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Sugar and Sweeteners Outlook: December 2023

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In this report:

Reduced Sugar Exports to U.S. from Mexico; U.S. Stocks-to-Use Ratio Below 13.5 Percent

In the December 2023 *World Agricultural Supply and Demand Estimates* (*WASDE*), Mexico's sugar production in 2023/24 is reduced from last month by 47,000 metric tons (MT), actual weight, to 5.283 million. Based on Mexico's National Committee for the Sustainable Development of Sugarcane's (CONADESUCA) 7-year low forecast of less than 99.2 polarity sugar, exports to the United States are reduced by 195,000 MT to 831,000 (971,000 short tons, raw value or STRV). This is about 81,000-MT lower (94,000 STRV) than the December U.S. Needs calculation by the U.S. Department of Commerce (DOC) that achieves a U.S. stocks-to-use ratio of 13.5 percent. With deliveries and ending stocks unchanged, Mexico's imports for consumption are residually reduced from last month by 148,000 MT to 286,000, on par with last year's 267,000.

The U.S. 2023/24 sugar supply is raised from last month by 120,000 STRV to 14.354 million mostly on higher imports. Lower imports from Mexico are offset by a projected record volume of high-tier raw sugar imports and by a larger amount of raw sugar imports after the U.S. Trade Representative's (USTR) November 30 reallocation of the raw sugar World Trade Organization (WTO) tariff-rate quota (TRQ). Cane sugar production is slightly up on account of Louisiana and Texas. U.S. exports are raised by 65,000 STRV to 100,000 based on increased pace between July–October going primarily to Mexico. With no changes to the other delivery categories, the larger export volume raised total use by 65,000 STRV to 12.730 million STRV. The resulting stocks-to-use ratio is 12.8 percent, up 0.4 percentage point from last month's 12.4 percent.

U.S. Outlook Summary

U.S. 2023/24 Supply Increased on Imports; Larger Exports to Mexico Expected

In the December 2023 *WASDE*, the U.S. 2023/24 sugar supply is raised from last month by 120,000 STRV to 14.354 million as the reduction in beginning stocks are offset by larger imports and a slight increase in cane sugar production (table 1). Beginning stocks are lowered by 20,000 STRV from last month to 1.855 million mainly on a slight downward revision in cane processors' ending stocks in the 2022/23 USDA, Farm Service Agency (FSA) *Sweetener Market Data* (*SMD*).

Imports from Mexico are forecast to fall by 227,000 STRV to 971,000, equaling 2020/21's 968,000 STRV as a 14-year low. In addition, the projected imports from Mexico would be 94,000-STRV less than the DOC December U.S. Needs calculation (1.066 million STRV) that achieves a U.S. stocks-to-use ratio of 13.5 percent. The reduction in imports from Mexico are offset by an anticipated record volume of high-tier raw sugar imports (up 190,000 STRV from last month's 100,000) and larger amount of raw sugar TRQ imports (up by 163,000 STRV from last month's 977,000) after USTR's reallocation. Thus, imports increased by a net of 125,000 STRV to 3.256 million but remains the second lowest in 5 years behind 2020/21 (3.221 million).

Cane sugar production is increased from last month by 14,000 STRV to 3.880 million on slight upward adjustments in drought-affected Louisiana (up 12,000 STRV to 1.799 million) and Texas (up 2,000 STRV to 44,000). However, the updated forecast for Louisiana remains at a 4-year low; Texas is still a record low. Beet sugar production is unchanged at 5.363 million STRV, a record if attained, and makes up for lower cane sugar production. As such, total sugar production is forecast at 9.243 million, continuing the stable trend of U.S. sugar production at about 9.2 million STRV seen in the last 4 years (figure 1).

U.S. exports are raised by 65,000 STRV to 100,000 based on increased pace between July–October going primarily to Mexico. With food use delivery unchanged at 12.525 million STRV and the forecast for the rest of other delivery categories carried over from last month, the larger export volume raised total use by 65,000 STRV to 12.730 million STRV. The resulting stocks-to-use ratio is 12.8 percent, up 0.4 percentage point from last month's 12.4 percent, but lower than

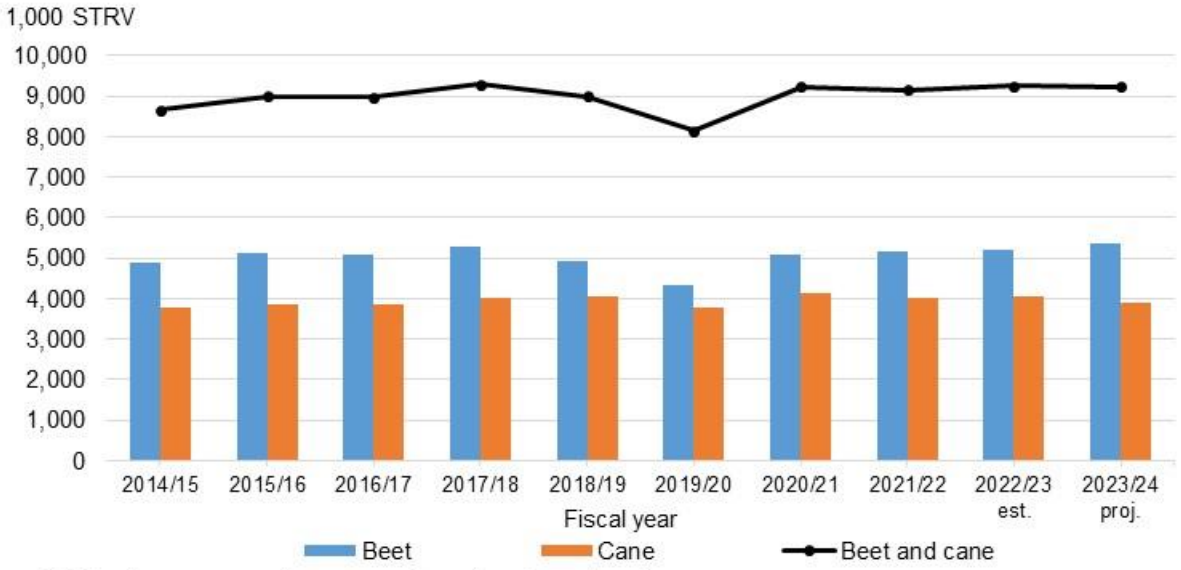
the suspension agreements' stipulation of 13.5 percent for December.

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

Items	2021/22	2022/23			2023/24		
	Final	November (estimate)	December (estimate)	Monthly change	November (forecast)	December (forecast)	Monthly change
			1,000 short tons, raw value				
Beginning stocks	1,705	1,820	1,820	0	1,875	1,855	-19
Total production	9,157	9,249	9,248	-1	9,229	9,243	14
Beet sugar	5,155	5,187	5,187	0	5,363	5,363	0
Cane sugar	4,002	4,062	4,061	-1	3,866	3,880	14
Florida	1,934	1,983	1,983	0	2,037	2,037	0
Louisiana	1,944	2,002	2,001	-1	1,787	1,799	12
Texas	124	76	76	0	42	44	2
Total imports	3,646	3,614	3,614	0	3,130	3,256	125
Tariff-rate quota imports	1,579	1,862	1,862	0	1,457	1,620	163
Other program imports	298	141	141	0	200	200	0
Non-program imports	1,769	1,611	1,611	0	1,474	1,436	-37
Mexico	1,379	1,156	1,156	0	1,199	971	-227
High-duty	390	455	455	0	275	465	190
Total supply	14,508	14,684	14,683	-1	14,234	14,355	120
Total exports	29	82	82	0	35	100	65
Miscellaneous	81	138	156	18	0	0	0
Total deliveries	12,578	12,589	12,589	0	12,630	12,630	0
Domestic food and beverage use	12,470	12,473	12,473	0	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	22	22	0	25	25	0
Commodity Credit Corporation (CCC) for ethanol	0	0	0	0	0	0	0
Total use	12,688	12,809	12,827	18	12,665	12,730	65
Ending stocks	1,820	1,875	1,855	-19	1,569	1,625	55
Private	1,820	1,875	1,855	-19	1,569	1,625	55
Commodity Credit Corporation	0	0	0	0	0	0	0
Stocks-to-use ratio (percent)	14.3	14.6	14.5	-0.2	12.4	12.8	0.4

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*).

Forecast for Record Beet Sugar Production in 2023/24 Unchanged

The U.S. beet sugar production in fiscal year 2023/24 of 5.363 million STRV from last month is carried over (table 2). This level of beet sugar production, if realized, would reflect a 175,000-STRV increase (3 percent) from last year's 5.187 million and would be a record, exceeding 2017/18's 5.279 million. Given the year-over-year decrease in acreage, the record forecast is driven by a relatively high national sugarbeet yield and recovery rate.

The yield of 31.7 tons per acre, based on the November[1] NASS *Crop Production,* 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 6 years behind 2021/22's record of 33.2 tons (figure 2). Based on industry news and the beet processors' forecast published in the *SMD*, high yields led some growers in the Red River Valley to leave beets unharvested due to pressure on processing capacity. Similarly, the current extraction rate forecast of 15.03 would be above the 5-year average (14.85 percent) and is supported by the relatively strong pace through October based on actual processors'

[1] The December 2023 NASS *Crop Production* only updated the data for sugarcane but not for sugarbeets; the final data for both crops will be published in January 2024.

data published in the *SMD* (figure 3).

Table 2: Beet sugar production, 2020/21–2023/24

	2022/23 Final	2023/24 November	2023/24 December	Monthly change
Sugarbeet production (1,000 short tons) 1/	32,574	35,508	35,508	0
Sugarbeet shrink (percent)	6.187	6.557	6.557	0
Sugarbeet sliced (1,000 short tons)	30,558	33,180	33,180	0
Sugar extraction rate from slice (percent)	15.35	15.03	15.03	0
Sugar from beets sliced (1,000 STRV) 2/	4,690	4,986	4,986	0
Sugar from molasses (1,000 STRV) 2/	372	360	360	0
Crop year sugar production (1,000 STRV) 2/	5,061	5,346	5,346	0
Aug.–Sep. sugar production (1,000 STRV)	537	663	663	0
Aug.–Sep. sugar production of subsequent crop (1,000 STRV)	663	644	644	0
Sugar from imported beets (1,000 STRV) 3/	N/A	35	35	0
Fiscal year sugar production (1,000 STRV)	5,187	5,363	5,363	0

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

1/ USDA, National Agricultural Statistics Service.

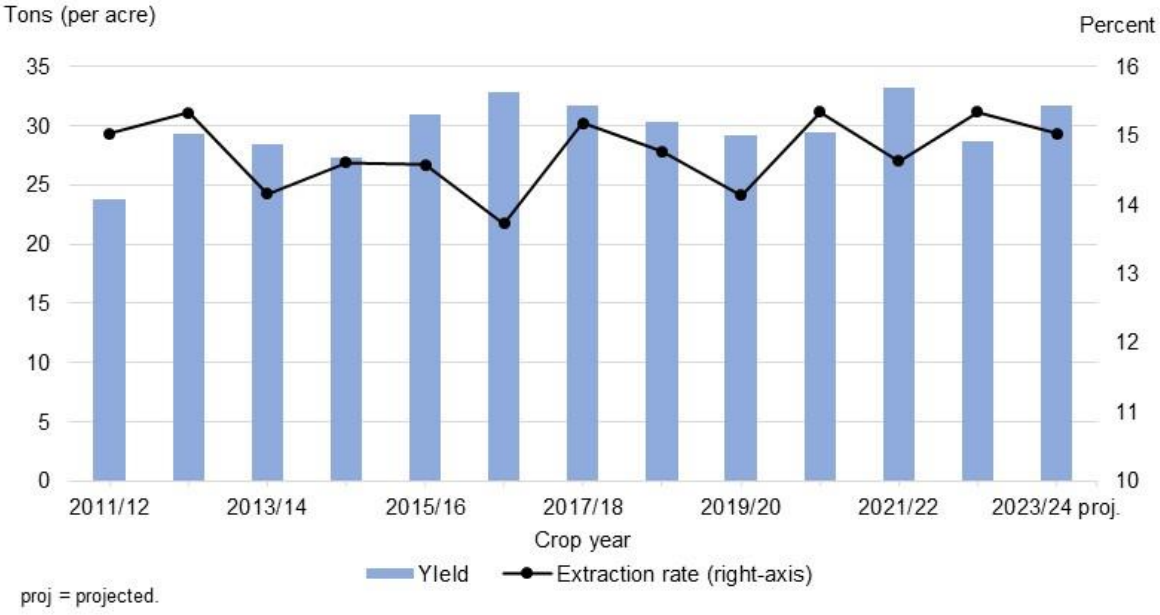
2/ August–July.

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

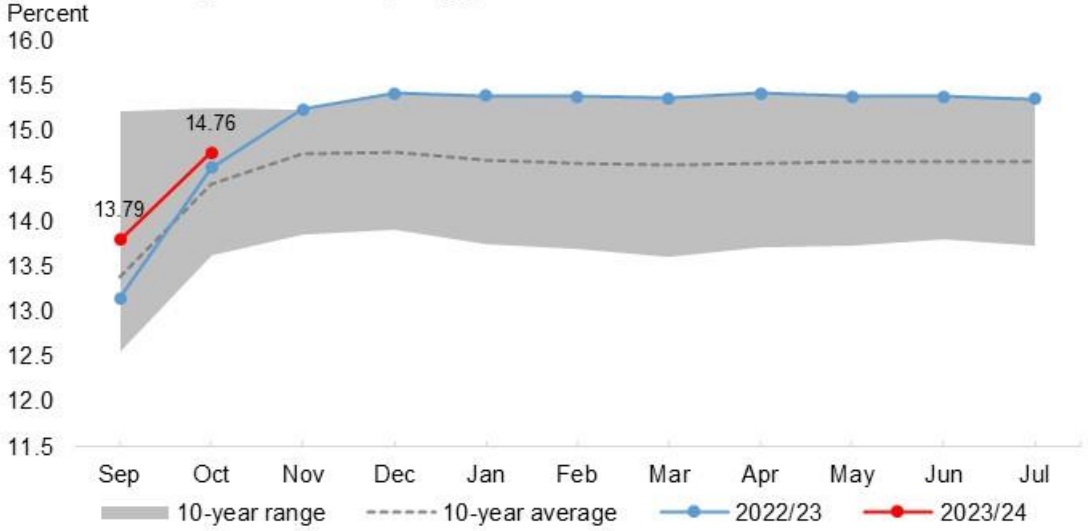
U.S. sugarbeet yield and extraction rate, 2011/12–2023/24



proj = projected.

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

Figure 3
Cumulative sugar extraction, crop year 2013/14–2023/24



Note: Extraction rate = 100 * (sugar produced from sliced beets / sliced beets).

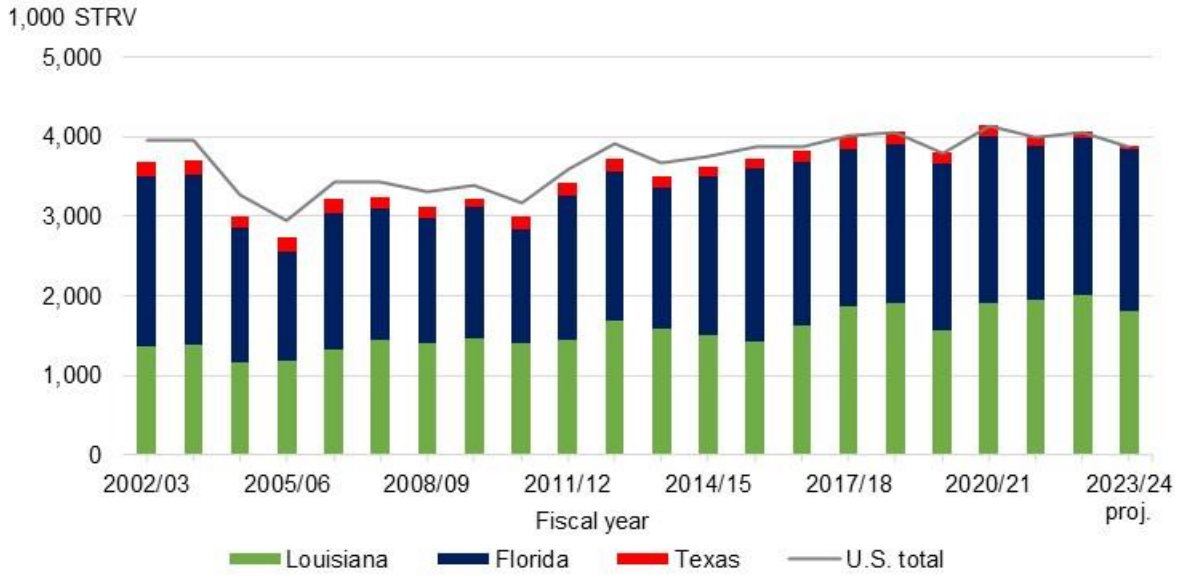
Source: USDA, Economic Research Service calculations using data from USDA, Farm Service Agency.

2023/24 Cane Sugar Production Raised Slightly

The 2023/24 cane sugar production in Louisiana and Texas have been negatively affected by drought. The outlook for both States slightly improved this month. In Louisiana, the NASS *Crop Production* in December raised the State's sugarcane yield for the third consecutive month—from 27.7 tons per acre in October to 28.3 tons in November, and then to 28.5 tons in December. The yield improvement in December translates to a slight increase of 12,000 STRV from last month to 1.799 million STRV but would still reflect a 202,000-STRV reduction (10 percent) from last year's record (2.022 million) and would be the second lowest in 5 years (figure 4).

In Texas, where restrictions on water releases from Mexico pose additional challenge, sugar production is raised by 2,000 STRV to 44,000 on higher yield forecast submitted to the *SMD*. Florida's production is unchanged at 2.037 million STRV—reflecting a return to typical production level above 2 million tons. Collectively, 2023/24 cane sugar production in the U.S. is projected at 3.880 million STRV. While up month to month, this outlook is 180,000-STRV lower (4 percent) than last year's 4.061 million STRV, a 4-year low.

Figure 4
U.S. production of cane sugar by State, 2002/03–2023/24



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

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

2023/24 Imports from Mexico Reduced

For 2023/24, U.S. imports from Mexico, the largest source from a single country averaging about 33 percent of the total in the last 5 years, are reduced from last month by 227,000 to 971,000. This volume is 185,000-STRV lower (16 percent) than last year and would represent a 14-year low in line with 2022/21's 968,000 STRV.

The reduction is primarily based on the CONADESUCA's November initial 2023/24 forecast of a 7-year low production of less than 99.2 polarity sugar due to widespread, moderate-to-extreme drought conditions in most of the country's sugarcane growing areas. Consequently, the *WASDE* forecast of imports from Mexico (971,000 STRV) is 94,000-STRV lower than the anticipated volume of U.S. Needs that the U.S. Department of Commerce (DOC) calculated in December (about 1.066 million STRV) (table 3). The difference between the calculations arises because the DOC's U.S. Needs calculation is driven by a formula[2] to achieve a 13.5 percent stocks-to-use ratio in the U.S. balance sheet while the *WASDE* forecast of U.S.

[2] For its calculation, the Department of Commerce uses the *World Agricultural Supply and Demand Estimates* balance sheet to determine U.S. Needs using the following formula:
U.S. Needs = (Total use * 1.135) – Beginning stocks – Production – Tariff-rate quota imports – Other program imports – High tier tariff/other imports.

imports from Mexico considers Mexico's exportable surplus after accounting for its production (primarily low polarity sugar), domestic deliveries, and target ending stocks. The *WASDE* calculation is detailed in the Mexico Outlook section.

Table 3. Comparison of forecast of imports from Mexico in the WASDE and U.S. Needs calculation by the U.S. Department of Commerce, 2022/23 and 2023/24

	Imports from Mexico in the *WASDE*	Target quantity of U.S. Needs	Percent to derive Export Limit	U.S. Needs x percent	Less than or equal to previous calculation	Export Limit
			Unit is STRV except where percent is noted			
Fiscal year 2022/23						
July 2022	1,756,180	1,900,775	50	950,388	N/A	950,388
September 2022	1,618,775	1,618,775	70	1,133,143	No	1,133,143
December 2022	1,477,400	1,477,400	80	1,181,920	No	1,181,920
March 2023	1,305,900	1,305,900	100	1,305,900	No	1,305,900
Fiscal year 2023/24						
July 2023	1,485,900	1,485,900	50	742,950	N/A	742,950
September 2023	1,284,150	1,284,150	70	898,905	No	898,905
December 2023[1/]	971,079	1,065,550	80	852,440	Yes	898,905
March 2024	N/A	N/A	100	N/A	N/A	N/A

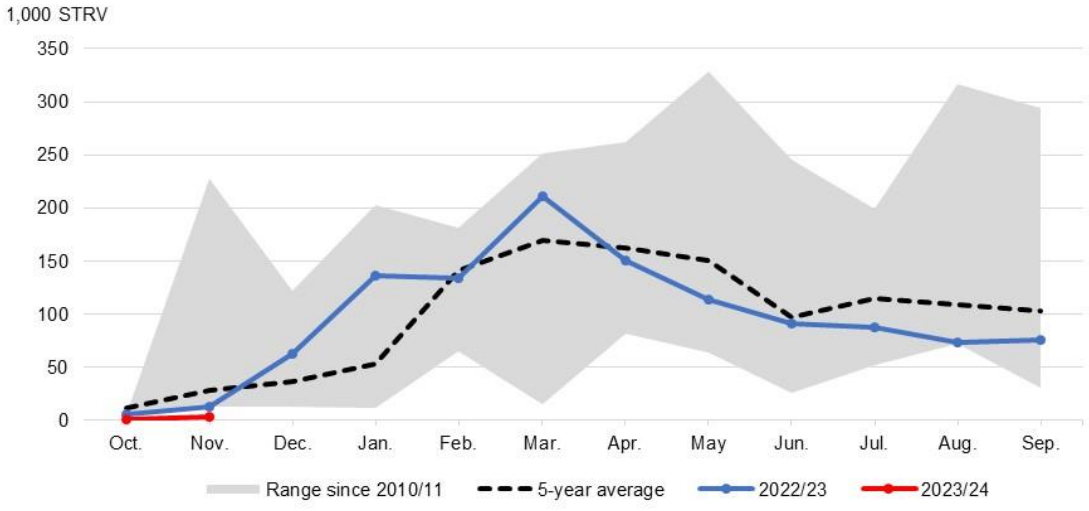
STRV = short tons, raw value; WASDE = World Agriculture Supply and Demand Estimates; N/A = not available.

[1/] USDA, Economic Research Service calculation since U.S. Department of Commerce has not published its calculation at the time of publication.

Source: U.S. Department of Commerce *ACCESS* repository.

The actual pace of U.S. imports from Mexico reflects the latter's drought-induced supply constraints. U.S. imports of sugar from Mexico in October and November (about 1,000 and 3,000 STRV, respectively) would be the lowest for each month since 2010/11, the earliest year that data is publicly available from USDA, Foreign Agriculture Service (FAS) *Sugar Monthly Import and Re-Export Data* (figure 5).

Figure 5
U.S. sugar imports from Mexico, monthly, fiscal year 2010/11–2023/24



STRV = short tons, raw value.

Source: USDA, Foreign Agricultural Service.

Record High-tier Sugar Imports, Reduced TRQ Shortfall Offset Lower Imports from Mexico

The forecast of 2023/24 high-tier raw sugar imports (up by 190,000 STRV from last month to 290,000 STRV) would overtaking 2021/22's 249,000 STRV. While traditionally comprised of high-value, refined sugar that is difficult to source domestically, high-tier raw sugar imports have surged in the last 3 years (figure 6). If the 2023/24 forecast holds true, high-tier raw sugar imports would even be greater than high-tier refined sugar imports in 2 of the last 3 years. The upward adjustment for high-tier raw sugar was based on a combination of actual entries through November and the expected continuation of the recent strong pace[3] amid current market conditions characterized by tight supplies and high prices.

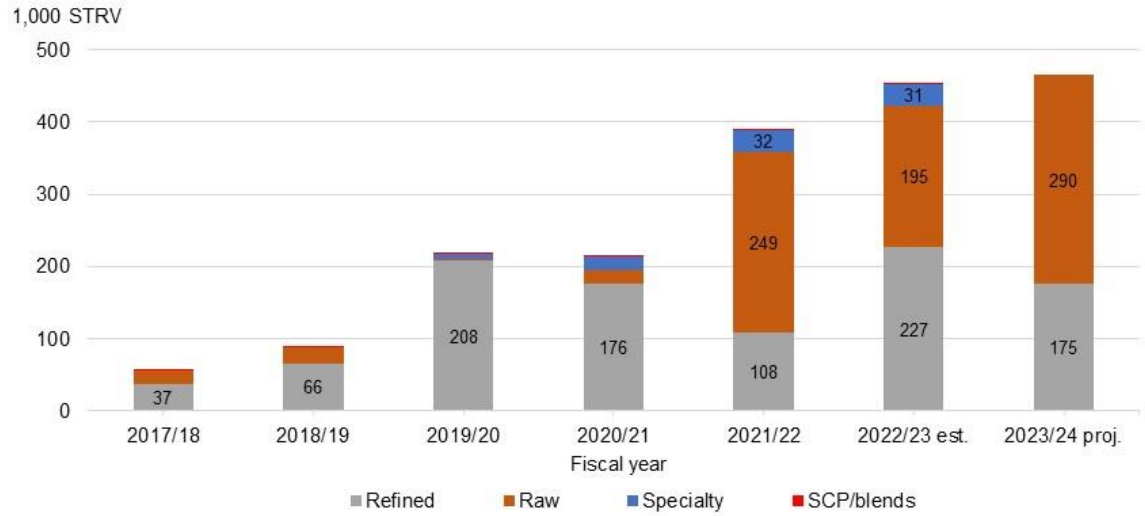
With the forecast for high-tier refined sugar imports unchanged at 175,000 STRV, total high tier imports are raised to 465,000, overtaking last year's 455,000 to be the largest in the past 18 years. Thus, while historically the smallest import category, high-tier imports in 2023/24 are projected to comprise 14 percent of the total compared with the 5-year average (8 percent) (table 4). In addition, it would now be the third largest category behind raw sugar TRQ and Mexico in 3 consecutive years.

[3] Prior to October 2023, USDA only increased the high-tier raw sugar estimate after sugar officially entered the country.

After USTR's November 30 reallocation announcement, the expected 2023/24 shortfall was reduced from 255,000 STRV to 92,000, correspondingly increasing the raw sugar TRQ imports by the difference (163,000) to 1.140 million. Despite the increase, raw sugar TRQ imports—the largest import category—for 2023/24 would be 245,000-STRV lower (18 percent) than last year.

With no changes to the other categories, total imports increased by a net of 125,000 STRV to 3.256 million but would still be 359,000-STRV lower (10 percent) than last year's 3.614 million and the second lowest in the last 5 years behind 2020/21's 3.221 million (figure 7).

Figure 6
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*.

Table 4: U.S. sugar imports by type, by fiscal year 2018/19–2023/24

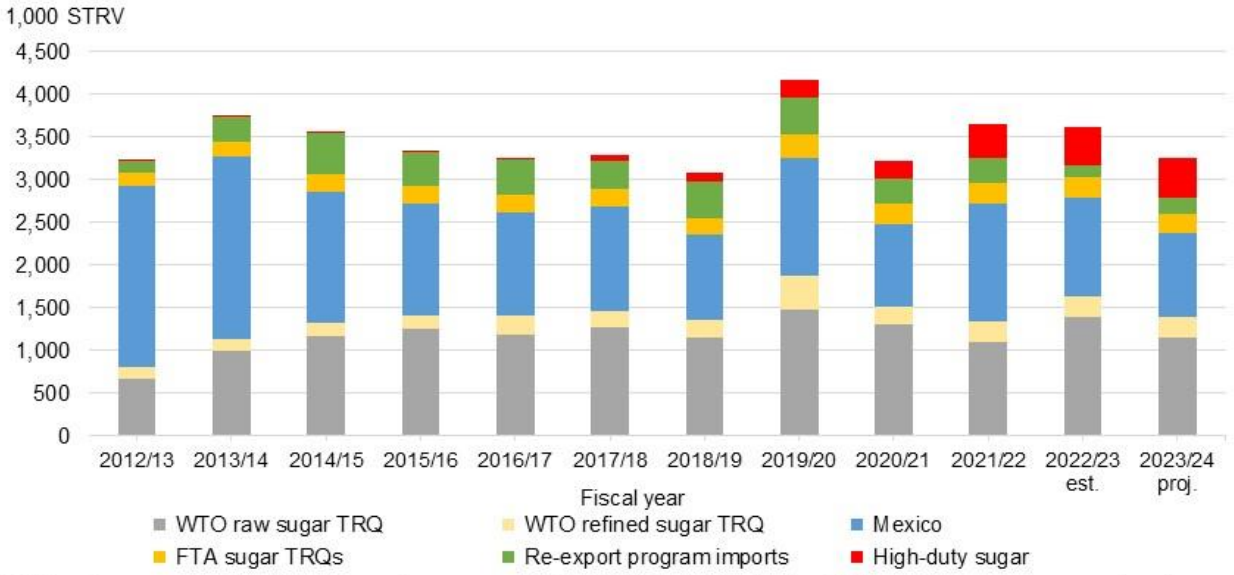
	2018/19	2019/20	2020/21	2021/22	2022/23 est.	2023/24 proj.	5-year average	Over-the-year change	
Fiscal year total	1,000 short tons, raw value (STRV)							STRV	Percent
Mexico	1,000	1,376	968	1,379	1,156	971	1,176	-185	-16
WTO raw sugar TRQ	1,144	1,468	1,296	1,096	1,384	1,140	1,278	-245	-18
WTO refined sugar TRQ	207	408	217	237	241	252	262	11	5
FTA sugar TRQ	190	276	236	246	237	228	237	-9	-4
Re-export program	438	432	292	298	141	200	320	59	41
High-duty sugar	91	206	212	390	455	465	271	10	2
Total	3,070	4,165	3,221	3,646	3,614	3,256	3,543	-359	-10
Share of fiscal year total			Percent					Percentage point	
Mexico	33	33	30	38	32	30	33	-2	
WTO raw sugar TRQ	37	35	40	30	38	35	36	-3	
WTO refined sugar TRQ	7	10	7	7	7	8	7	1	
FTA sugar TRQ	6	7	7	7	7	7	7	0	
Re-export program	14	10	9	8	4	6	9	2	
High-duty sugar	3	5	7	11	13	14	8	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.

Figure 7
U.S. sugar imports by type, 2012/13–2023/24



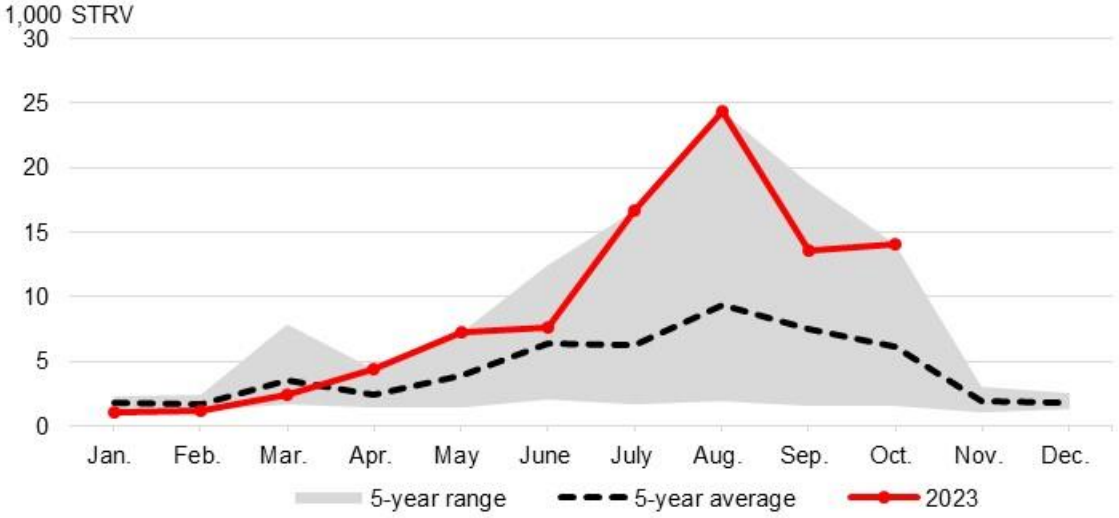
STRV = short tons, raw value; FTA = free trade agreement; WTO = World Trade Organization; TRQ = tariff-rate quota; est. = estimated; proj. = projected.

Source: USDA, Foreign Agricultural Service.

Larger U.S. Exports Raise Total Sugar Use

U.S. exports for 2023/24 are raised by 65,000 STRV to 100,000 this month on the assumption that the strong pace between July–October will continue (figure 8). The current projection represents an 18,000-STRV (21 percent) increase from last year's 82,000 and, if realized, will be the largest volume of U.S. exports in the last 6 years. The pace is largely driven by the increasing volume of U.S. exports going to Mexico (figure 9). With sugar deliveries for food and beverage use remaining at 12.525 million STRV (reflecting a 0.4 percent annual growth) and the rest of the delivery categories unchanged, the higher export volume raised total use in 2023/24 by 65,000 STRV to 12.730 million STRV, the second largest since 2000/01 behind last year (12.828 million).

Figure 8
U.S. sugar exports, monthly, calendar year 2017–23

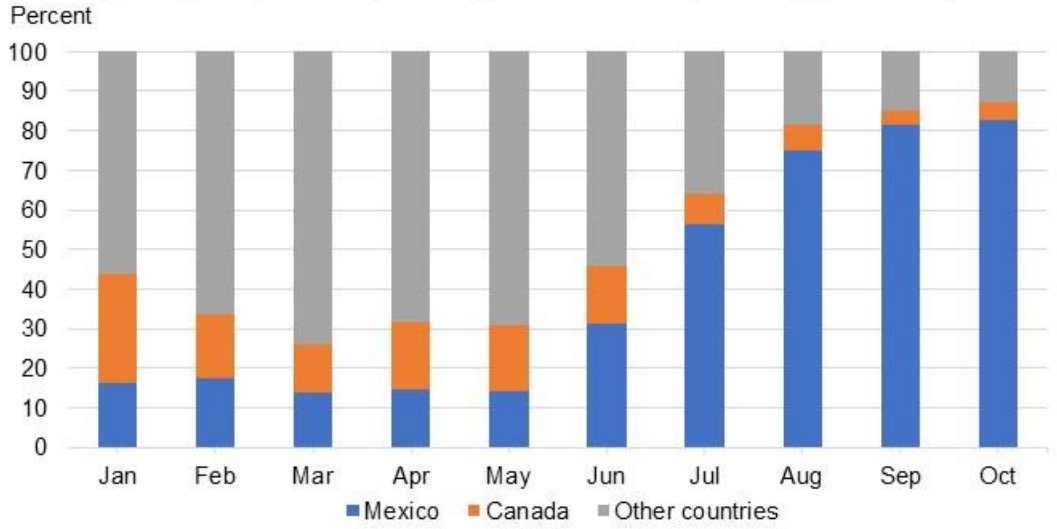


STRV = short tons, raw value.

Source: USDA, Farm Service Agency.

Figure 9

U.S. sugar exports, share by country of destination, monthly, calendar year 2023



Source: USDA, Foreign Agricultural Service, Global Agricultural Trade System (GATS).

Mexico Outlook

Mexico's Sugar Production Further Reduced in 2023/24

In the December *World Agricultural Supply and Demand Estimates (WASDE)*, Mexico's 2023/24 sugar production is reduced by 47,000 metric tons (MT), actual weight from last month to 5.283 million based on a joint analysis with USDA, Foreign Agricultural Service (FAS) in Mexico City (table 5). The 5.283-million MT of production would be 59,000-STRV (1 percent) higher than last year's record low since 2012/13 (5.224 million) and ties with 2019/20 (5.278 million), the last time severe drought negatively affected swaths of sugarcane areas.

The *WASDE* forecast remains 95,000-MT larger than the Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA) initial forecast of 5.188 million MT in November. FAS indicated that the decrease in prices of farm inputs, primarily fertilizer, encouraged greater use compared with last year, and that October seasonal rains might have benefitted the sugarcane crop that has yet to be harvested in some States such as Veracruz and Jalisco.

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

Items	2021/22	2022/23			2023/24		
		November (estimate)	December (estimate)	Monthly change	November (forecast)	December (forecast)	Monthly change
		1,000 metric tons, actual weight					
Beginning stocks	1,053	964	964	0	835	835	0
Production	6,185	5,224	5,224	0	5,330	5,283	-47
Imports	31	285	285	0	434	286	-148
Imports for consumption	7	267	267	0	409	261	-148
Imports for sugar-containing product exports (IMMEX) 1/	24	18	18	0	25	25	0
Total supply	7,269	6,473	6,473	0	6,599	6,404	-195
Disappearance							
Human consumption	4,113	4,193	4,193	0	4,248	4,248	0
For sugar-containing product exports (IMMEX)	532	405	405	0	400	400	0
Other deliveries and end-of-year statistical adjustment	-16	29	29	0	0	0	0
Total	4,629	4,627	4,627	0	4,648	4,648	0
Exports	1,676	1,011	1,011	0	1,051	856	-195
Exports to the United States and Puerto Rico	1,180	989	989	0	1,026	831	-195
Exports to other countries 2/	495	22	22	0	25	25	0
Total use	6,305	5,638	5,638	0	5,699	5,504	-195
Ending stocks	964	835	835	0	900	900	0
Stocks-to-human consumption (percent)	23.4	19.9	19.9	0	21.2	21.2	0
Stocks-to-use (percent)	15.3	14.8	14.8	0	15.8	16.3	1
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).

CONADESUCA's weekly report as of December 2, the ninth week of the campaign, indicates that 26 of the 48 mills have started their campaign, which is more than this time last year (15 mills) and the 5-year average (20 mills) (table 6). In aggregate, the 26 mills produced 97,000 MT of sugar, on par with the 5-year average (98,000 MT) and higher than last year (86,000 MT). However, this year's total factory yield of 5.93 MT of sugar per hectare (ha) is lower than last year (6.94) and the 5-year average (7.25). These numbers imply that to date, more areas were harvested (16,000 ha) and a higher volume of sugarcane was processed (1.289 million MT) by more mills possibly to compensate for this year's relatively low sugarcane yield and extraction rate.

Table 6: Mexican sugar production, 2022/23, 2023/24, and 5-year average

	As of week 9			Difference vs. 2022/23		Difference vs. 5-year average	
	2022/23	2023/24	5-year average[1/]	Level	Percent	Level	Percent
Area harvested (1,000 ha)	12	16	14	4	32	3	19
Sugarcane processed (1,000 MT)	971	1,289	1,140	318	33	150	13
Sugarcane yield (MT per ha)	78.66	79.26	84.11	0.6	1	-4.8	-6
Number of mills in operation	15	26	20	11	73	6	30
Extraction rate (percent)	8.83	7.49	8.62	-1.34	-15	-1.13	-13
Total factory yield (MT sugar per ha)	6.94	5.93	7.25	-1.01	-15	-1.32	-18
Sugar production (1,000 metric tons)	86	97	98	11	13	-2	-2

ha = hectares; MT = metric tons; vs. = versus.

[1/] Years included are 2018/19–2022/23.

Source: USDA, Economic Research Service calculations using data from Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

With the current campaign demonstrating an increased pace of harvesting and grinding, the mills may reach their limits on raw throughput earlier in the campaign than is typical. There is a strong, positive correlation between the number of campaign days and sugar production, supporting expectations that mills tend to produce less sugar when the harvest campaign is shorter (table 7).

CONADESUCA appears to convey this situation in its initial forecast of 2023/24 harvest days for each of the 48 mills. If realized, the 2023/24 campaign will only average 143 days, fewer than 2022/23 (156 days) and 2019/20 (157 days)—the other 2 years with comparable low sugar production levels. Noticeably, the 2023/24 minimum and maximum campaign days would also be the lowest in the last 7 years.

Table 7. Mexico's sugar production and number of harvest days,

	Sugar production	Number of mills' harvest days		
Fiscal year	(Million metric tons)	Average	Minimum	Maximum
2017/18	6,010	172	104	214
2018/19	6,426	175	112	216
2019/20	5,278	157	88	209
2020/21	5,715	160	82	227
2021/22	6,185	169	105	241
2022/23	5,224	156	82	222
2023/24 proj.	5,283	143	73	204
Average (2017/18–2022/23)	5,806	165	92	219

Source: USDA, Economic Research Service calculations using data from Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

The comparison of histogram charts—between that 2023/24 projected harvest days with those of the prior years' actual days—further reflect the expectation of a relatively short 2023/24 campaign (figure 10). More mills in 2023/24 are expected to finish earlier (within 150 days or less) relative to 2019/20 (low production also attributed to drought) and 2022/23 (low production due to lack of fertilizer application). The forecast for a short 2023/24 campaign (estimated at 143 days) is in contrast with the longer campaigns observed in 2017/18 (172 days), 2018/19 (175 days), and 2021/22 (169 days) when mills collectively produced more than 6 million MT of sugar.

With only 9 weeks of data, the predictive power of econometric models and simulation is limited. Instead, a simple forecasting exercise is carried out using CONADESUCA's initial forecast of mills' campaign days and the mill's average daily sugar production in the previous 6 fiscal years. The premise is that the length of campaign is a reasonable proxy for the overall condition and quality of the cane crop. The main caveat is the uncertainty in CONADESUCA's forecast; historically, the organization's initial estimate of mills' harvest days has differed from what was realized.

The first step is in the forecasting exercise is to calculate each mill's average daily production in each of the prior 6 years starting in 2017/18, that is, divide the individual mill's total sugar production with that mill's respective number of campaign days (equation 1). This creates6 production scenarios. Then, the 2023/24 sugar production forecast for each scenario is calculated as the sum of the product between CONADESUCA's estimate of 2023/24 harvest days for each mill and that mill's actual average daily production in each of the prior 6 years (equation 2).

Equation 1:

Actual average daily production$_{it}$ = total sugar production$_{it}$ / harvest days$_{it}$

Equation 2:

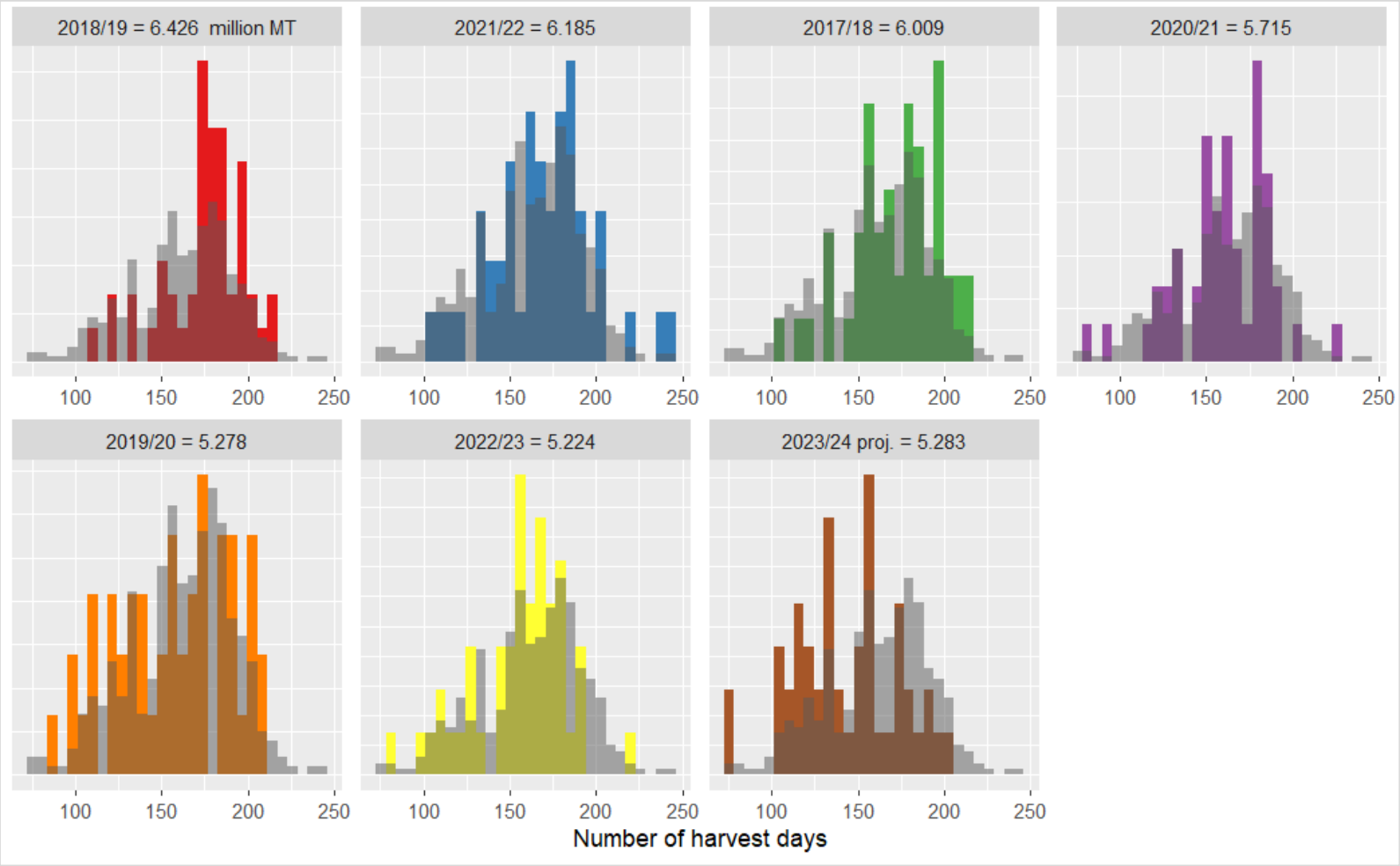
Forecast 2023/24 sugar production$_{j}$ = $\sum_{i=1}^{48}$ (2023/24 harvest days$_{i}$ x average daily production$_{it}$)

where:

i = mill 1 to 48, and
t = fiscal year 2017/18 to 2022/23
j = scenario 1 to 6

Figure 10

Distribution of the length of Mexican mill's total harvest campaign days, by fiscal year, 2017/18–2023/24[1/]



MT = metric ton; proj. = projected.

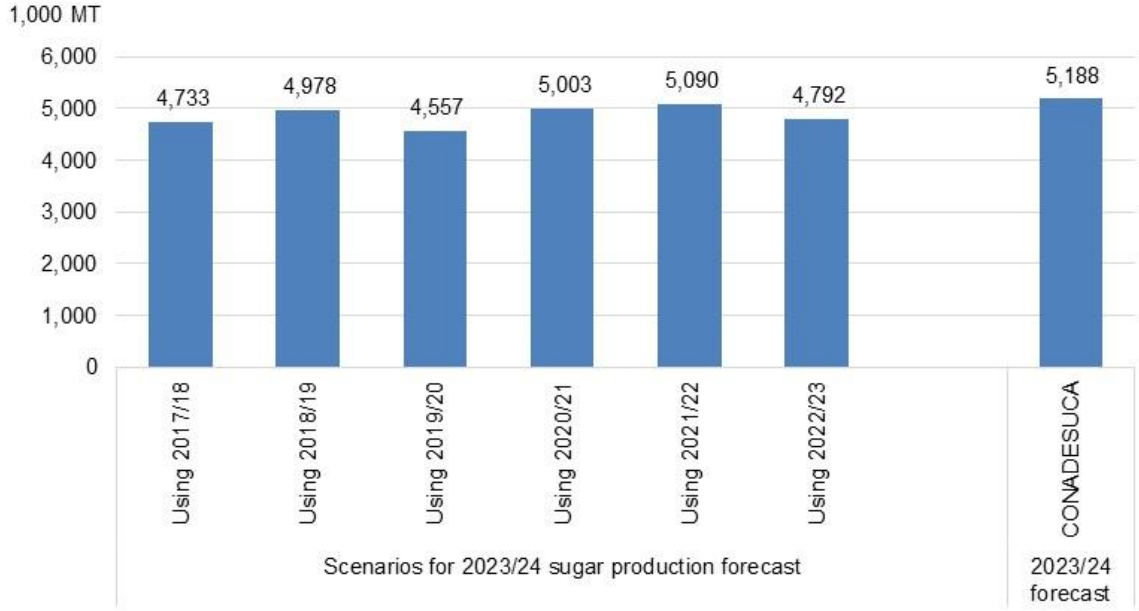
Note: The gray histograms in the background show the distribution for all the fiscal years.

[1/] The fiscal years are sorted in descending order by the volume of sugar production. The first row contains the years with strong sugar production, while the bottom are the low production years.

Source: USDA, Economic Research Service calculations using data from Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

The forecasting exercise shows that using CONADESUCA's initial forecast of shortened harvest days, Mexico's 2023/24 sugar production can have a risk (between 4.6 and 4.8 million MT) if each mill's average daily sugar production mirrors that of 2019/20 and 2022/23, respectively (figure 11). The average of these 2 projections is about 4.7 million MT implying that if area harvested is assumed to equal CONADESUCA's initial forecast of 798,286 hectares, then the corresponding sugarcane yield (54 tons per acre) and sugar recovery rate (10.91 percent) are both lower than what CONADESUCA is forecasting (table 8). The availability of additional weekly production data will enable USDA to conduct other forecasts.

Figure 11
Mexican 2023/24 sugar production scenarios using average daily production and length of campaign days compared with *WASDE* (December 2023) and CONADESUCA first estimate (November 2023)



Source: USDA, Economic Research Service calculations; USDA, World Agricultural Outlook Board, World Agricultural Supply and Demand Estimates (*WASDE*); and Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA)..

Table 8: Mexican sugar production scenarios for the 2023/24 crop year assuming 798,286 hectares[1/] of harvested area

		Sugarcane yield (metric ton per hectare)						
		54.00	55.12	56.23	57.35	58.46 3/	59.58	60.69 2/
		1,000 metric tons, actual value						
Sugar recovery rate (percent)	10.91 2/	4,703	4,800	4,897	4,994	5,091	5,189	5,283
	10.93	4,713	4,810	4,908	5,005	5,102	5,200	5,297
	10.96	4,723	4,821	4,918	5,016	5,113	5,211	5,308
	10.98	4,733	4,831	4,929	5,026	5,124	5,222	5,320
	11.00	4,743	4,841	4,939	5,037	5,135	5,233	5,331
	11.03	4,753	4,851	4,950	5,048	5,146	5,244	5,342
	11.05	4,763	4,862	4,960	5,058	5,157	5,255	5,354
	11.07	4,773	4,872	4,971	5,069	5,168	5,266	5,365
	11.10	4,783	4,882	4,981	5,080	5,179	5,277	5,376
	11.12 3/	4,794	4,893	4,992	5,090	5,188	5,288	5,387

Note: Red shaded area represents sugar production that is below 5 million metric tons. The value in yellow shade is CONADEUSCA forecast in November 2023. The value in blue shade is *WASDE* forecast in December 2023.

[1/] The number of hectares is equal to CONADESUCA's October 2023 initial forecast.

[2/] *WASDE* November 2023 forecast: recovery rate = 10.91%; yield = 60.69 MT/ha; sugar production = 5.286 million MT.

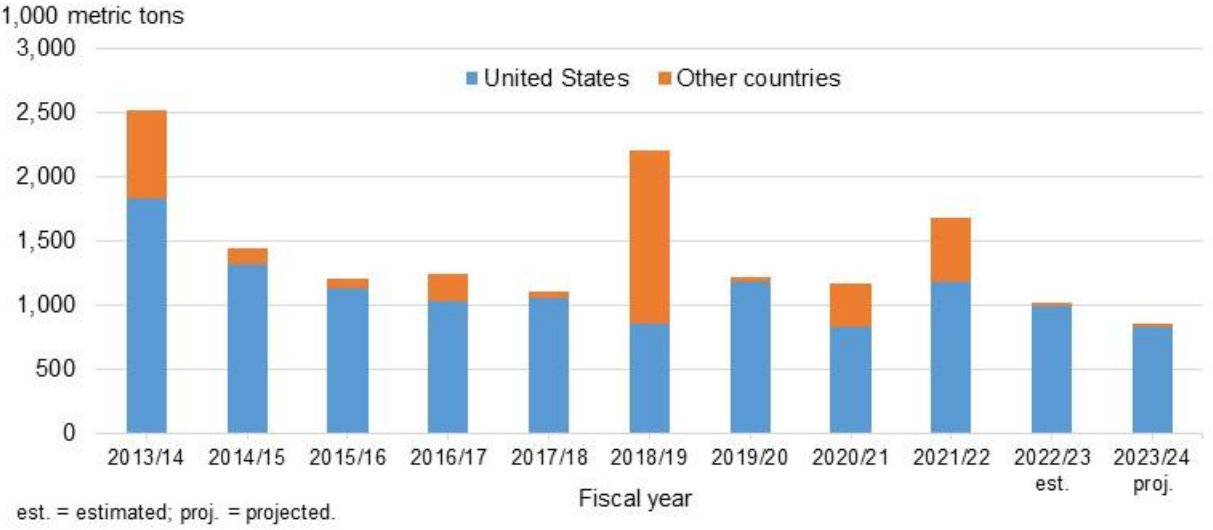
[3/] CONADESUCA November 2023 forecast: recovery rate = 11.12%; yield = 58.46 mt/ha; sugar production = 5.188 million MT.

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

Mexico's Sugar Exports to the U.S. Lowered; Projected to Fall Short of U.S. Needs

Mexico's 2023/24 exports to the United States are lowered 195,000 MT from last month to 831,000 (971,000 STRV). This is about 81,000-MT lower (94,000 STRV) than the DOC's U.S. Needs December calculation (912,000 MT or 1.066 million STRV) to achieve a U.S. stocks-to-use ratio of 13.5 percent. If the *WASDE*'s 831,000-MT forecast is realized, then this implies a reduction of 158,000 MT (16 percent) from last year and would match 2020/21 (828,000 MT) as the lowest Mexican exports to the United States since 2013/14 (figure 12). With exports to other countries only forecast at 25,000 MT (unchanged from last month), total Mexican exports in 2023/24 would be 856,000 MT, also the lowest since 2013/14.

Figure 12
Mexican sugar exports by destination, by fiscal year, 2013/14–2023/24



est. = estimated; proj. = projected.

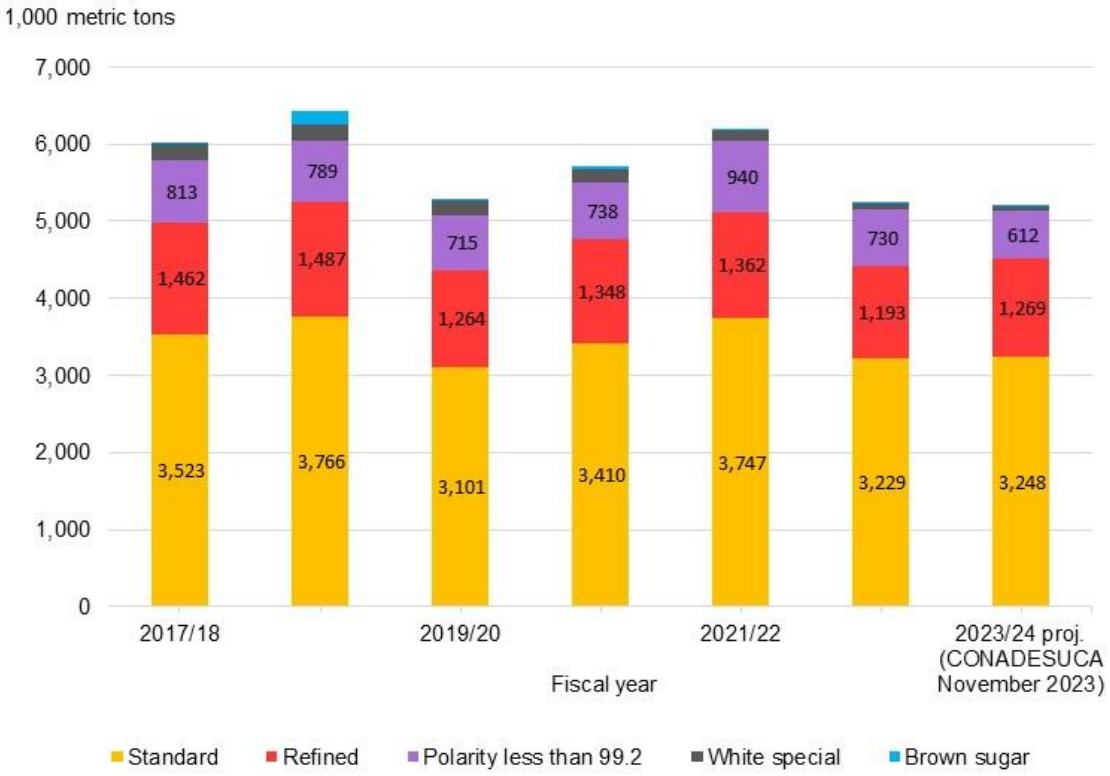
Source: USDA, World Agricultural Outlook Board; Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

The *WASDE* arrived at a forecast of 831,000-MT of exports to the United States using CONADESUCA's initial sugar production forecast of 5,188,233 million MT in November, of which 612,131 MT or 11.8 percent is comprised of low polarity sugar, the lowest since 2017/18 in terms of volume (figure 13) and share (figure 14). Conversely, CONADESUCA's 2023/24 forecast of standard (3.248 million MT) and refined sugar (1.269 million MT) production would represent 62.6 percent and 24.5 percent of the 5.188 million MT, respectively, the highest for each sugar type since 2017/18. Given the drought-reduced sugarcane crop, meeting Mexico's domestic requirements for standard and refined sugar would likely be prioritized before the fulfilling the export quota to the United States, which is mostly low polarity sugar.

The 11.8 percent share of low polarity sugar that is derived from CONADESUCA is then multiplied to the December WASDE's Mexican sugar projection of 5.283 million MT. This results in 623,312 MT of low polarity sugar production presumably destined to the United States. Assuming this 623,312-MT of low polarity sugar would comprise 75 percent of Mexico's total exports to the U.S.—same share as last year—then the total Mexican exports to the U.S. are expected to be 831,000 MT (i.e., 623,312 MT divided by 0.75).

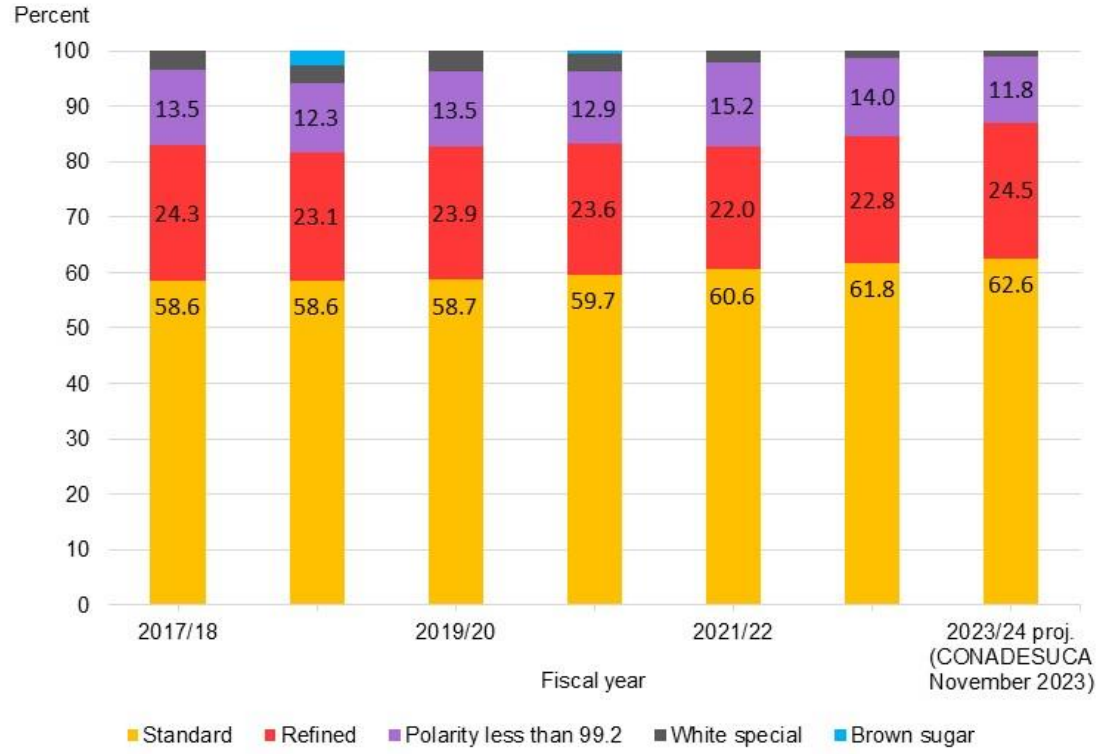
Figure 13

Mexican final sugar production by type of sugar, 2017/18–2022/23



Source: Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

Figure 14
Share of Mexican final sugar production by type of sugar to total, 2017/18–2023/24

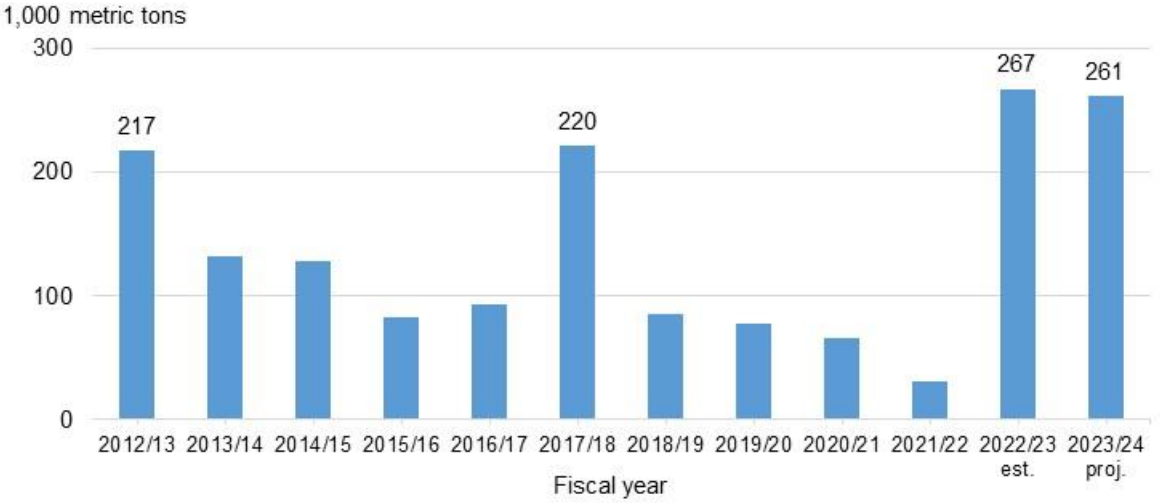


Source: USDA, Economic Research Service calculations using data from Mexico's National Committee for the Sustainable Development of Sugarcane (CONADESUCA).

Mexico's Sugar Imports Residually Reduced

While the 2023/24 forecast for Mexico's total exports were lowered from last month by 195,000 MT to 856,000, the other use components are unchanged. Deliveries for domestic consumption and companies participating in the Industria Manufacturera, Maquiladora y de Servicios de Exportación (IMMEX) program remain at 4.248 million MT and 400,000 MT, respectively. Thus, total use is lowered from last month by the same amount (195,000 MT) to 5.504 million. With a lower total use and the same 2.5-months' worth of target ending stocks, Mexico's 2023/24 imports for domestic consumption are residually lowered by 148,000 MT from last month to 261,000 MT. This volume would be on par with last year's record high 267,000 MT (figure 15). The forecast for the other import subcategory (sugar-containing products participating in the IMMEX program) is carried over from last month, and would also be relatively close to 2022/23's 18,000 MT.

Figure 15
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).

In its October 2023 *Monthly National Sugar Balance*, CONADESUCA reported that Mexico already imported 41,376 MT. This implies that Mexico had already imported 16 percent of the *WASDE* forecast of 261,000 MT just in the first month of the 2023/24. As of December 11, Trade Data Monitor data through November 2023 show that 4 countries reported exports to Mexico totaling 137,000 MT, or 52 percent of the 261,000-MT *WASDE* forecast, just in the first 2 months. This indicates a strong pace of sugar being imported by Mexico.

In terms of countries of origin, through November of this year, Brazil has exported 121,000 MT (89 percent of the total Mexico imports of 137,000 MT), followed by United States with 11,600 MT (8 percent) (table 9). The other 2 countries are El Salvador and Thailand, each exporting about 2,000 MT (1 percent) to Mexico.

Table 9: Countries' reported sugar exports to Mexico, October 2022–September 2023

Origin	Quantity (metric tons)	Share in total (percent)
Brazil	121,006	89
El Salvador	1,963	1
Thailand	2,000	1
United States	11,555	8
Total	**136,524**	**100**

Note: Totals may not add due to rounding.

Source: USDA, Economic Research Service calculation using Trade Data Monitor.

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