sugar production in Louisiana, which has been negatively impacted by drought, is increased by 49,000 STRV to 1.787 million on a higher sugarcane yield forecast in the USDA, NASS November *Crop Production* and on adjustments to September production provided in the final 2022/23 fiscal year data published in the USDA, Farm Service Agency (FSA) *Sweetener Market Data* (*SMD*). U.S. beet sugar production is increased by 211,000 STRV to 5.363 million—a record if realized—on a higher NASS sugarbeet yield forecast, processors' estimate of higher sugar content, and adjustments to early production. The improved outlook for beet sugar production compensates for the drought-reduced production in Louisiana and Texas, implying a U.S. sugar production of 9.229 million STRV, at par with 2022/23's 9.249 million (figure 1).

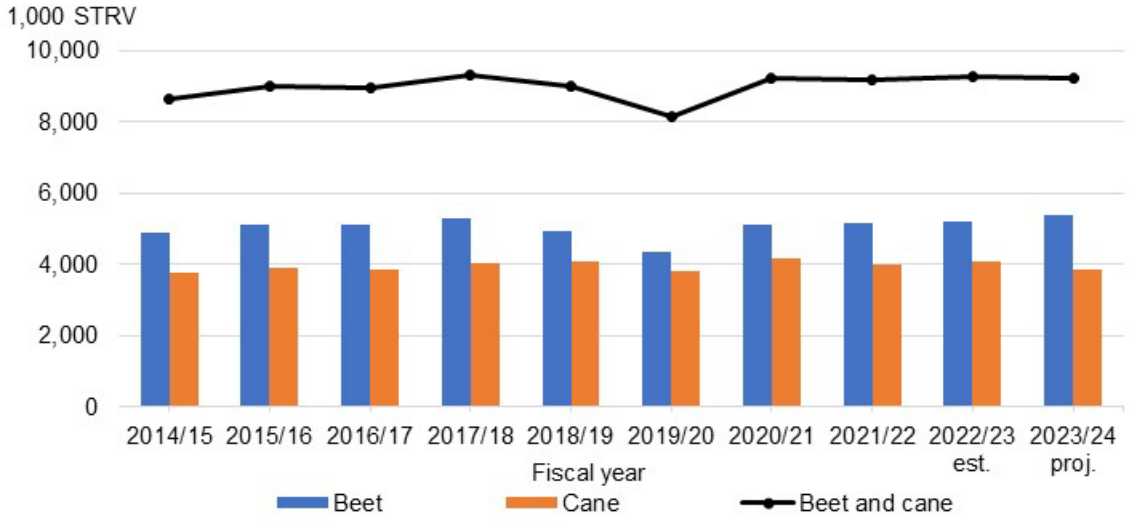
Total imports in 2023/24 are reduced by 146,000 STRV to 3.130 million, the lowest in 6 years. High-tier tariff sugar imports are increased by 100,000 STRV—all expected to be raw sugar, given current market conditions—to 275,000. However, this increase is countered by an 86,000-STRV reduction in expected imports from Mexico due to the drought-impacted crop and a 161,000-STRV reduction of raw sugar imports under the WTO TRQ on account of the Philippine government's decision to allocate all production to the domestic market. With total use unchanged at 12.665 million STRV, ending stocks are marginally increased by 12,345 STRV to 1.569 million STRV. The stocks-to-use ratio is 12.4 percent, up 0.1 percentage point from last month's 12.3 percent.

Table 1: U.S. sugar: Supply and use by fiscal year (October–September), November 2023

Items	2021/22	2022/23			2023/24		
	Final	October (estimate)	November (estimate)	Monthly change	October (forecast)	November (forecast)	Monthly change
			1,000 short tons, raw value				
Beginning stocks	1,705	1,820	1,820	0	1,977	1,875	-102
Total production	9,157	9,237	9,249	13	8,969	9,229	260
Beet sugar	5,155	5,168	5,187	20	5,151	5,363	211
Cane sugar	4,002	4,069	4,062	-7	3,817	3,866	49
Florida	1,934	1,983	1,983	0	2,037	2,037	0
Louisiana	1,944	2,010	2,002	-7	1,738	1,787	49
Texas	124	76	76	0	42	42	0
Total imports	3,646	3,584	3,614	31	3,277	3,130	-146
Tariff-rate quota imports	1,579	1,834	1,862	29	1,617	1,457	-161
Other program imports	298	141	141	0	200	200	0
Non-program imports	1,769	1,608	1,611	2	1,459	1,474	14
Mexico	1,379	1,156	1,156	0	1,284	1,199	-86
High-duty	390	453	455	2	175	275	100
Total supply	14,508	14,641	14,684	43	14,222	14,234	12
Total exports	29	70	82	12	35	35	0
Miscellaneous	81	0	138	138	0	0	0
Total deliveries	12,578	12,594	12,589	-5	12,630	12,630	0
Domestic food and beverage use	12,470	12,475	12,473	-2	12,525	12,525	0
To sugar-containing products re-export program	80	94	94	0	80	80	0
For polyhydric alcohol, feed, other alcohol	27	25	22	-3	25	25	0
Commodity Credit Corporation (CCC) for ethanol	0	0	0	0	0	0	0
Total use	12,688	12,664	12,809	145	12,665	12,665	0
Ending stocks	1,820	1,977	1,875	-102	1,557	1,569	12
Private	1,820	1,977	1,875	-102	1,557	1,569	12
Commodity Credit Corporation	0	0	0	0	0	0	0
Stocks-to-use ratio (percent)	14.3	15.6	14.6	-1.0	12.3	12.4	0.1

Source: USDA, World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates (WASDE)* .

Figure 1
U.S. beet and cane sugar production, by fiscal year, 2014/15–2023/24



STRV = short tons, raw value; est. = estimated; proj. = projected.

Source: USDA, World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates* (*WASDE*).

Beet Sugar Production in 2023/24 Raised to Record Level

U.S. beet sugar production in fiscal year 2023/24 is increased from last month by 211,000 STRV to 5.363 million on NASS' higher sugarbeet yield forecast, processors' estimate of higher sugar content, and adjustments to early production in 2023 and 2024 (table 2). This level, if realized, would reflect a 175,000-STRV increase (3 percent) from last year's 5.187 million and would be a new record if realized, exceeding 2017/18's 5.279 million.

In its November *Crop Production*, NASS raised its forecast of national sugarbeet yield from 31.1 tons per acre last month to 31.7 tons. The updated yield would be 3.1 tons per acre (11 percent) higher than last year's 28.6 tons and would tie 2017/18 as the second highest yield in 13 years behind 2021/22's record high of 33.2 tons (figure 2). Accordingly, the projected volume of sugarbeet production and slice are increased from last month, thereby increasing crop year sugar production.

The forecast for the extraction rate is raised from last month's 14.7 percent (based on a 10-year average) to 15 percent (based on processor reporting in the *SMD),* which would be above the 5-year average (14.9 percent) but below last year's 15.4 percent. With complete fiscal year data available from *SMD*, the August−September 2023 beet sugar production is finalized at 663,000

STRV, up 30,000 from last month's estimate (633,000). This final number is included in the 5-year average for early beet sugar production, raising the August−September 2024 forecast from last month by 12,000 STRV to 644,000.

Table 2: U.S. beet sugar production calculations, 2022/23 and 2023/24

	2022/23 October	2022/23 November	Monthly change	2023/24 October	2023/24 November	Monthly change
Sugarbeet production (1,000 short tons) 1/	32,574	32,574	0	34,739	35,508	769
Sugarbeet shrink (percent)	6.19	6.19	0.00	6.56	6.56	0.00
Sugarbeet sliced (1,000 short tons)	30,558	30,558	0	32,461	33,180	719
Sugar extraction rate from slice (percent)	15.38	15.35	-0.03	14.65	15.03	0.37
Sugar from beets sliced (1,000 STRV) 2/	4,700	4,690	-10	4,756	4,985	230
Sugar from molasses (1,000 STRV) 2/	372	372	0	360	360	0
Crop year sugar production (1,000 STRV) 2/	5,071	5,061	-10	5,116	5,345	230
Aug.–Sep. sugar production (1,000 STRV)	537	537	0	633	663	30
Aug.–Sep. sugar production of subsequent crop (1,000 STRV)	633	663	30	633	644	12
Sugar from imported beets (1,000 STRV) 3/	N/A	N/A	N/A	35	35	0
Fiscal year sugar production (1,000 STRV)	5,168	5,187	20	5,151	5,363	212

STRV = short tons, raw value; N/A = not applicable.

1/ USDA, National Agricultural Statistics Service.

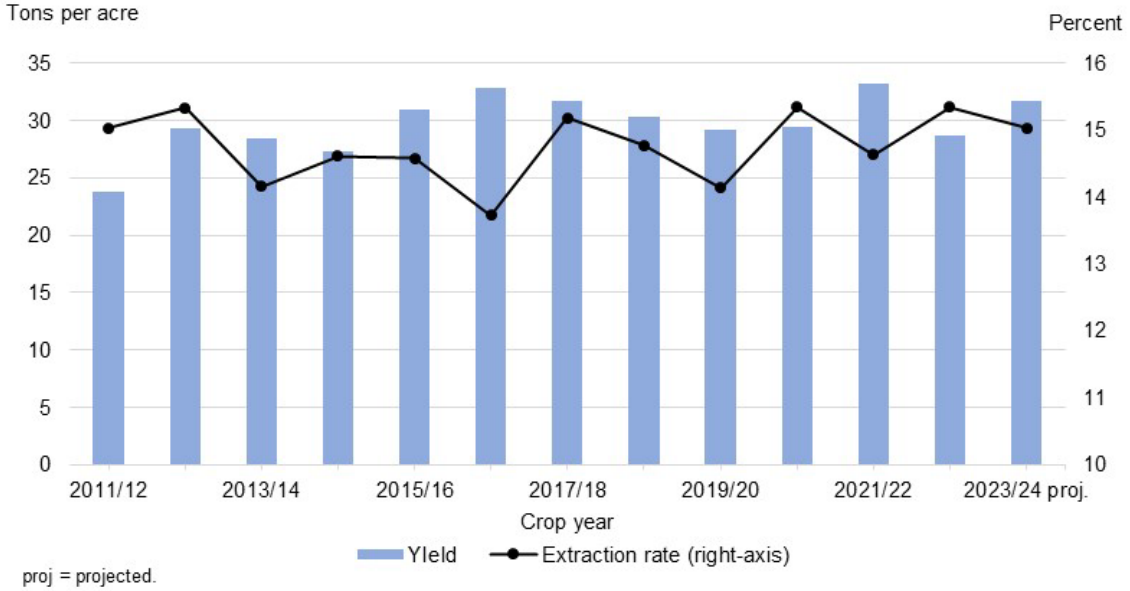
2/ August–July.

3/ Sugar from imported beets in 2022/23 are already included in the crop year production. Typically, this component is separated for projection purposes and included in the total once the full crop year slice is available.

Source: USDA, Economic Research Service; USDA, World Agricultural Outlook Board; USDA, Farm Service Agency.

Figure 2

U.S. sugarbeet yield and extraction rate, 2011/12–2023/24



proj = projected.

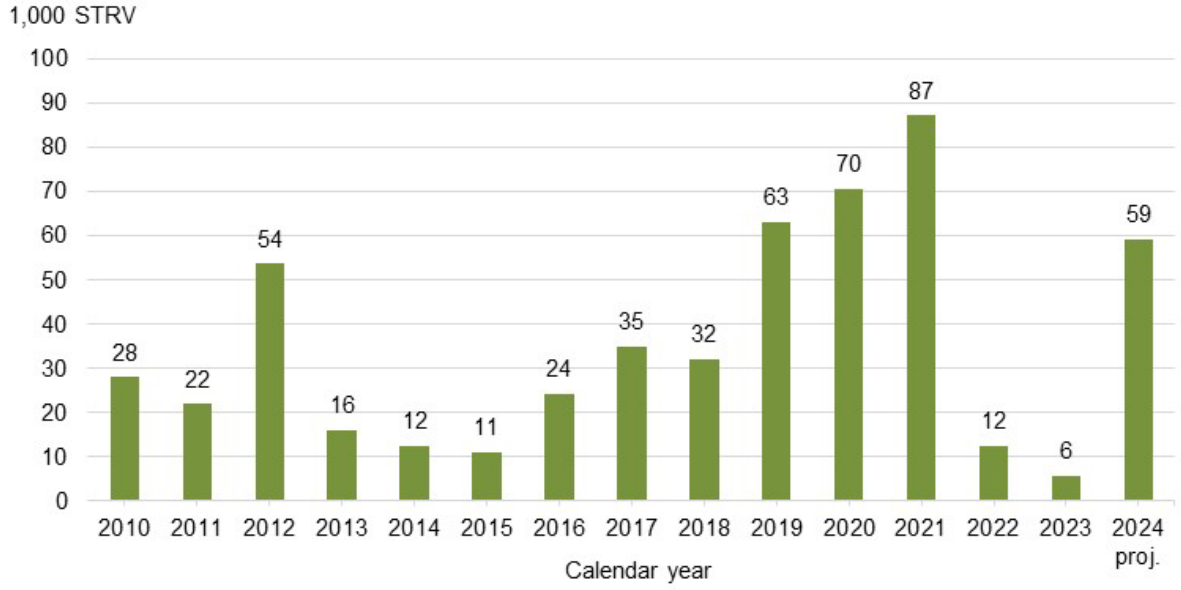
Source: USDA, World Agricultural Outlook Board; USDA, Farm Service Agency; USDA, National Agricultural Statistics Service.

Louisiana Cane Sugar Production Finalized in 2022/23

Louisiana cane sugar production in fiscal year 2022/23 is finalized at 2.002 million STRV, reflecting a 7,000-STRV decrease from last month, on the availability of actual September 2023 production data in the *SMD*. With no changes to Florida and Texas, final 2022/23 U.S. cane sugar production is lowered by the same amount from last month to 4.062 million STRV, the second largest production in a decade behind 2020/21's 4.142 million.

Louisiana's September 2023 sugar output is 6,000 STRV, the lowest since 2010, due to drought-delayed harvest (figure 3). Louisiana has been under drought conditions since June, and according to USDA's *U.S. Agriculture in Drought* report as of November 7, 100 percent of the State's sugarcane production areas remain under exceptional drought. In hope of receiving beneficial rains, the harvest campaign was delayed to October, one of the latest start dates on record. As of November 13, the sugarcane crop is 35 percent harvested, the slowest pace since 2014/15, the first year that harvest progress data is available from NASS (figure 4).

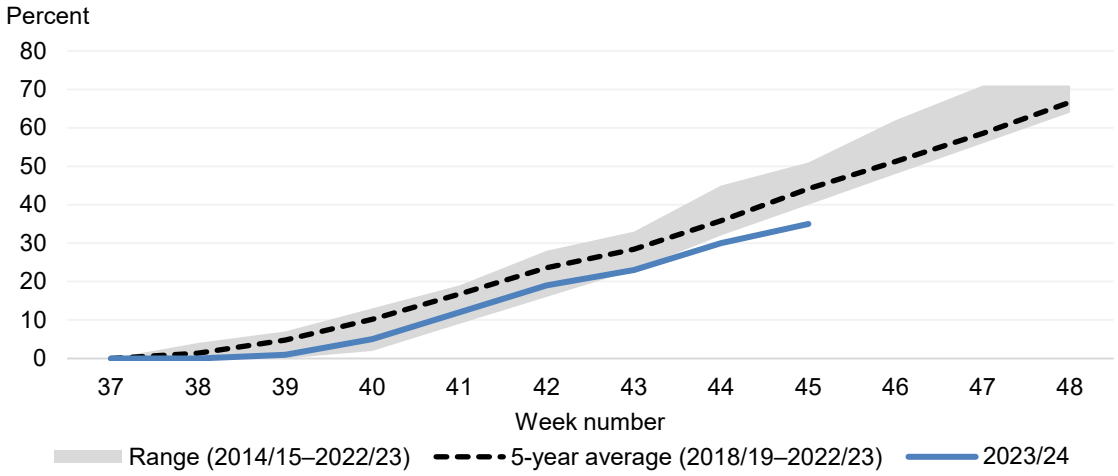
Figure 3
Louisiana early (September) cane sugar production, 2010–2024



STRV = short tons, raw value; proj = projected.

Source: USDA, World Agricultural Outlook Board; USDA, Farm Service Agency.

Figure 4
Louisiana sugarcane, percent harvested as of week 45[1/], crop year 2014/15−2023/24



1/ Week 45 was November 12 in 2023; exact dates vary by year.

Source: USDA, Economic Research Service calculations using data from USDA, National Agricultural Statistics.

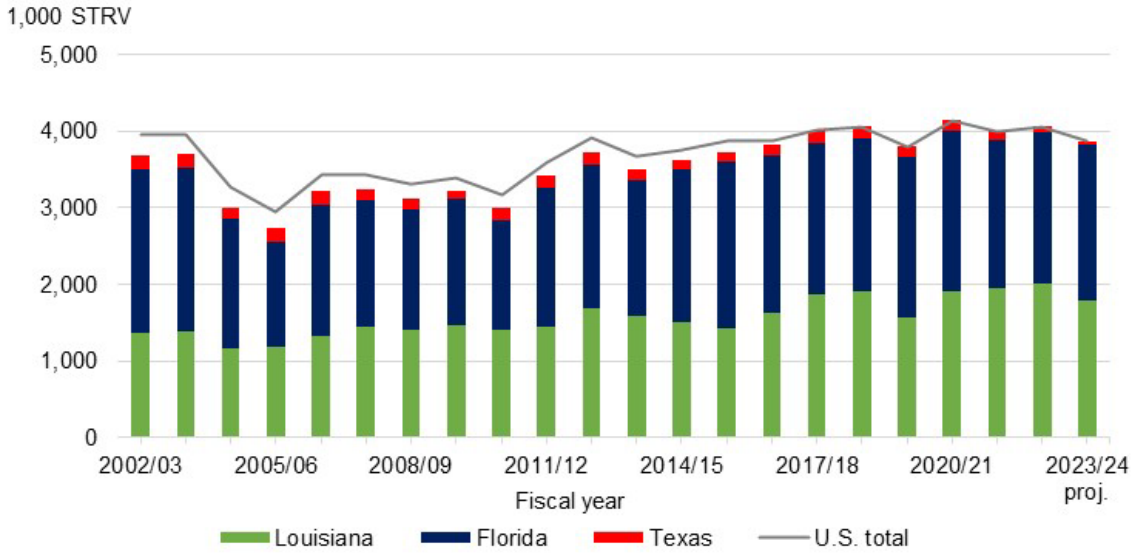
2023/24 Cane Sugar Production Raised on Improved Louisiana Outlook

While Louisiana surpassed Florida's cane sugar production the past two years, severe drought has eliminated that prospect for the 2023/24 crop. The outlook for the State has been improving with sugar production up from last month by 49,000 STRV to 1.787 million, mostly on NASS' higher sugarcane yield forecast and upward adjustment to the projected September 2024 production. After increasing Louisiana's sugarcane yield last month, NASS has again raised it from 27.7 tons per acre to 28.3 tons in its November *Crop Production.* Despite the increase, Louisiana's sugar production of 1.787 million STRV would be 216,000 STRV lower (11 percent) than its record high of 2.022 million last year and the second lowest in 5 years (figure 5).

There are no changes to the 2023/24 sugar production forecasts in Florida (2.037 million STRV) and Texas (42,000 STRV). After being impacted by weather-related events in the last 2 years, Florida is projected to return to production levels above 2 million tons. The 42,000-STRV production forecast in Texas is a record low due to drought conditions and restrictions of water releases from Mexico under the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty).

In aggregate, the 2023/24 cane sugar production in the United States is projected at 3.866 million STRV, 196,000-STRV lower (5 percent) than last year's 4.062 million STRV and would be the lowest in 5 years since 2019/20's 3.798 million.

Figure 5
U.S. production of cane sugar by State, 2002/03–2023/24



STRV = short tons, raw value; proj. = projected.

Source: USDA, Farm Service Agency.

U.S. Imports Reduced in 2023/24

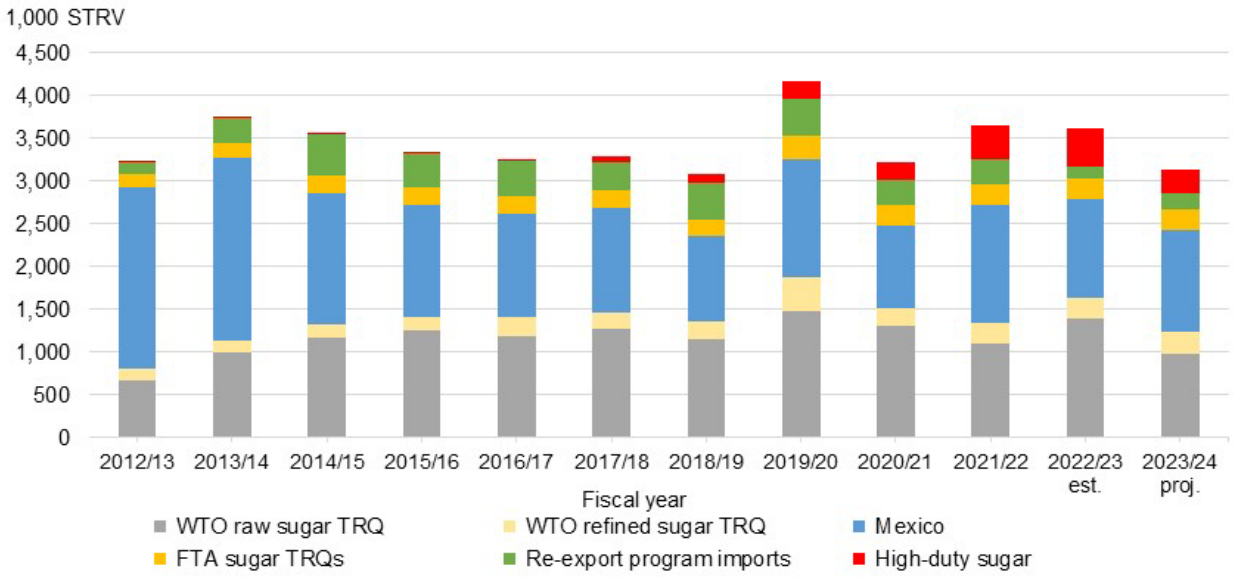
U.S. imports in 2023/24 are lowered from last month by 146,000 STRV to 3.130 million, 484,000-STRV lower (13 percent) than 2022/23 and would be the lowest in 6 years (figure 6). The lower expected imports of raw sugar under the WTO TRQ and from Mexico countered the increase in high-tier tariff raw sugar.

WTO TRQ raw sugar imports are reduced from last month by 161,000 STRV to 977,000—the lowest since 2013/14—on account of the Philippines (the third largest quota holder with about 13 percent of total WTO TRQ)—after its government's decision to allocate all production to the domestic market due to a reduced production forecast. It would be the third consecutive year of a zero-percent fill rate for the Philippines.

Imports from Mexico are reduced from last month by 86,000 STRV to 1.199 million on the expectation of drought-reduced sugar production. See the Mexico section for a detailed

discussion.

Figure 6
U.S. sugar imports by type, 2012/13–2023/24



STRV = short tons, raw value; FTA = free trade agreement; WTO = World Trade Organization; TRQ = tariff-rate quota; est. = estimated; proj. = projected.

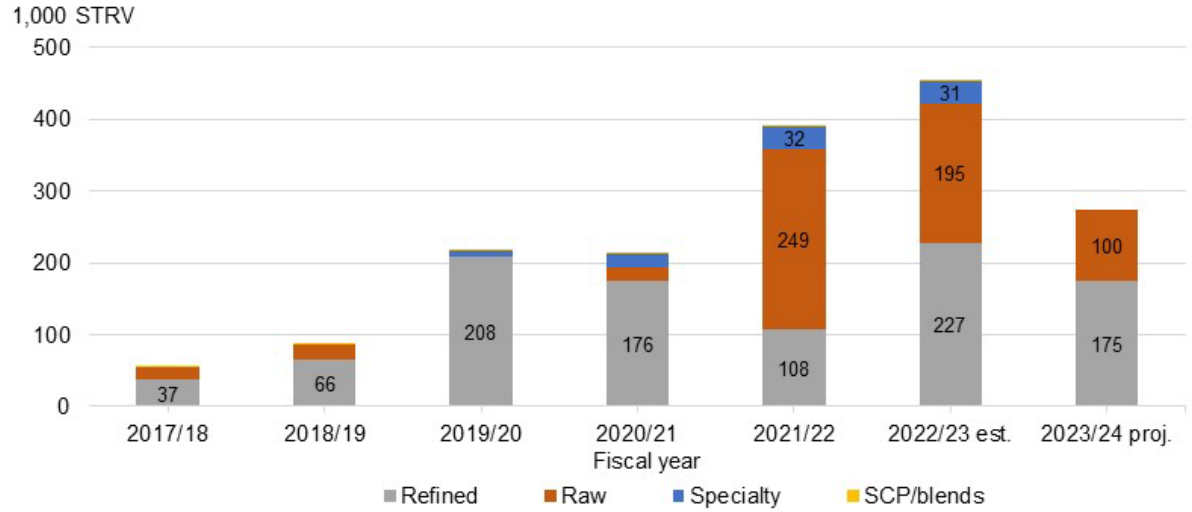
Source: USDA, Foreign Agricultural Service.

U.S. High-tier Raw Sugar Imports Up in 2023/24

High-tier imports, which are imported at higher tariffs than the low-duty TRQ supplies, are raised from last month by 100,000 STRV to 275,000. All the increase is assumed to be raw sugar; the forecast for high-tier refined sugar remains at 175,000 STRV. In the past, *WASDE* only increased the high-tier raw sugar estimate after sugar officially entered the country. While the maximum volume was about 20,000 STRV between 2017/18 and 2020/21, high-tier raw sugar imports increased substantially in the last 2 years: about 250,000 in 2021/22 (even surpassing the 108,000-STRV of high-tier refined imports in that year) and 195,000 in 2022/23 (figure 7). In addition, based on the port of entry and location of coastal cane refiners, more than one refiner located in the east and west coasts have sourced high-tier raw sugar imports in the last 2 years (figure 8). As such, the change in methodology recognizes the increasing role of high-tier raw sugar imports in meeting the raw cane sugar requirements of import-based cane refiners amid current market conditions of tight supplies and high prices.

Figure 7

U.S. high-tier duty sugar imports, by type of sugar, 2017/18–2023/24



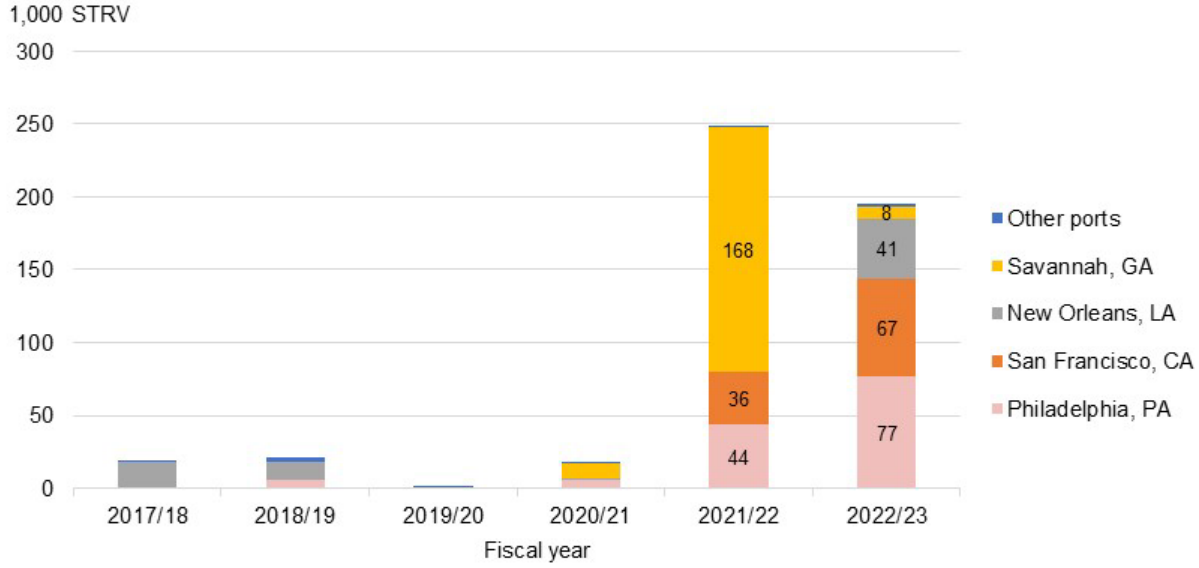
STRV = short tons, raw value; SCP = sugar-containing products; est. = estimated; proj. = projected.

Note: The Harmonized Tariff Schedule (HTS) lines are 1701.12.5000, 1701.13.5000, and 1701.14.5000 for raw sugar; 1701.91.3000, 1701.99.5025, 1701.99.5050 for refined sugar; 1701.99.5015 and 1701.99.5017 for specialty sugar including organic; and 1702.90.2000 and 2106.90.4600 for SCP/blends.

Source: USDA, Economic Research Service calculations using U.S. Department of Commerce, Bureau of the Census trade data from the U.S. International Trade Commission's *DataWeb*.

Figure 8

U.S. high-tier duty raw sugar imports, by U.S. port of entry, 2017/18–2022/23



STRV = short tons, raw value.

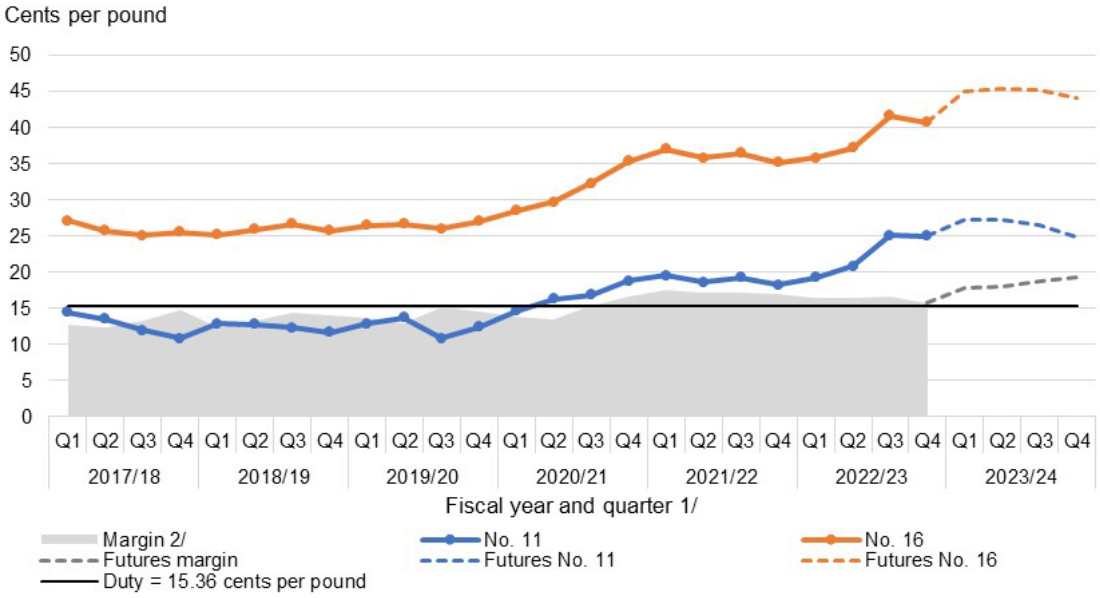
Note: The Harmonized Tariff Schedule (HTS) lines are 1701.12.5000, 1701.13.5000, and 1701.14.5000 for raw sugar.

Source: USDA, Economic Research Service calculations using U.S. Department of Commerce, Bureau of the Census trade data from the U.S. International Trade Commission's *DataWeb*.

As seen in figure 9, the U.S. Number (No.) 16 raw sugar futures have been positively influenced by the world No. 11 raw sugar futures. Both price series have been on a sustained, increasing trend since the third fiscal year (FY) quarter of 2019/20 (July−September 2020), with the No. 16 maintaining a wide margin. Around the second FY quarter of 2020/21 (January−March 2021), the increase in No. 16 started outpacing that of No. 11 causing the margin to exceed the high-tier raw sugar duty of 15.36 cents per pound (above the zero dotted line in figure 10). With the logistical costs of importing high-duty raw sugar feasible, the pace of high-duty raw sugar imports increased—averaging about 60,000 STRV per quarter in 2021/22 and 50,000 STRV per quarter in 2022/23.

Such a strong pace is likely to continue in 2023/24 as indicated by the continuation in the strength of No. 16 and No. 11 futures into FY 2023/24, mostly on expected tight supplies. Currently, unpromising cane sugar production prospects for Louisiana and Mexico, and the TRQ shortfall are some of the underpinning factors for the No. 16, while the No. 11 rally is attributed to the expected weather-reduced production in several major exporters (e.g., India, Thailand) and continued port congestion in the center-south region of Brazil, the leading sugar exporter.

Figure 9
U.S. and world raw average sugar prices relative to high-tier raw sugar duty, by fiscal year quarters, 2017/18−2023/24



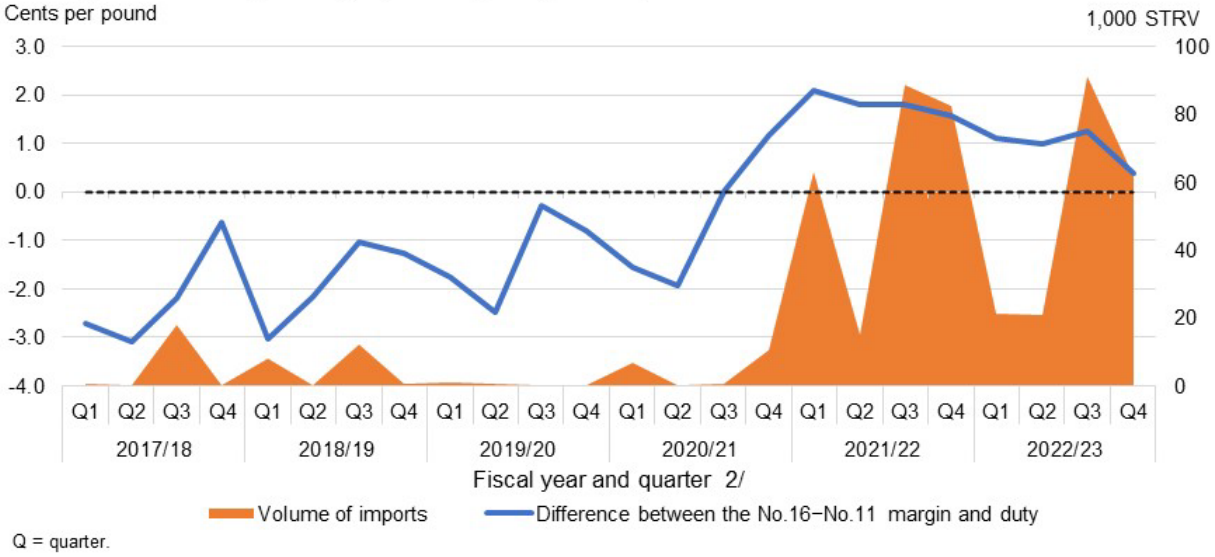
Q = quarter.

1/ For example, in 2017/18: Q1 = October−December 2017; Q2 = January−March 2018; Q3 = April−June 2018; and Q4 = July−September 2018.
2/ Margin is the difference between the No. 16 and No. 11.

Note: No. 11 and No. 16 contract futures settlement prices are as of 11/10/2023 and out to September 2024.

Source: USDA, Economic Research Service calculations of data from Intercontinental Exchange, Inc.

Figure 10
U.S. imports of high-tier raw sugar relative to the difference between the No.16−No.11 margin[1/] and high-tier raw sugar duty, by fiscal year quarters, 2017/18−2023/24



Q = quarter.

1/ Margin is the difference between the No. 16 and No. 11. The high-tier raw sugar duty is 15.36 cents per pound. The blue line represents the difference between the No.16−No.11 margin and high-tier raw sugar duty; the black dotted line indicates that the difference is 0.
2/ For example, in 2017/18: Q1 = October−December 2017; Q2 = January−March 2018; Q3 = April−June 2018; and Q4 = July−September 2018.

Source: USDA, Economic Research Service calculations using data from Intercontinental Exchange, Inc.

U.S. Imports Finalized in 2022/23

USDA, Foreign Agricultural Service (FAS) adjusted the 2022/23 trade data in its November 9 *Sugar Monthly Import and Re-Export Data* report upon the availability of full fiscal year data from the U.S. Department of Commerce, Bureau of the Census and the U.S. Department of Homeland Security, Customs and Border Protection. The final 2022/23 total imports amount to 3.614 million STRV, which is 31,000 lower (1 percent) than 2021/22 year but 138,000 (31 percent) above the 5-year average (table 3).

The largest change in the 2022/23 trade balance sheet from last month was a 29,000-STRV upward adjustment in raw sugar TRQ imports to 1.384 million, reflecting a 288,000 increase (26 percent) from 2021/22. Imports under the refined sugar TRQs and free trade agreements were finalized at 241,000 STRV and 237,000 STRV, respectively, which are relatively consistent with recent years. The largest over-the-year decline was observed for re-export program imports that were finalized at 141,000 STRV, which is below the 5-year average (357,000 STRV) and more than 50 percent lower (156,000 STRV) than last year (298,000 STRV). The final volume of high-tier imports was 455,000, a new record surpassing last year's 390,000 STRV by 65,000 (17 percent). Thus, while historically the smallest import

category, high-tier imports in 2022/23 comprised the third largest category in 2 consecutive years behind imports under the WTO raw sugar TRQ and from Mexico. As discussed in the previous section, given the current market conditions, the strong pace of high-tier imports is projected to continue in 2023/24.

Table 3: U.S. sugar imports by type, by fiscal year 2017/18–2022/23

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23 est.	5-year average	Over-the-year change	
Fiscal year total			1,000 short tons, raw value (STRV)					STRV	Percent
Mexico	1,223	1,000	1,376	968	1,379	1,156	1,189	-223	-16
WTO raw sugar TRQ	1,272	1,144	1,468	1,296	1,096	1,384	1,255	288	26
WTO refined sugar TRQ	190	207	408	217	237	241	252	4	2
FTA sugar TRQ	202	190	276	236	246	237	230	-9	-4
Re-export program	326	438	432	292	298	141	357	-156	-53
High-duty sugar	64	91	206	212	390	455	193	65	17
Total	3,277	3,070	4,165	3,221	3,646	3,614	3,476	-31	-1
Share of fiscal year total				Percent				Percentage point	
Mexico	37	33	33	30	38	32	34	-6	
WTO raw sugar TRQ	39	37	35	40	30	38	36	8	
WTO refined sugar TRQ	6	7	10	7	7	7	7	0	
FTA sugar TRQ	6	6	7	7	7	7	7	0	
Re-export program	10	14	10	9	8	4	10	-4	
High-duty sugar	2	3	5	7	11	13	5	2	
Total	100	100	100	100	100	100	100	N/A	

WTO = World Trade Organization; TRQ = tariff-rate quota; FTA = free trade agreement; est. = estimated; N/A = not applicable.

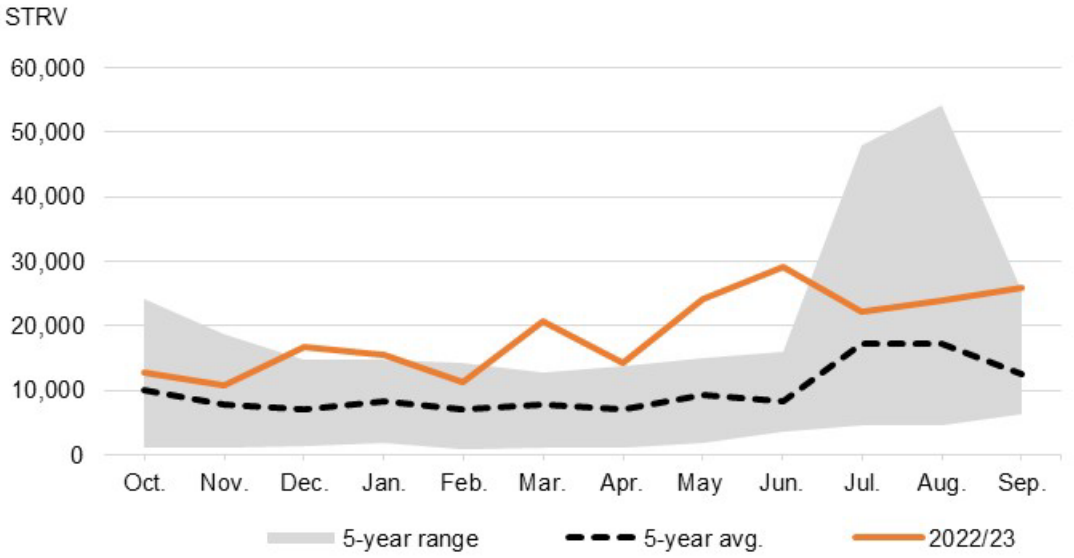
Note: Totals may not add due to rounding.

Source: USDA, Economic Research Service calculations using data from USDA, Foreign Agricultural Service.

Half of the 2022/23 455,000-STRV high-tier imports is comprised of refined sugar (227,000 STRV), followed by raw sugar (195,000 STRV or 43 percent). The monthly entry pace of both refined and raw imports have mostly outpaced the 5-year average (figure 11 and 12). The volume of specialty sugar, which includes organic, was 31,000 STRV (7 percent), mirroring last year's 32,000 STRV. It is possible that the oversubscription of the refined sugar additional specialty sugar quota, which was set at 220,462 STRV (200,000 metric tons, raw value) for both years contributed to the entry of organic sugar with high-tier duty.

Of the 455,000-STRV high-tier imports in 2022/23, about 203,000 STRV or 45 percent came from Brazil, followed by Guatemala (87,000 STRV or 19 percent) and El Salvador (65,000 STRV or 14 percent) (figure 13). Most of the sugar entered via one of three ports: Philadelphia, PA (89,000 STRV or 20 percent); San Francisco, CA (76,000 STRV or 17 percent); and New Orleans, LA (72,000 STRV or 17 percent) (figure 14).

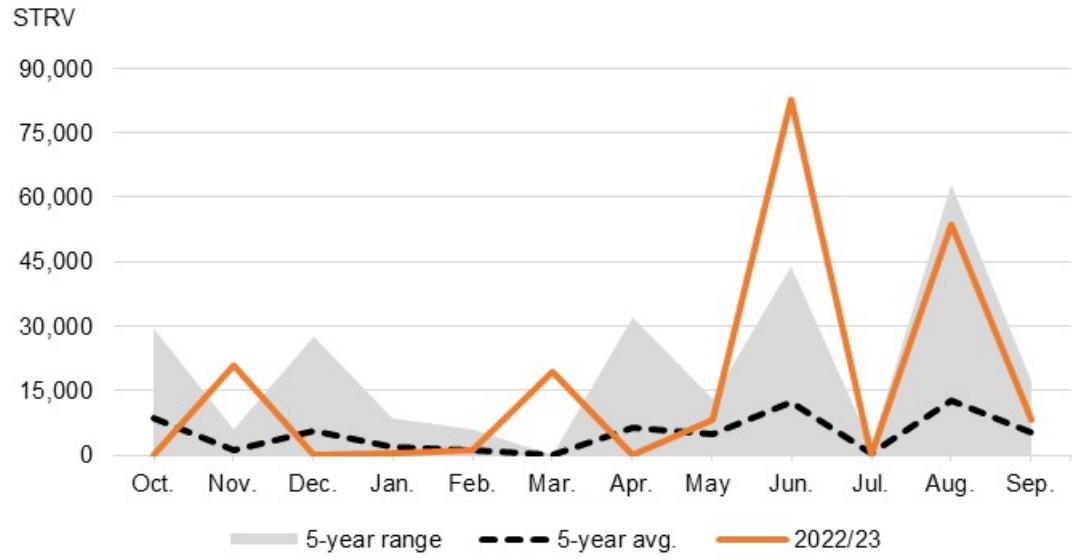
Figure 11
U.S. monthly imports of high-tier refined sugar, 2017/18–2022/23



STRV = short tons, raw value; avg. = average.

Source: USDA, Economic Research Service calculations using U.S. Department of Commerce, Bureau of the Census trade data from the U.S. International Trade Commission's *DataWeb*.

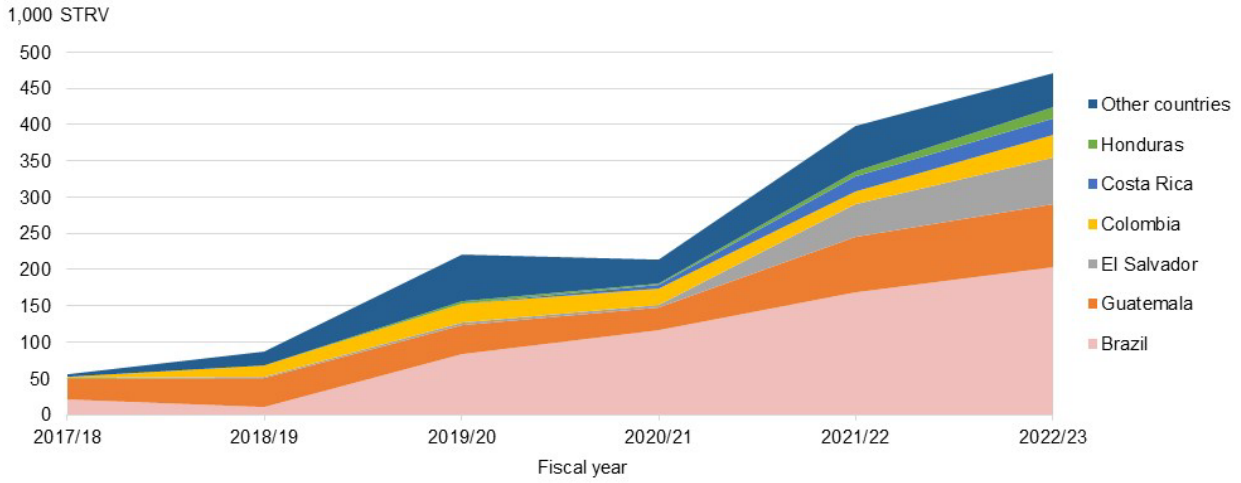
Figure 12
U.S. monthly imports of high-tier raw sugar, 2017/18–2022/23



STRV = short tons, raw value; avg. = average.

Source: USDA, Economic Research Service calculations using U.S. Department of Commerce, Bureau of the Census trade data from the U.S. International Trade Commission's *DataWeb*.

Figure 13
U.S. high-tier duty sugar imports, by country of origin, 2017/18–2022/23

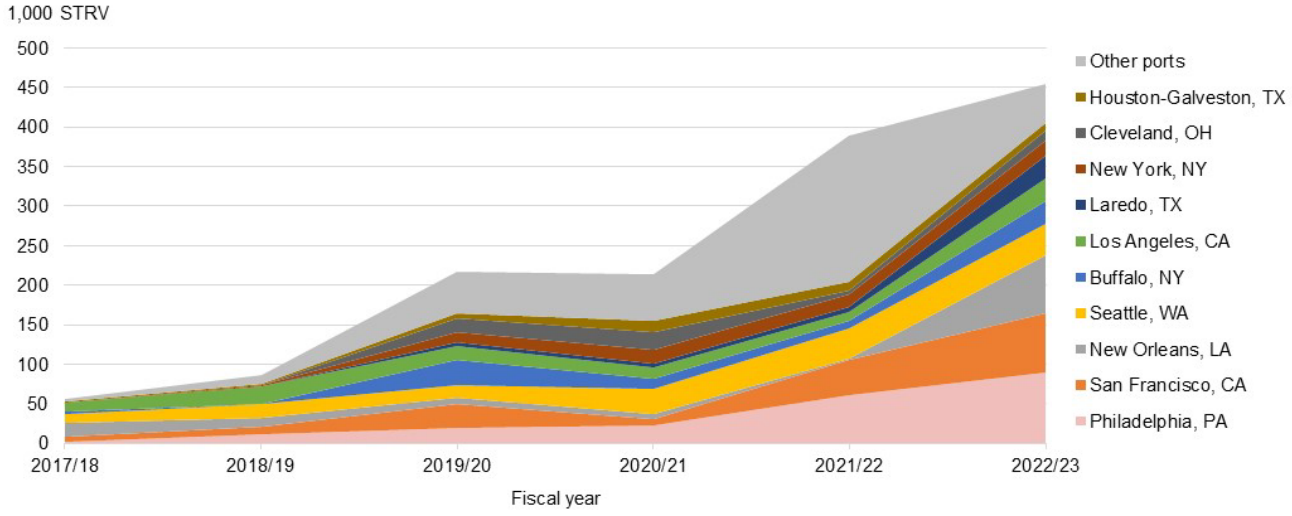


STRV = short tons, raw value; SCP = sugar-containing products.

Note: The Harmonized Tariff Schedule (HTS) lines are 1701.12.5000, 1701.13.5000, and 1701.14.5000 for raw sugar; 1701.91.3000, 1701.99.5025, and 1701.99.5050 for refined sugar; 1701.99.5015 and 1701.99.5017 for specialty sugar including organic; and 1702.90.2000 and 2106.90.4600 for SCP/blends.

Source: USDA, Economic Research Service calculations using U.S. Department of Commerce, Bureau of the Census trade data from the U.S. International Trade Commission's *DataWeb*.

Figure 14
U.S. high-tier duty sugar imports, by U.S. port of entry, 2017/18–2022/23



STRV = short tons, raw value; SCP = sugar-containing products.

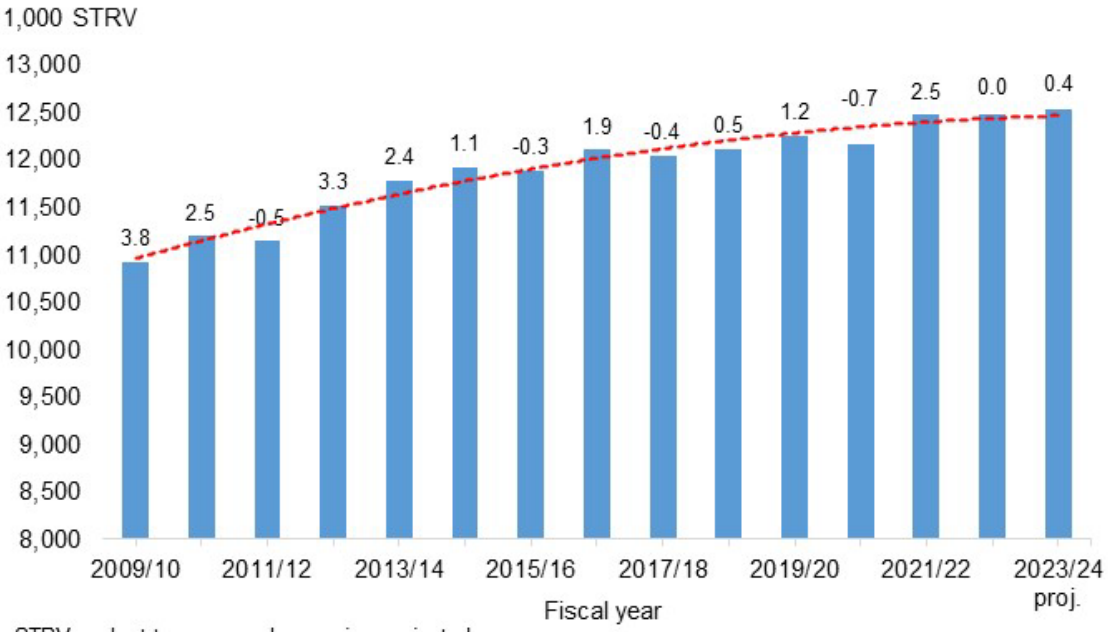
Note: The Harmonized Tariff Schedule (HTS) lines are 1701.12.5000, 1701.13.5000, and 1701.14.5000 for raw sugar; 1701.91.3000, 1701.99.5025, and 1701.99.5050 for refined sugar; 1701.99.5015 and 1701.99.5017 for specialty sugar including organic; and 1702.90.2000 and 2106.90.4600 for SCP/blends.

Source: USDA, Economic Research Service calculations using U.S. Department of Commerce, Bureau of the Census trade data from the U.S. International Trade Commission's *DataWeb*.

Sugar Deliveries for Human Consumption in 2022/23 Comparable With 2021/22

Based on the *SMD* report, sugar deliveries for food and beverage use in 2022/23 were slightly adjusted from last month and finalized at 12.473 million STRV, reflecting a flat trend from 2021/22's 12.470 million (figure 15). The forecast for 2023/24 remains at 12.525 million STRV, reflecting a 0.4 percent annual growth.

Figure 15
U.S. sugar deliveries for food and beverage use, 2009/10–2023/24



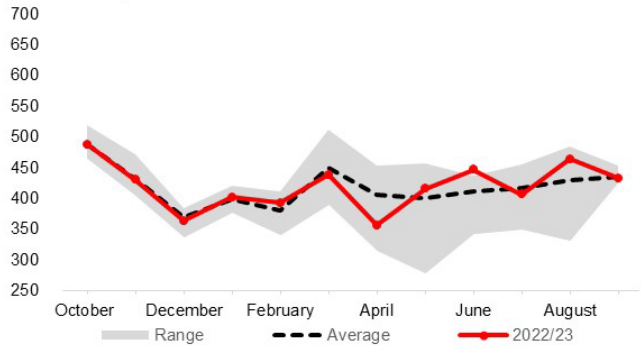
STRV = short tons, raw value; proj. = projected.

Note: The dashed red line represents the long-term trend line. Numbers on top of the bars represent the annual growth rates (percent).

Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

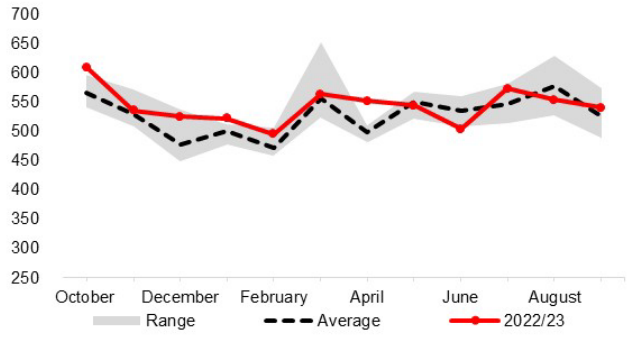
While the food use deliveries are comparable between the 2 years, the delivery patterns among the components differ. With monthly deliveries mostly tracking the 5-year average (figure 16a), the 2022/23 beet sugar deliveries in 2022/23 totaled 5.027 million STRV, lower by about 300,000 STRV (6 percent) than last year's 5.326 million (table 4). Thus, beet sugar accounts for 40 percent of the 2022/23 total food and beverage deliveries, down from 43 percent last year and the 41 percent 5-year average.

Figure 16a
Beet sugar deliveries, monthly, 2017/18–2022/23
1,000 short tons, raw value



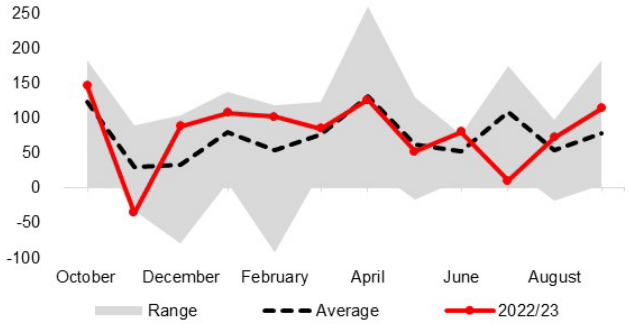
Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

Figure 16b
Cane sugar deliveries, monthly, 2017/18–2022/23
1,000 short tons, raw value



Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

Figure 17
Non-reporter deliveries, monthly, 2017/18–2022/23
1,000 short tons, raw value



Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

Table 4: Food and beverage deliveries, October–September, 2017/18–2022/23

	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23 est.	Annual change	
	1,000 short tons, raw value (STRV)						1,000 STRV	Percent
Beet sugar processors	5,271	5,044	4,422	4,966	5,326	5,027	-299	-6
Cane sugar refiners	6,113	6,302	6,615	6,265	6,349	6,507	158	2
Non-reporter (direct consumption)	664	760	1,213	930	795	939	144	18
Total	12,048	12,106	12,250	12,161	12,470	12,473	3	0
	Percent share in total						5-year average	
Beet sugar processors	44	42	36	41	43	40	41	
Cane sugar refiners	51	52	54	52	51	52	52	
Non-reporter (direct consumption)	6	6	10	8	6	8	7	
Total	100	100	100	100	100	100	100	

est. = estimated.

Note: Totals may not add due to rounding.

Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

The decline in the beet sugar sector is offset by the over-the-year increases in deliveries by cane sugar refiners and non-*SMD* reporters. Cane sugar deliveries started strongly relative to recent years, with monthly deliveries at or above the 5-year average between October 2022

and April 2023, and above the 5-year range for 3 months (figure 16b). However, the pace slowed in the succeeding months, mostly tracking the 5-year average. Nonetheless, the strong pace in the first half contributed to a 6.507 million-STRV of cane sugar delivery for 2022/23, 158,000 STRV (2 percent) higher than 2021/22 (6.349 million STRV) and is the second largest in 6 years (behind 2019/20's 6.615 million STRV).

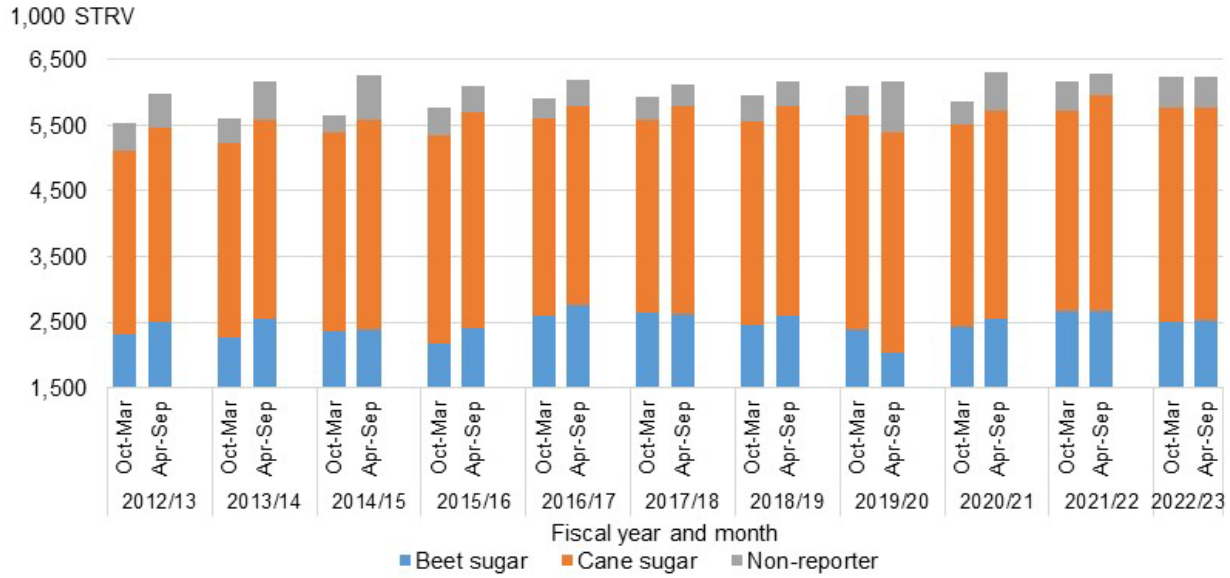
Non-*SMD* reporter monthly deliveries[1] in 2022/23, which were at or above the 5-year average except for 2 months (figure 17), were generally strong and totaled 939,000 STRV. This volume is higher than last year by 144,000 STRV (18 percent) and would be the second largest behind 2019/20 (1.213 million STRV).

Deliveries are historically stronger during the first half of the fiscal year (October−March) than the second half (April−September), particularly before 2017/18 (figure 18). This can be attributed to the seasonal surge in demand for sweets-related products during the summer and ahead of the holidays (Halloween, Thanksgiving, and Christmas). Interestingly, in the past 2 years (starting in 2021/22 when deliveries surged post-COVID), the pace of deliveries between the first and second half of the year had been comparable. USDA received feedback from sugar sellers that in the second half of 2022/23 in particular, several food and beverage companies were delayed or delinquent in taking contracted commitments and/or took the sugar but at lower volumes. Some of the reasons identified include slower-than-expected food and beverage manufacturers sales likely due to inflation or customers' recession concerns and relatively high interest rates that increase manufacturers' costs of stocking ingredients such as sugar. Given the implications for forecasting, it would be noteworthy if the recent patterns continue into 2023/24 or revert to historical trends.

[1] Non-*SMD* reporters are neither beet processors nor cane refiners covered under the sugar program that report to *SMD*. These companies typically import refined sugar for direct consumption or delivery to an end-user. Non-reporter deliveries can be negative in some months because the data is not based on actual numbers but instead calculated using two reports that use different databases. Specifically, the imports reported by beet processors and/or cane refiners in the *SMD* are subtracted from the total imports in the FAS *Sugar Monthly Import and Re-Export.* Negative values for non-reporter monthly deliveries arise when the timing of imports reported in the databases differs.

Figure 18

Food and beverage deliveries, by components, fiscal year 2012/13–2022/23



STRV = short tons, raw value.

Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

Mexico Outlook

Mexico's Sugar Production in 2023/24 Lowered Anew Due to Drought Conditions

In the November 9 *WASDE*, Mexico's 2023/24 sugar production is reduced by another 245,000 metric tons (MT), actual weight to 5.330 million (table 5) based on a joint analysis with USDA, FAS in Mexico City. A day after the *WASDE*, Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA) published its initial 2023/24 sugar production forecast at 5.188 million MT, 36,000 MT lower than last year's 5.224 million MT, and thus a new record low since 2017/18 if realized (table 6).

The main factor behind CONADESUCA's less optimistic Mexican production outlook is the drought-reduced sugarcane yield of 58.46 tons per hectare (see the Special Article on the drought situation in Mexico at the end of this Outlook). If realized, this yield level would be the lowest in 7 years, edging 2019/20's 62.89 tons per hectare (also due to drought) and last year's 58.99 tons per hectare (due to very low levels of fertilizer application).

While CONADESUCA's projected area harvested of 798,000 hectares is down from last year's record high of 806,000 hectares, it is in line with the 5-year average as growers were likely incentivized by the current record high levels of refined and standard sugar prices in Mexico. CONADESUCA's forecast for a recovery rate of 11.12 percent is more hopeful and higher than the WASDE (10.90 percent), the 5-year average (11.08 percent), and the other 2 low production years (10.71 percent and 10.98 percent in 2019/20 and 2022/23, respectively).

CONADESUCA reported that about 5 of the 48 mills started their harvest campaign on November 11 and projects all the mills will be done by June 15, 2024.

Table 5: Mexican sugar: Supply and use by fiscal year (October–September), November 2023

Items	2021/22	2022/23			2023/24		
		October (estimate)	November (estimate)	Monthly change	October (forecast)	November (estimate)	Monthly change
		1,000 metric tons, actual weight					
Beginning stocks	1,053	964	964	0	836	835	0
Production	6,185	5,224	5,224	0	5,575	5,330	-245
Imports	31	285	285	0	322	434	111
Imports for consumption	7	260	267	7	297	409	111
Imports for sugar-containing product exports (IMMEX) 1/	24	25	18	-7	25	25	0
Total supply	7,269	6,474	6,473	0	6,733	6,599	-134
Disappearance							
Human consumption	4,113	4,194	4,193	-1	4,249	4,248	-1
For sugar-containing product exports (IMMEX)	532	406	405	-1	450	400	-50
Other deliveries and end-of-year statistical adjustment	-16	27	29	2	0	0	0
Total	4,629	4,627	4,627	0	4,699	4,648	-51
Exports	1,676	1,011	1,011	0	1,124	1,051	-73
Exports to the United States and Puerto Rico	1,180	989	989	0	1,099	1,026	-73
Exports to other countries 2/	495	22	22	0	25	25	0
Total use	6,305	5,638	5,638	0	5,823	5,699	-124
Ending stocks	964	836	835	0	910	900	-10
Stocks-to-human consumption (percent)	23.4	19.9	19.9	0	21.4	21.2	0
Stocks-to-use (percent)	15.3	14.8	14.8	0	15.6	15.8	0
High-fructose corn syrup (HFCS) consumption (dry weight)	1,291	1,392	1,392	0	1,407	1,407	0

1/ IMMEX = Industria Manufacturera, Maquiladora y de Servicios de Exportación.
2/ Includes exports participating in the U.S. re-export programs.

Source: USDA, World Agricultural Outlook Board; Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

Table 6: Mexican sugar production, 2017/18–2023/24

Crop year	Harvested area (1,000 ha)	Yield (MT per ha)	Sugarcane processed (1,000 MT)	Recovery (percent)	Sugar production (1,000 MT)
2017/18	785	67.97	53,336	11.27	6,010
2018/19	804	70.94	57,037	11.27	6,426
2019/20	783	62.89	49,274	10.71	5,278
2020/21	790	64.93	51,293	11.14	5,715
2021/22	800	68.37	54,681	11.31	6,185
2022/23	806	58.99	47,564	10.98	5,224
2023/24 *WASDE*	800	61.30	49,040	10.90	5,330
2023/24 CONADESUCA	798	58.46	46,668	11.12	5,188
5-year average	797	65.22	51,970	11.08	5,766

ha = hectares; MT = metric tons.

Source: USDA, World Agriculural Outlook Board, *World Agricultural Supply and Demand Estimates* (*WASDE*) published in November 2023; Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA) first production forecast published in November 2023.

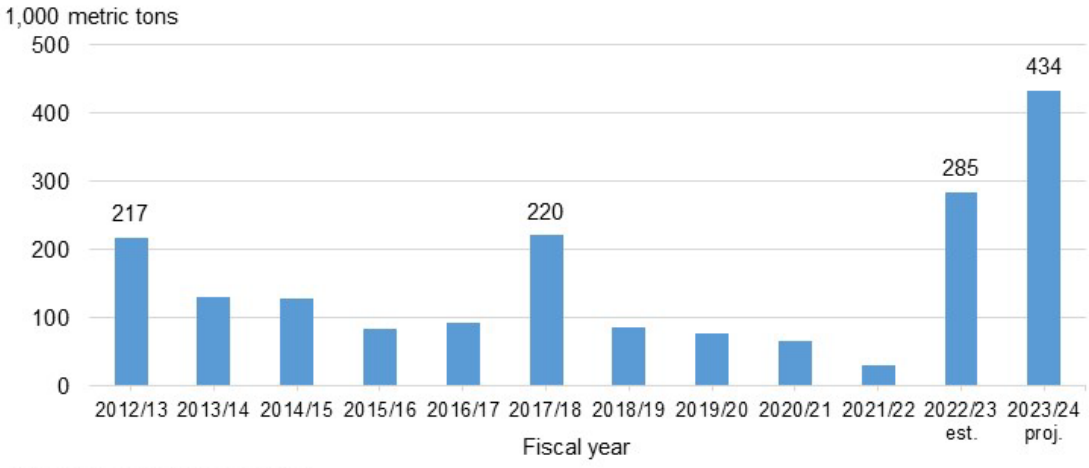
Larger 2023/24 Imports Expected to Offset Record Low Sugar Production

Mexico's low sugar production outlook in 2023/24 has implications in the other components of the balance sheet. In particular, the November 14 *WASDE* forecasts that to meet delivery requirements and maintain a 2.5-months' worth of ending stocks, Mexico would increase its supply by importing more sugar for domestic consumption while reducing both its exports to the United States and deliveries to the Industria Manufacturera, Maquiladora y de Servicios de Exportación (IMMEX) program.

As such, in the November *WASDE*, the 2023/24 imports into Mexico for domestic consumption are increased from last month by 112,000 MT to 409,000, 142,000 MT higher (53 percent) than last year's 267,000 MT. With imports for IMMEX purposes left unchanged at 25,000, total imports are also increased by 112,000 MT from last month to 434,000 MT, surpassing last year's 285,000 MT, a new record since 2012/13 (figure 19).

In its first 2023/24 *Estimated National Balance of Sugar and Sweeteners* released on November 13, CONADESUCA noted that the 50,000 MT in the balance sheet reflect actual imports as of November 10. This implies that Mexico had already imported 12 percent of the *WASDE* forecast of 434,000 MT within the first 2 months of the fiscal year. It appears that CONADESUCA only recognizes actual sugar imports in the balance sheet; that is, the volume of sugar imports reflects the pace to date instead of a fiscal year-basis forecast.

Figure 19
Mexican total sugar imports, by fiscal year, 2012/13–2023/24



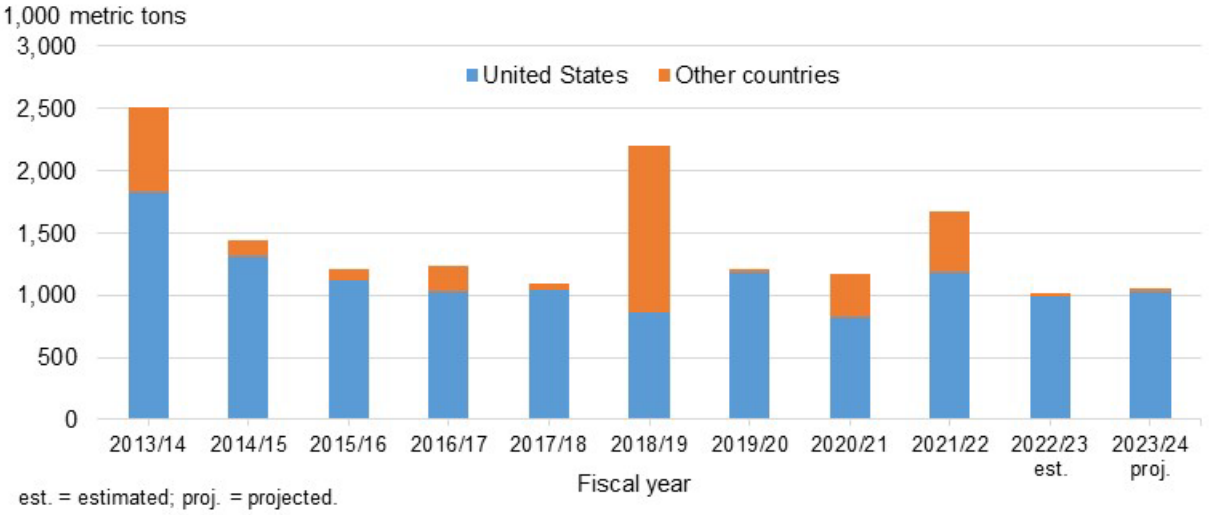
est. = estimated; proj.= projected.

Source: USDA, World Agricultural Outlook Board; Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

Mexico's 2023/24 Exports to the U.S. Lowered

The projected Mexican export volume to the United States in 2023/24 is lowered from last month by 73,000 MT to 1.026 million MT, and thus lower than the U.S. Needs (1.099 million MT or 1.284 million STRV) that U.S. Department of Commerce (DOC) calculated in September. The reduction in U.S. exports mainly stems from the Countervailing Duty Suspension Agreement's 70-percent cap on exports of low polarity sugar, the production of which is also forecast to be negatively impacted by drought as with the rest of the sugar types. With the forecast for exports to other countries unchanged at 25,000 MT, total Mexican exports in 2023/24 are lowered from last month by the amount (73,000 MT) to 1.051 million MT. This volume is comparable with last year's 1.011 million MT, reflecting the lowest back-to-back years of exports since 2013/14 (figure 20).

Figure 20
Mexican sugar exports by destination, by fiscal year, 2012/13–2023/24



est. = estimated; proj. = projected.

Source: USDA, World Agricultural Outlook Board; Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

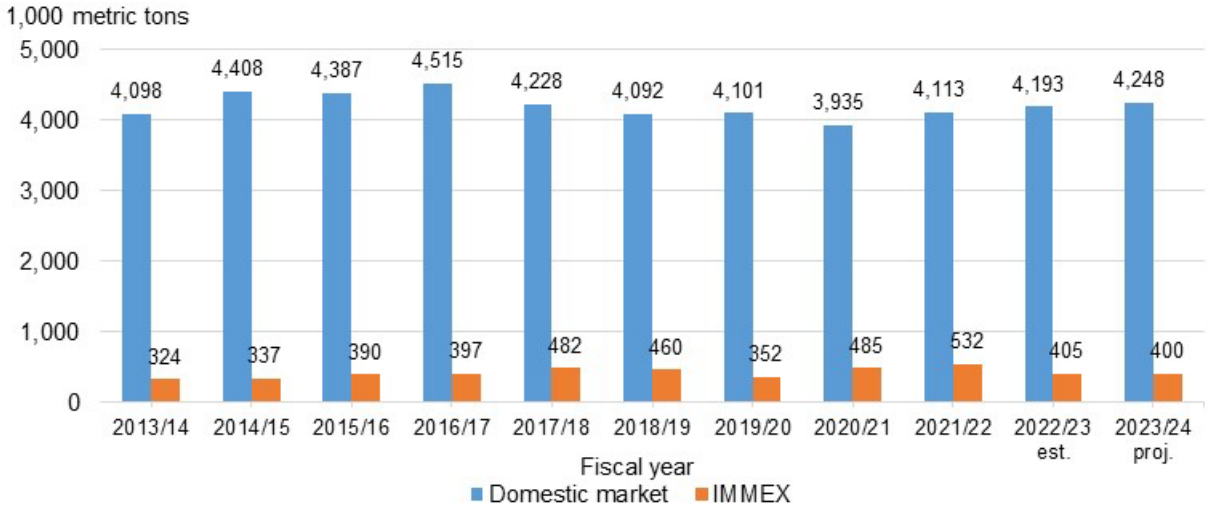
Reduced IMMEX Delivery in 2023/24 Lowers Total Deliveries to Domestic Market

Given the expectation of a drought-reduced 2023/24 sugar production, the forecast for IMMEX deliveries is lowered from last month by 50,000 MT to 400,000 MT (figure 21). This adjusted volume is comparable with last year's 405,000 MT. Deliveries for domestic consumption is unchanged at 4.248 million MT, which was based on population growth and the assumption that the observed increased pace in per capita consumption in 2022/23 will

carry over in 2023/24. If realized, the 4.248-million MT forecast for 2023/24 would reflect an annual increase of 55,000 MT (1 percent) from 2022/23, marking 3 consecutive years of growth.

Note that in its first 2023/24 *Estimated National Balance of Sugar and Sweetener,* CONADESUCA has a lower forecast for both delivery components—350,000 MT for IMMEX (versus *WASDE*'s 400,000 MT) and 4.124 million MT for domestic consumption (versus *WASDE*'s 4.248 million MT).

Figure 21
Mexican domestic sugar delivery, by fiscal year, 2012/13–2023/24



est. = estimated; proj. = projected; IMMEX = Industria Manufacturera, Maquiladora y de Servicios de Exportación.

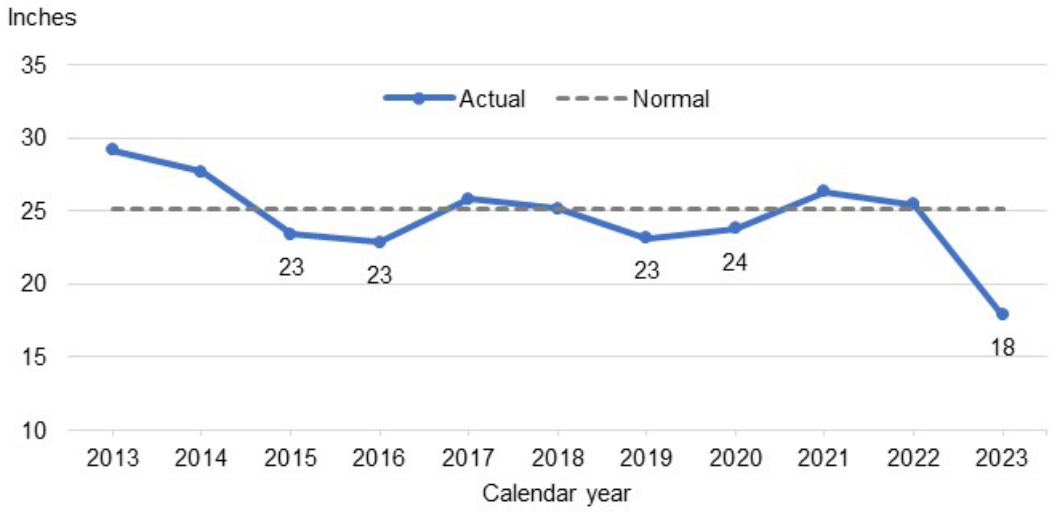
Source: USDA, World Agricultural Outlook Board; Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

Special Article: Drought in Mexico's Sugarcane Areas

Mexico's rainy season is typically between May and September, with rainfall between June and August having the greatest effect on yields. The severity of this year's drought conditions is reflected by the average cumulative rainfall in Mexico between May and October 2023, amounting to 18 inches. This amount is lower than the level recorded over the same period during the prior 4 years with drought (23−24 inches in 2015, 2016, 2019, and 2020 (figure 22).

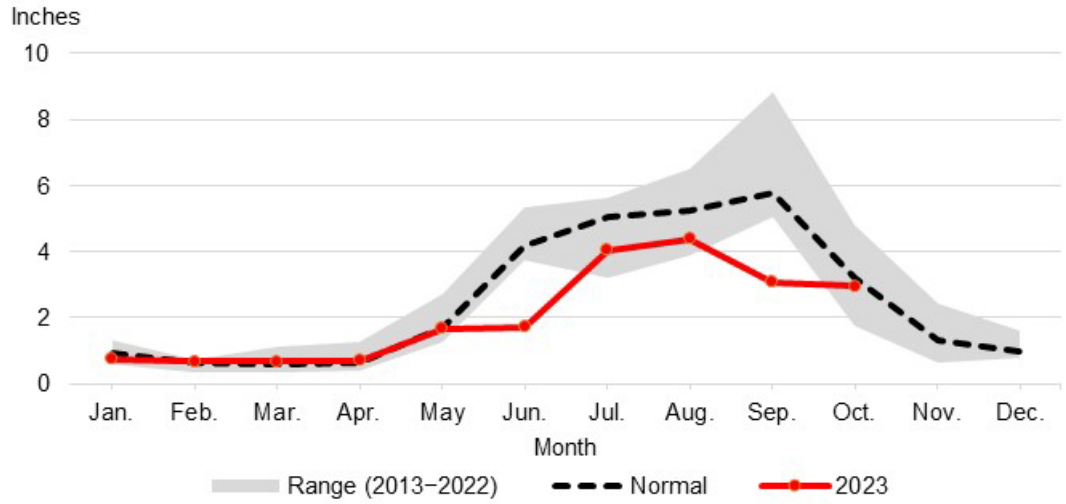
As seen in the monthly data (figure 23), rainfall for each month during the 2023 rainy season was below normal levels and even lower than the minimum levels observed since 2013 for June and September. While the rainfall volume appeared to pick up in October, it might have been too late to have a positive impact on the yields once the harvest campaign commenced.

Figure 22
Mexico's cumulative rainfall, May−October, 2013−23



Source: USDA, Economic Research Service calculations using USDA, Foreign Agricultural Service, Global Agricultural and Disaster Assessment System (GADAS) based on Climate Hazards Group InfraRed Precipitation with Station (CHIRPS) data.

Figure 23
Mexico's monthly rainfall, January–December, 2013–23



Source: USDA, Economic Research Service calculations using USDA, Foreign Agricultural Service, Global Agricultural and Disaster Assessment System (GADAS) based on Climate Hazards Group InfraRed Precipitation with Station (CHIRPS) data.

Mexico's National Water Commission's (CONAGUA) *Mexico Drought Monitor* data (municipal level) provides evidence of improving conditions. As of CONAGUA's latest report (October 31), 10 of the 48 sugarcane mills (21 percent) are in municipalities that are no longer in drought. However, there are more mills in municipalities that are still experiencing some level of drought—23 mills (48 percent) in areas with abnormally dry (D0) to moderate drought conditions (D1), and 15 mills (31 percent) with severe drought (D2) to exceptional drought (D4).

ERS produced a map that overlays the CONAGUA drought data with the 2022/23 sugarcane yields for each mill and whether each mill produces less than 99.2 polarity sugar (low polarity sugar) or at a polarity of 99.2 and above (high polarity sugar) (figure 24). It appears that:

- Mills in the Pacific and Northeast region (particularly in the State of San Luis Potosi) —with relatively high 2022/23 yields that do not produce any low polarity sugar—are in municipalities that are likely the most severely affected; and

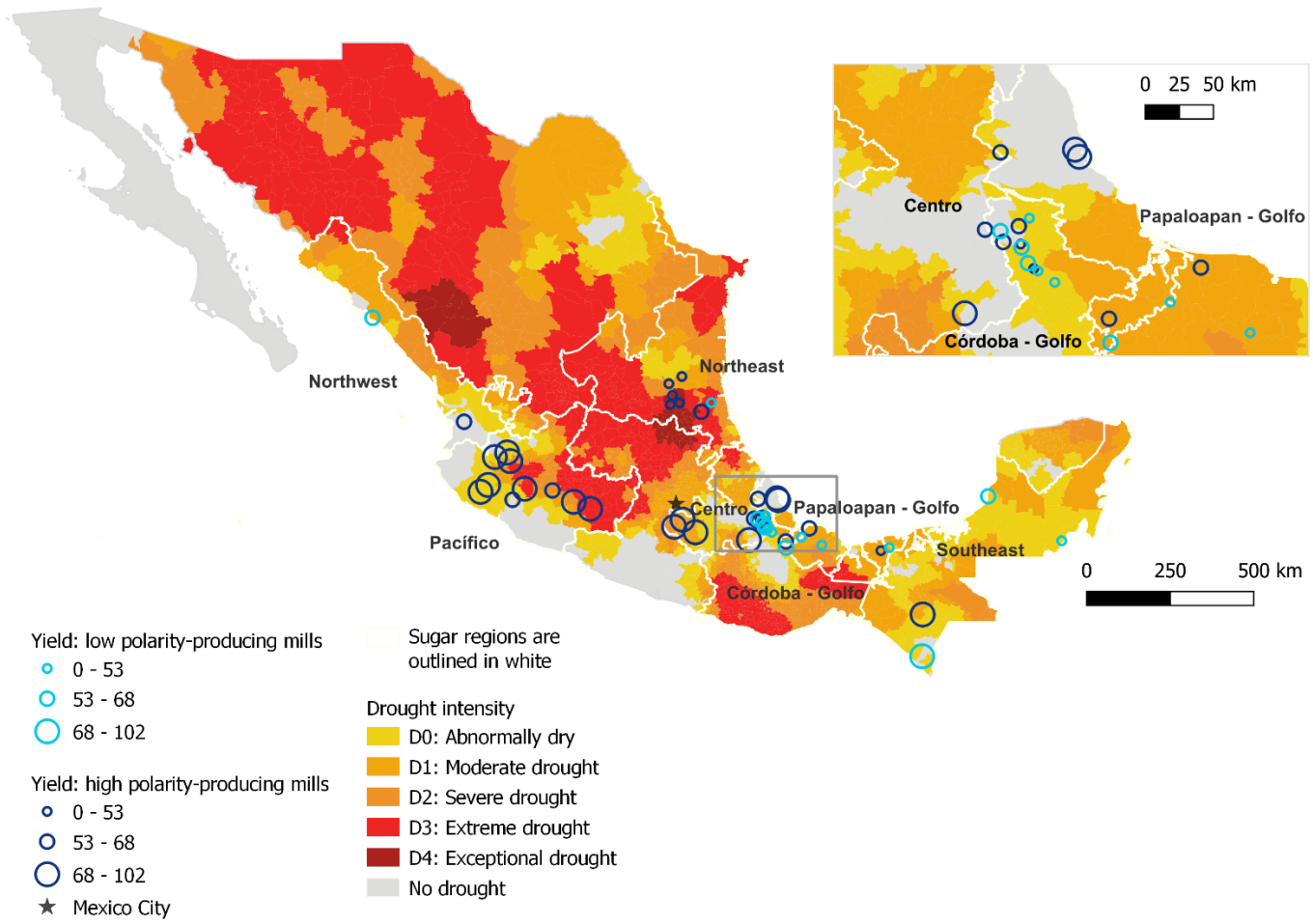
- Drought conditions appear to be relatively less severe in the Papaloapan-Golfo region (which includes the major sugar-producing State of Veracruz) where low polarity-producing mills are located.

The second map (figure 25) then overlays the sugarcane yields and the mills with the percent of irrigated areas in Mexico. The Mexico irrigation data were based on the Food and Agriculture Office of the United Nations' (FAO) *Global Map of Irrigation Areas Version 5* that was last updated in 2013. FAO calculated "area equipped for irrigation" for each municipality and included areas that have groundwater and surface water.

If the irrigated areas in Mexico have not substantially changed over the past decade, it can be deduced that the low-polarity sugar producing mills in the Papaloapan-Golfo region would process sugarcane that are mostly grown in areas that are less irrigated (lightest blue). Thus, while drought conditions appear to be less severe in these areas, the lack of reliable water under prolonged drought conditions can reduce these mills' capability to produce low-polarity sugar. In addition, it appears that high-polarity sugar producing mills in the Northeast region that are most severely affected by drought will likely process sugarcane grown in less irrigated lands.

Figure 24

Mexico drought intensity at the municipal level, as of October 31, 2023



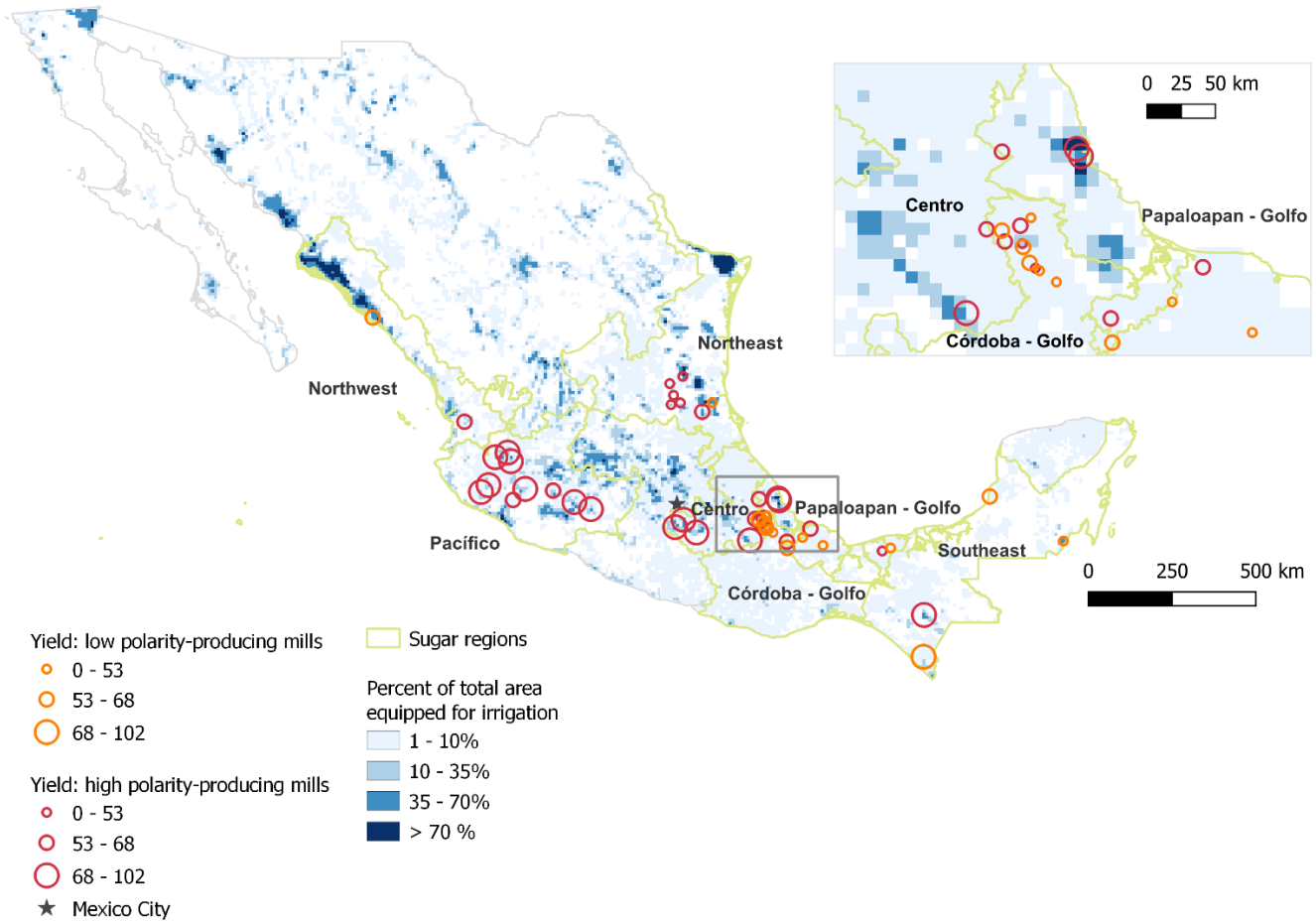
km = kilometers.

Note: Sugarcane yields reflect 2022/23 levels; unit is tons per hectare. A mill is categorized as "low polarity-producing" if it produced less than 99.2 polarity sugar in 2022/23.

Source: USDA, Economic Research Service calculations using QGIS software and data from several sources: Mexico National Water Commission (CONAGUA) *Mexico Drought Monitor* (as of October 31, 2023) for drought data; Mexico National Committee for the Sustainable Development of Sugarcane (CONADESUCA) for 2022/23 sugarcane yields, polarity of sugar produced, and sugarcane mills' GPS coordinates; and Mexico National Institute of Statistics and Geography (INEGI) for municipal and State boundaries.

Figure 25

Mexico map of areas equipped for irrigation



km = kilometers.

Note: Sugarcane yields reflect 2022/23 levels; unit is tons per hectare. A mill is categorized as "low polarity-producing" if it produced less than 99.2 polarity sugar in 2022/23.

Source: USDA, Economic Research Service calculations using QGIS software and data from several sources: Food and Agricultural Organization of the United Nation's *Global Map of Irrigation Areas Version 5* (last updated in 2013) for Mexico's percent share of total area equipped for irrigation; Mexico National Committee for the Sustainable Development of Sugarcane (CONADESUCA) for 2022/23 sugarcane yields, polarity of sugar produced, and sugarcane mills' GPS coordinates; and Mexico National Institute of Statistics and Geography (INEGI) for municipal and State boundaries.

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