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Sugar and Sweeteners Outlook

Michael McConnell, coordinator
michael.mcconnell@ers.usda.gov

Sugar Deliveries Strong in Early 2016/17, Aided by Improved Pace of Beet Sugar

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World Agricultural
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In the February *World Agricultural Supply and Demand Estimates* (WASDE), U.S. sugar supplies in 2016/17 are projected to be 14.038 million short tons, raw value (STRV), a 23,000-STRV reduction from the previous month. Domestic projections are reduced 73,000 STRV due to lower production expected in Florida and Hawaii. The decline in projected production is partially offset by higher projected imports, due to a 50,000-STRV increase in imports for the re-export program. The increase in re-export program imports is also related to the 50,000-STRV increase in exports, as beet sugar is expected to be exported to allow for additional raw cane sugar imports under the program. Projected domestic deliveries for 2016/17 are unchanged. The result is a stocks-to-use ratio reduction of 14.8 percent, due to fewer ending stocks and slightly higher use.

Mexico's projected sugar balance table for 2016/17 is unchanged from the previous month. Production is projected to be 6.370 million metric tons (MT), actual value, which would be a 4.2-percent increase from the previous year's crop. Domestic deliveries are projected to be 4.769 million MT, including 4.389 million MT delivered for human consumption. Mexico is projected to export 1.470 million MT, with 832,000 MT shipped to the United States. Ending stocks are projected to be 18.6 percent higher than 2015/16, totaling 1.229 million MT, with a stocks-to-consumption ratio of 28.0 percent.

In February, the USDA published *Long-Term Agricultural Projections to 2027* for a number of agricultural commodities. The projections assume the continuation of current policies and include specific macroeconomic assumptions for the duration of the projection period. The long-term projections for the U.S. sugar market show growth in domestic sugar production through 2026/27. Growth in domestic deliveries, however, will outpace domestic production, requiring larger imports over the course of the projection period from Mexico and quota import programs.

Projected cane sugar production in 2016/17 reduced from previous month, beet sugar production unchanged

The February USDA *World Agricultural Supply and Demand Estimates* (WASDE) projects total U.S. domestic sugar production at 9.240 million short tons, raw value (STRV) in 2016/17. This is a 73,000-STRV decrease from the January projection, all of which is due to a reduced cane sugar outlook.

Table 1 -- U.S. sugar: supply and use, by fiscal year (Oct./Sept.), February 2017.

Items	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17
		(estimate)	(forecast)		(estimate)	(forecast)
	1,000 Short tons, raw value			1,000 Metric tons, raw value		
Beginning stocks	1,810	1,815	2,054	1,642	1,647	1,863
Total production	8,656	8,989	9,240	7,853	8,155	8,383
Beet sugar	4,893	5,119	5,371	4,439	4,644	4,872
Cane sugar	3,763	3,870	3,869	3,414	3,511	3,510
Florida	1,981	2,173	2,072	1,797	1,971	1,879
Louisiana	1,513	1,428	1,612	1,372	1,296	1,462
Texas	123	116	142	112	106	129
Hawaii	146	152	43	132	138	39
Total imports	3,553	3,341	2,744	3,223	3,031	2,489
Tariff-rate quota imports	1,536	1,620	1,532	1,393	1,469	1,390
Other program imports	471	396	225	427	359	204
Non-program imports	1,546	1,325	987	1,403	1,202	896
Mexico	1,532	1,309	972	1,389	1,187	882
Total supply	14,019	14,145	14,038	12,718	12,832	12,735
Total exports	185	74	75	168	67	68
Miscellaneous	0	-33	0	0	-30	0
Deliveries for domestic use	12,019	12,051	12,155	10,903	10,932	11,027
Transfer to sugar-containing products						
for exports under re-export program	103	148	120	93	134	109
Transfer to polyhydric alcohol, feed, other alcohol	28	22	35	25	20	32
Commodity Credit Corporation (CCC) sale for ethanol, other	0	0	0	0	0	0
Deliveries for domestic food and beverage use	11,888	11,881	12,000	10,785	10,778	10,886
Total Use	12,204	12,091	12,230	11,071	10,969	11,095
Ending stocks	1,815	2,054	1,808	1,647	1,863	1,640
Private	1,815	2,054	1,808	1,647	1,863	1,640
Commodity Credit Corporation (CCC)	0	0	0	0	0	0
Stocks-to-use ratio	14.87	16.99	14.78	14.87	16.99	14.78

Source: U.S. Dept. of Agriculture, Economic Research Service, Sugar and Sweetener Outlook.

Cane sugar production is projected to total 3.869 million STRV in 2016/17, accounting for the entirety of the 73,000-STRV decline in domestic production compared with the previous month. Production in Florida is projected to be 2.072 million STRV, a 70,000-STRV decrease from the January projection. The decline is based on processors' reports of less tonnage of sugarcane than previously expected. Production in Louisiana is projected to be 1.612 million STRV, unchanged from the previous month. Cane sugar production in Texas is projected to be 142,000 STRV, also unchanged from the previous month. Hawaii production is projected to total 43,000 STRV, a 3,000 STRV decline from the previous month. Projected production in Hawaii also totals the reported production in the State from October to December, as Hawaii's last sugarcane processor ceased operation in December 2016.

Beet sugar production for 2016/17 is projected to total 5.371 million STRV, unchanged from the previous month's projection. Beet processors are still contending with a record sugarbeet crop of 36.613 million short tons in 2016/17. Sugar content in the crop is reported to be relatively lower than the previous year, however. Through the October to

December quarter of 2016/17, beet sugar production is 5.8 percent lower than the same period the previous year. The pace of the current crop year’s sugarbeet slice has been 1.6 percent behind last year’s campaign.

Additional refined sugar exports allows for increased raw sugar imports under the re-export program

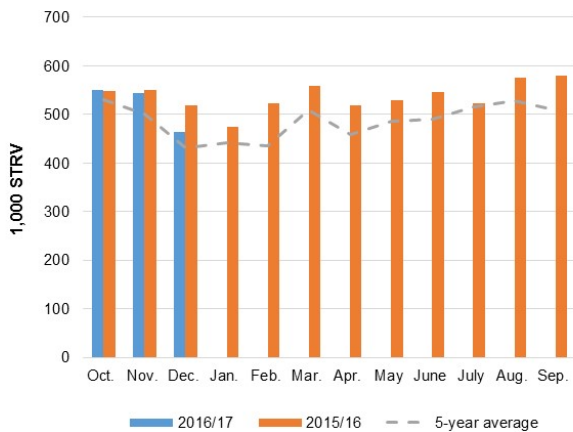
U.S. sugar exports are projected to be 75,000 STRV in 2016/17, a 50,000-STRV increase from the previous month. Current prices in U.S. and global sugar markets have opened up arbitrage opportunities and the prospect of additional refined beet sugar exports. The exports would generate credits that would increase imports of raw sugar under the re-export program. Total U.S. imports for 2016/17 are projected at 2.744 million STRV, a 50,000-STRV increase from the January figure. The entirety of the increase is expected to come from additional imports of raw cane sugar under the re-export program—up 50,000 STRV to 225,000 STRV in the February WASDE. Imports under quota programs are projected to total 1.532 million STRV, unchanged from the previous month. Imports from Mexico are projected to be 972,000 STRV, equal to the Export Limit amount published by the U.S. Department of Commerce (USDOC) in December plus an additional amount of sugar that entered under the 2015/16 Export Limit but was reported by U.S. Census during the 2016/17 fiscal year.

Projected domestic deliveries in 2016/17 remain unchanged, first quarter beet sugar deliveries pick up

Total domestic deliveries are projected to be 12.155 million STRV in 2016/17, unchanged from the previous month. Deliveries for food and beverage are projected to be 12.000 million STRV, unchanged from the previous month. This would constitute a 1.0 percent increase from the 2015/16 deliveries for food and beverage uses. Projected other deliveries to domestic users are also unchanged at 155,000 STRV.

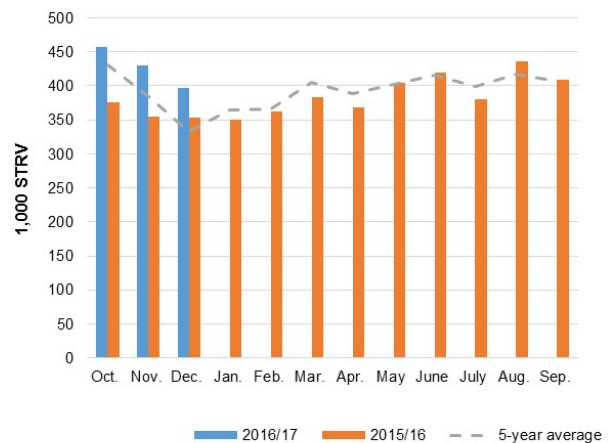
Through the first quarter of 2016/17, sugar deliveries for food and beverage consumption were 10.6 percent above the previous year. This is primarily due to an 18.5-percent increase in first-quarter beet sugar deliveries. Beet sugar deliveries have continued strong through the first 3 months of 2016/17, carrying over from the trend seen at the end of 2015/16. This uptick in deliveries has been aided by high availability of beet supplies; tight cane sugar supplies; a relative discount of refined beet sugar prices compared with cane sugar prices; and the passage of a Federal labeling law in 2016 that will create a national standard for labeling GMO ingredients in food products. The magnitude of the year-over-year increase in beet sugar deliveries is also due to the lower deliveries in early 2015/16. Nonetheless, beet sugar deliveries remain above historical averages, as well. Cane sugar deliveries were 3.6-percent lower in the first quarter, compared with the previous year. Conversely to beet sugar deliveries, the year-over-year decline is partially due to large deliveries in 2015/16. Cane sugar deliveries in 2016/17 have been running ahead of historical rates.

Figure 1
Cane sugar deliveries, monthly, 2010/11 to 2016/17



Source: U.S. Department of Agriculture, Farm Service Agency.

Figure 2
Beet sugar deliveries, monthly, 2010/11 to 2016/17



Source: U.S. Department of Agriculture, Farm Service Agency.

Despite the strong deliveries recorded in the first quarter of 2016/17, projected total deliveries for food and beverage use remains unchanged from the previous month. Long-term projections of sugar delivery growth has been predicated on analysis showing that growth is closely correlated to time trends, with seasonal variation that has been consistent since 2007/08, and to implementation of the sweetener provisions of NAFTA with Mexico. In the past several years, a series of events have created uncertainty and policy-related structural changes to the market: AD/CVD investigations, legal challenges to the suspension agreements, implementation of the suspension agreements, and market uncertainty caused by State- and Federal food-labeling legislation. These events have disrupted previously established seasonal patterns, making it unclear if current trends are indicative of structural changes in demand or temporary variations in seasonal allocation of annual deliveries.

U.S. ending stocks are projected to be 1.808 million STRV, a 73,000-STRV decline from the January projection. The resulting stocks-to-use ratio is 14.8 percent, down from the January projection of 15.4 percent.

Special Article: Divergence Between Cane and Beet Sugar Markets Persists into 2016/17

Breaking the sugar market into beet and cane sugar supply and use balances, a substantial divergence between cane sugar and beet sugar that emerged in 2015/16 appears to be continuing into 2016/17. Consecutive years of large sugarbeet crops have resulted in ample supplies of beet sugar in the market. Cane sugar supplies, however, have been declining due to fewer imports and a general draw-down of domestic inventories. Domestic deliveries have gradually been for a higher proportion of cane sugar. Between 2008/09 and 2014/15, cane sugar deliveries ranged from 58.2 to 59.3 percent of total food deliveries. Cane sugar deliveries jumped to 60.3 percent in 2014/15 and 61.3 percent of total deliveries in 2015/16. While a relatively subtle change in terms of percentages, the result—combined with the trends in supplies—has been the dramatic divergence in the stocks-to-use ratio in 2015/16. There are no official projections of food deliveries for cane sugar and beet sugar, but if the current 2016/17 projection were allocated in the same proportion as in 2014/15, the divergence would be exacerbated.

Table 2: Beet and cane sugar supply and use hypothetical for 2016/17, by fiscal year (Oct./Sept.), February 2017.

	Beet sugar			Cane sugar			Total sugar		
	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17
	<i>1,000 short tons, raw value</i>								
Beginning stocks	553	747	1,244	1,257	1,068	810	1,810	1,815	2,054
Domestic production	4,893	5,119	5,371	3,763	3,870	3,869	8,656	8,989	9,240
Imports 1/	13	10	13	3,540	3,330	2,731	3,553	3,341	2,744
Total supply	5,460	5,877	6,628	8,559	8,268	7,410	14,019	14,145	14,038
Domestic deliveries for consumption 2/	4,730	4,598	4,762	7,191	7,283	7,238	11,921	11,881	12,000
Other deliveries 2/	20	47	43	110	123	112	131	170	155
Exports	1	2	50	184	72	25	185	74	75
Misc.	-39	-14	0	6	-19	0	-33	-33	0
Total use	4,713	4,633	4,855	7,491	7,458	7,375	12,204	12,091	12,230
Ending stocks	747	1,244	1,773	1,068	810	35	1,815	2,054	1,808
Stocks-to-use ratio	15.85%	26.85%	36.53%	14.26%	10.86%	0.47%	14.87%	16.99%	14.78%

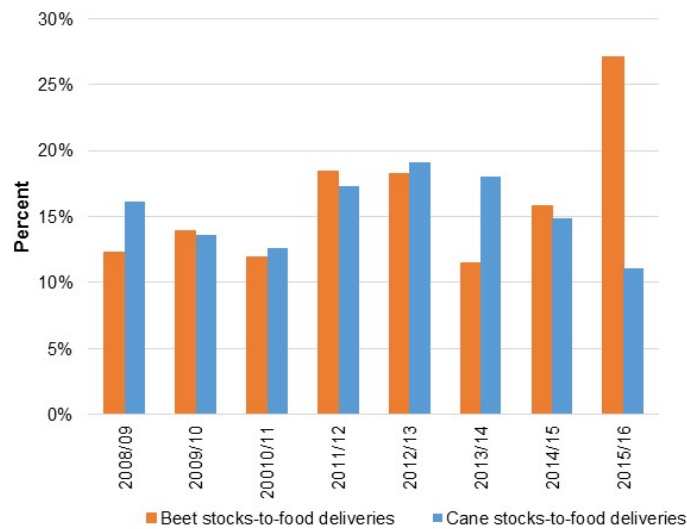
1/ Nearly all imports are counted as cane sugar, except Canada refined imports. It is possible that additional refined sugar imports may be from sugarbeet crops, although this proportion is likely minor. 2/ Beet and cane sugar human consumption for 2016/17 assume same proportion as 2014/15, while other deliveries assumes the same proportion as 2015/16.

Note: Shaded fields represent hypothetical market scenarios based on assumptions carried over into 2016/17 projections and are not official USDA projections.

Source: U.S. Dept. of Agriculture, Farm Service Agency; Foreign Agricultural Service; Economic Research Service.

There was a strong correlation between the respective stock ratios from 2008/09 to 2014/15. The differences in 2015/16 demonstrate that the cane sugar and beet sugar markets may no longer be integrated and operated with independent market fundamentals and pricing dynamics. Empirical evidence over the last few months leaves it uncertain as to whether the markets have separated or whether the recent developments indicate a temporary market dislocation that will return to an equilibrium with time.

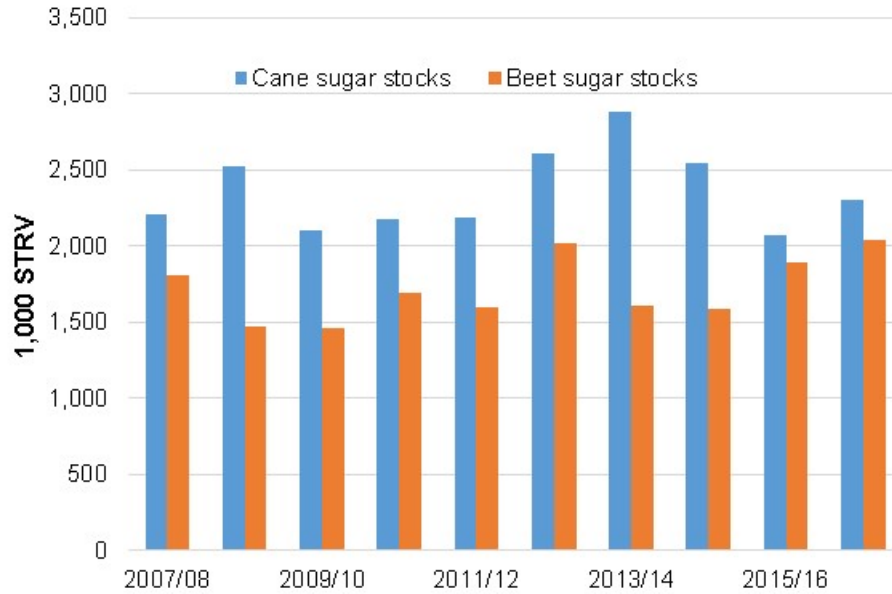
Figure 3
Stocks-to-food use, beet vs. cane deliveries, fiscal year, 2008/09 to 2015/16



Source: U.S. Department of Agriculture, Economic Research Service.

As of December 31, inventories for beet sugar and cane sugar are both higher than the previous year, as reported in the *Sweetener Market Data* (SMD) published by USDA’s Farm Service Agency (FSA). The increase in cane sugar stocks is primarily due to higher inventories by cane processors, likely the result of good sugarcane crops harvested in both Florida and Louisiana in 2016/17. Inventories held by cane refiners, however, remain below historical levels, in particular raw sugar inventories. U.S. raw sugar prices have remained high thus far in 2016/17, primarily due to nearly all raw sugar imports being constrained by tariff-rate quotas and the suspension agreements that resulted from the AD/CVD investigation of sugar from Mexico. Imports from Mexico are particularly limited in 2016/17 due to the consecutive years of large beet sugar production and large carryover of beet sugar inventories into 2016/17, reducing the U.S. Needs calculation and Export Limit compared with previous years. Although there is a premium for refined cane sugar in the market, reported spot prices imply that refining margins still limit the profitability for refiners. Therefore, despite higher cane sugar inventories relative to last year, a smaller share of the U.S. sugar supply mix is projected to be cane sugar. This, in turn, is contributing to higher raw sugar prices as the prospect for additional supplies later in the year are limited.

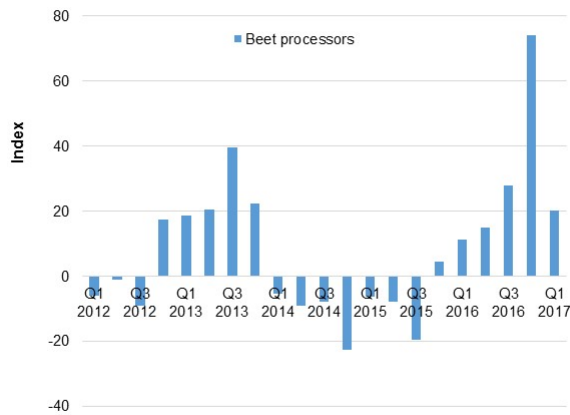
Figure 4
December 31 sugar inventories, fiscal year



Source: U.S. Department of Agriculture, Farm Service Agency.

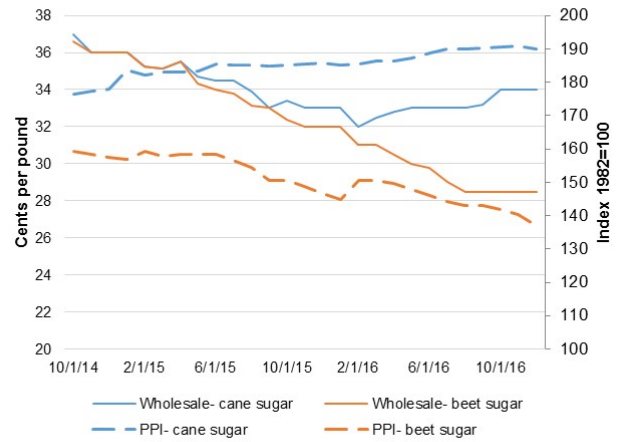
Beet sugar inventories on December 31 are larger than the previous year, but a substantial amount of built-up inventories from 2015/16 have cleared through the market. This has been evident from the increased beet sugar deliveries in the first 3 months of 2016/17. Reported spot prices for refined beet sugar markets have remained flat since the end of 2015/16. Limited amounts of sugar is marketed at spot prices, however. Sugar is predominantly marketed through longer-term contracts with proprietary terms. By comparison, though, the Producer Price Index (PPI) for beet sugar prices has steadily declined over the past several months, an indication that softer prices accompanied additional beet sugar into the market.

Figure 5
December 31 beetsugar inventory index 1/, fiscal year quarters, FY2012 to FY2017



1/ Indexed against 5-year average from FY2011 to FY2015.
Source: U.S. Department of Agriculture, Farm Service Agency.

Figure 6
Refined sugar prices, wholesale and Producer Price Indices, monthly



Source: U.S. Department of Agriculture, Economic Research Service.

Both refined cane sugar prices and the refined cane sugar price index have remained steady over this time, implying the spread between cane sugar and beet sugar has been growing. With ample supplies on the market and a relative price advantage, the increased pace of beet sugar deliveries in the first quarter of 2016/17 is not surprising. It also could imply that there is still a substantial segment of the market that views beet sugar and cane sugar as highly substitutable products, despite announcements over the past several months of some companies switching exclusively to cane sugar in their formulations to accommodate perceived consumer preferences and labeling strategies.

Such changes in the market may have caused dislocations in previously established commercial and logistics channels. Many refiners appear to be adjusting their marketing patterns in accordance with recent market developments, shipping to different customer segments or to non-traditional market locations. If this is the case, the recent disparities in the cane sugar and beet sugar markets could be a short-term development. Even if such a market response continues to push toward a new underlying equilibrium, structural changes in demand for the U.S. market could be occurring that would change the outlook for the U.S. sugar market from how it has been historically analyzed. Evidence still exists, however, that the cane sugar and beet sugar markets are integrated to some degree. Data also suggest that even if beet sugar deliveries return to historical levels, cane sugar market balances will remain extremely tight for the duration of 2016/17 under the current situation.

Mexico sugar supply and use projections for 2016/17 unchanged from January WASDE

Projected sugar supplies in Mexico for 2016/17 are projected to be 7.468 million metric tons, actual value (MT). This is unchanged from the January WASDE projections. Beginning stocks are projected to be 1.037 million MT and total imports 60,000 MT, both unchanged from the previous month.

Table 3 -- Mexico sugar supply and use, 2014/15 - 2015/16 and projected 2016/17, February 2017.

Items	2014/15	2015/16 (estimate)	2016/17 (forecast)
	1,000 metric tons, actual weight		
Beginning stocks	831	811	1,037
Production	5,985	6,117	6,371
Imports	128	83	60
Imports for consumption	8	17	10
Imports for sugar-containing product exports, IMMEX 1/	121	66	50
Total supply	6,944	7,011	7,468
Disappearance			
Human consumption	4,408	4,387	4,389
For sugar-containing product exports (IMMEX)	337	330	330
Statistical adjustment	-54	50	50
Total	4,691	4,767	4,769
Exports	1,442	1,207	1,470
Exports to the United States & Puerto Rico	1,311	1,120	832
Exports to other countries	131	86	638
Total use	6,134	5,974	6,238
Ending stocks	811	1,037	1,229
	1,000 metric tons, raw value		
Beginning stocks	881	859	1,099
Production	6,344	6,484	6,753
Imports	136	88	64
Imports for consumption	8	18	11
Imports for sugar-containing product exports (IMMEX)	128	70	53
Total supply	7,361	7,431	7,916
Disappearance			
Human consumption	4,673	4,650	4,652
For sugar-containing product exports (IMMEX)	357	350	350
Statistical adjustment	-57	53	53
Total	4,973	5,053	5,055
Exports	1,529	1,279	1,558
Exports to the United States & Puerto Rico	1,389	1,187	882
Exports to other countries	139	92	676
Total use	6,502	6,332	6,613
Ending stocks	859	1,099	1,303
Stocks-to-human consumption (percent)	18.4	23.6	28.0
Stocks-to-use (percent)	13.2	17.4	19.7
High fructose corn syrup (HFCS) consumption (dry weight)	1,444	1,482	1,459

1/ IMMEX = Industria Manufacturera, Maquiladora y de Servicios de Exportación.

Source: USDA, *World Agricultural Supply and Demand Estimates* and Economic Research Service, Sugar and Sweeteners Outlook; Conadesuca.

Mexico sugar production for 2016/17 is projected to be 6.371 million metric tons, actual value (MT), unchanged from the previous month. The projection also still aligns with the initial crop estimate by Mexico's *Comité Nacional para el Desarrollo Sustentable de la Caña de Azúcar* (Conadesuca), released in November 2016.

Through February 4, sugar mills in Mexico have produced 20.723 million metric tons of sugarcane and 2.141 million MT of sugar—both of which represent a 1.1 percent increase from the same period in 2015/16. Current weekly figures show that the pace still lags behind that expected from the initial estimate, primarily due to pace of harvest in the Northeast region of the country, although sugar production is slightly behind the initial estimate's pace for all sugarcane producing regions.

Domestic deliveries for 2016/17 are projected to be 4.769 million MT, unchanged from the previous month. Domestic deliveries for human consumption are projected to be 4.388 million MT, also unchanged from the previous month and virtually unchanged from 2015/16. Similarly, deliveries for IMMEX, at 330,000MT, are unchanged from both the previous month and the previous year.

Total sugar exports from Mexico are projected to be 1.470 million MT, with 832,000 MT shipped to the United States and 637,000 MT projected to be shipped to other countries. All export projections are unchanged from the previous month.

Ending stocks for 2016/17 are projected to be 1.229 million MT, unchanged from the previous month's projection, with a resulting stocks-to-consumption ratio of 28.0 percent. Compared with 2015/16, where the stocks-to-consumption ratio was 23.6 percent, Mexico's sugar supply is more ample for the second-consecutive year, although not outside historical bounds.

Special Article: U.S. and Mexico Sugar Market Long-term Projections through 2026/27

In February 2017, the USDA released *USDA Agricultural Projections to 2027* that shows the official long-term projections for agricultural commodities. These include projections for the U.S. sugar market, with 2015/16 and 2016/17 figures using data published in the November 2016 WASDE report. The projections form a baseline market scenario under specific policy and macroeconomic assumptions, which can then be used to analyze alternative market or policy scenarios. In addition to the base specifications in the report, the Sugar Interagency Commodity Estimates Committee (ICEC) also analyzed two alternative projection scenarios and evaluated the potential for costs associated with the USDA sugar program. The underlying assumptions and results of the projections are presented in this section.

Base Scenario

The base specification assumes that current policies remain in place over the duration of the projection period. This includes the Agricultural Act of 2014, which authorizes the Sugar Loan Program, Sugar Marketing Allotments, and the Feedstock Flexibility Program; current trade policies, including all free-trade agreements; and the terms of the agreements suspending the anti-dumping (AD) and countervailing duty (CVD) investigations signed between the U.S. Department of Commerce (USDOC), the Government of Mexico, and Mexican sugar industry in December 2014. Macroeconomic parameters follow those described in *USDA Agricultural Projections to 2027*. Projected world raw sugar prices are projected as described in [Haley \(2015\)](#). Finally, the projections assume a singular deliveries market in the United States, whether refined sugar is derived from sugarbeets or sugarcane, rather than a market structure that has distinct demand responses for beet sugar and cane sugar.

Table 4 -- U.S. sugar supply and use projections base specifications

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	1,000 short tons, raw value											
Beginning stocks	1,815	2,055	1,897	1,688	1,711	1,734	1,757	1,780	1,802	1,825	1,848	1,871
Total production	8,989	9,331	9,477	9,515	9,660	9,555	9,583	9,719	9,637	9,594	9,690	9,702
Beet sugar	5,119	5,371	5,448	5,386	5,452	5,341	5,359	5,448	5,350	5,310	5,379	5,369
Cane sugar	3,870	3,960	4,029	4,129	4,208	4,214	4,224	4,271	4,288	4,284	4,312	4,333
Total imports	3,341	2,691	2,817	3,181	3,206	3,481	3,622	3,655	3,906	4,118	4,189	4,345
TRQ	1,620	1,533	1,522	1,534	1,529	1,776	1,661	1,652	1,912	2,030	2,037	2,091
Mexico	1,309	1,018	1,155	1,507	1,537	1,565	1,821	1,863	1,854	1,948	2,012	2,113
Other imports	412	140	140	140	140	140	140	140	140	140	140	140
Total supply	14,145	14,077	14,192	14,384	14,577	14,769	14,962	15,154	15,346	15,537	15,728	15,917
Exports	74	25	25	25	25	25	25	25	25	25	25	25
Total domestic deliveries	12,075	12,155	12,479	12,648	12,818	12,987	13,157	13,326	13,495	13,664	13,832	13,999
Deliveries for food and beverage use	11,905	12,000	12,324	12,493	12,663	12,832	13,002	13,171	13,340	13,509	13,677	13,844
Other deliveries	170	155	155	155	155	155	155	155	155	155	155	155
Total Use	12,090	12,180	12,504	12,673	12,843	13,012	13,182	13,351	13,520	13,689	13,857	14,024
Ending stocks	2,055	1,897	1,688	1,711	1,734	1,757	1,780	1,802	1,825	1,848	1,871	1,893
Stocks-to-use ratio	17.00	15.58	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50
	cents per pound											
World raw sugar price	20.33	21.63	17.74	16.09	18.40	21.75	19.42	18.10	19.99	20.14	21.98	24.20
U.S. raw sugar price - 3rd quarter	28.28	28.98	24.63	22.25	25.68	31.07	27.31	25.20	28.22	28.46	31.43	35.06
Refined beet sugar spot price - 3q quarter	28.67	29.37	35.78	31.87	37.51	46.57	40.23	36.72	41.76	42.16	47.20	53.43
Sugarbeet price (Dollars/ton)	43.50	38.15	37.28	42.63	40.69	45.44	51.95	47.44	45.24	49.08	49.41	53.64
Sugarcane price (Dollars/ton)	35.96	35.33	40.16	38.07	36.95	40.06	44.85	42.66	41.40	44.16	44.78	47.52

Source: U.S. Department of Agriculture, Sugar and Sweetener Interagency Commodity Estimate Committee.

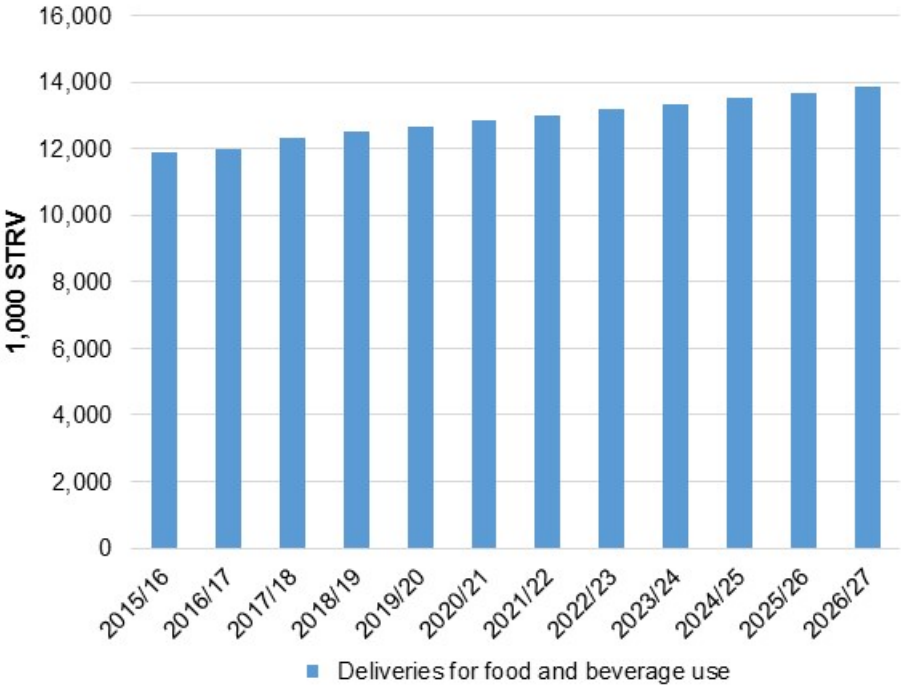
Table 5 -- Mexico sugar and high fructose corn syrup supply and use projections base specifications

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	1,000 metric tons, raw value											
Beginning stocks	859	1,099	1,312	1,175	1,290	1,299	1,514	1,545	1,554	1,627	1,664	1,693
Sugar production	6,484	6,678	6,811	6,841	6,843	6,919	7,071	7,154	7,198	7,298	7,399	7,550
Imports	74	11	11	11	11	11	11	11	11	11	11	11
Total supply	7,418	7,788	8,134	8,026	8,144	8,228	8,595	8,709	8,763	8,936	9,074	9,254
Domestic disappearance	5,039	5,071	5,128	5,184	5,240	5,294	5,347	5,400	5,453	5,504	5,555	5,605
Consumption	4,650	4,721	4,778	4,835	4,890	4,944	4,998	5,051	5,103	5,154	5,205	5,255
Other disappearance	350	350	350	350	350	350	350	350	350	350	350	350
Exports	1,279	1,404	1,831	1,552	1,606	1,420	1,703	1,755	1,683	1,768	1,826	1,918
To the United States	1,187	923	1,048	1,368	1,395	1,420	1,653	1,691	1,683	1,768	1,826	1,918
To other countries	92	481	783	184	211	0	50	64	0	0	0	0
Ending stocks	1,099	1,312	1,175	1,290	1,299	1,514	1,545	1,554	1,627	1,664	1,693	1,731
Stocks-to-consumption ratio	23.64	27.79	24.58	26.69	26.56	30.62	30.92	30.77	31.89	32.29	32.52	32.95
High fructose corn syrup deliveries	1,482	1,482	1,504	1,527	1,549	1,571	1,593	1,615	1,637	1,659	1,681	1,702

Source: U.S. Department of Agriculture, Sugar and Sweetener Interagency Commodity Estimate Committee.

Demand for refined sugar in the United States is driven by growth in domestic deliveries for food and beverage use. Growth in this market segment is due to by population growth and a continuing trend of refined sugar use increasing as a portion of per capita caloric sweetener deliveries—primarily at the expense of HFCS. Historically, refined sugar demand is not price-sensitive to alternative sweetener prices and is instead driven by macroeconomic factors and consumer preferences. Projected domestic deliveries for food and beverage use reach 13.844 million STRV by 2026/27, representing a 1.3-percent average annual growth rate compared with 2017/18 projections. Other domestic deliveries and exports are projected to remain constant throughout the projection period and reflect lower flows going through the U.S. re-export program due to changes to Mexico’s IMMEX program that went into place in February 2016.

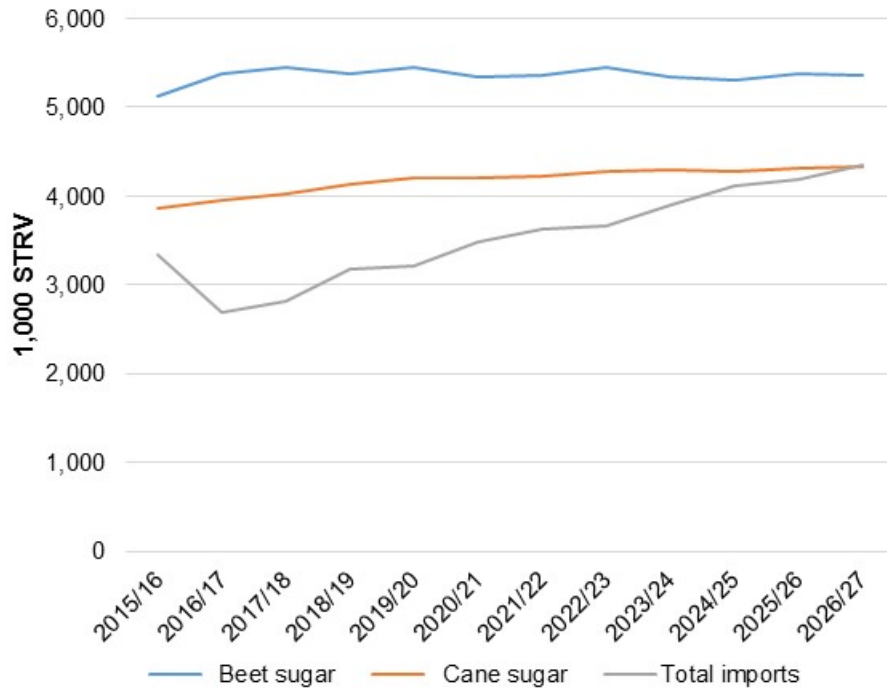
Figure 7
U.S. sugar domestic food and beverage deliveries projection, base scenario, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Supplies of sugar in the United States respond to the growth in the delivery market through the projection period. Domestic production of sugar is projected to increase 0.3 percent annually, on average, from 9.477 million STRV in 2017/18 to 9.702 million STRV by the end of the period. Beet sugar production is projected to remain the largest source of domestically produced sugar. Beet sugar production, however, is projected to remain relatively stable with production reaching its highest point of 5.448 million STRV, in both 2017/18 and 2022/23, and then subsequently ending the period at 5.369 million STRV. Sugarbeet acreage is projected to decline, as productivity in sugarbeet yields and sugar recovery improve in line with recent historical trends and as projected per acre growing costs increase, tied to projected oil prices. Cane sugar production is projected to increase by an average annual rate of 0.8 percent, increasing steadily to 4.333 million STRV by 2026/27. Projected sugarcane area is projected to increase as expected returns exceed costs, with acreage increasing at a greater rate until 2019/20 and then moderating in the latter portion of the period. This is due to the projected increase in costs of growing and processing sugarcane associated with higher oil prices. Projected cane sugar production does incorporate the lagged relationship between acreage decisions and profitability due to sugarcane’s multiple-year planting and production cycles.

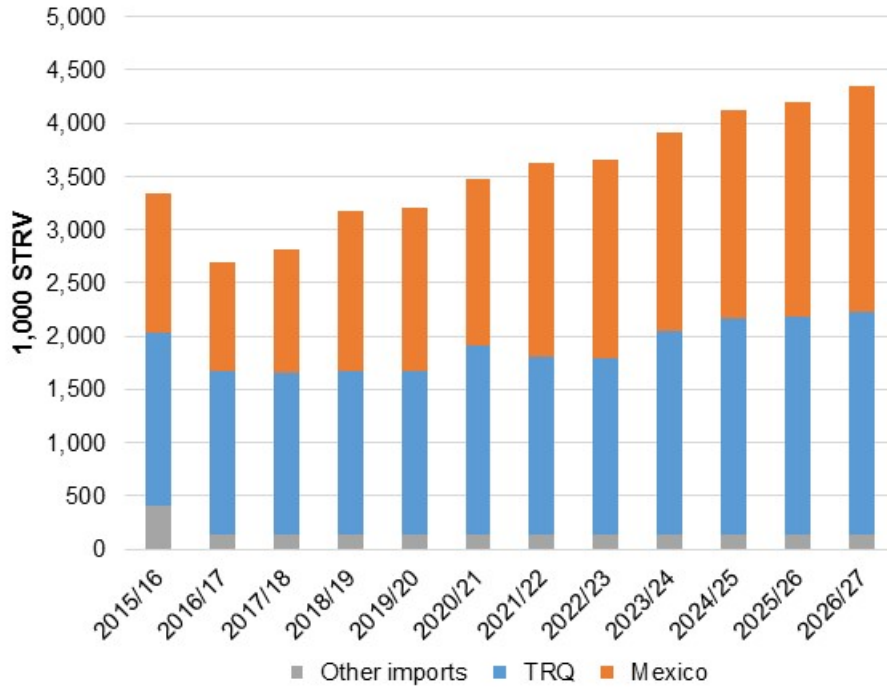
Figure 8
U.S. sugar supply projections, base scenario, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Increased imports are projected under the base scenario as the growth in domestic deliveries outpaces domestic production. Total imports are projected to increase an average of 4.8 percent per year between 2017/18 and 2026/27, totaling 4.345 million STRV in 2026/27. Projected imports from Mexico follow the terms of the U.S. Needs calculations governed in the suspension agreements signed between the USDOC and Government of Mexico in December 2014. Limited exportable supplies in Mexico begin to constrain shipments starting in 2020/21, however, necessitating additional imports under quota programs such as the WTO raw sugar TRQ. Imports under quota programs increase in line with quota schedules from free-trade agreements and WTO commitments for TRQs. As mentioned, projected imports under quota expand in order to maintain a targeted ending-stock level, implied by the suspension agreements' U.S. Needs formula of a 13.5 percent stocks-to-use ratio. This would potentially be executed through a reduction in shortfalls in quotas or, if necessary, an expansion of WTO sugar TRQs by decision of the Secretary of Agriculture to maintain adequate supplies for the domestic market.

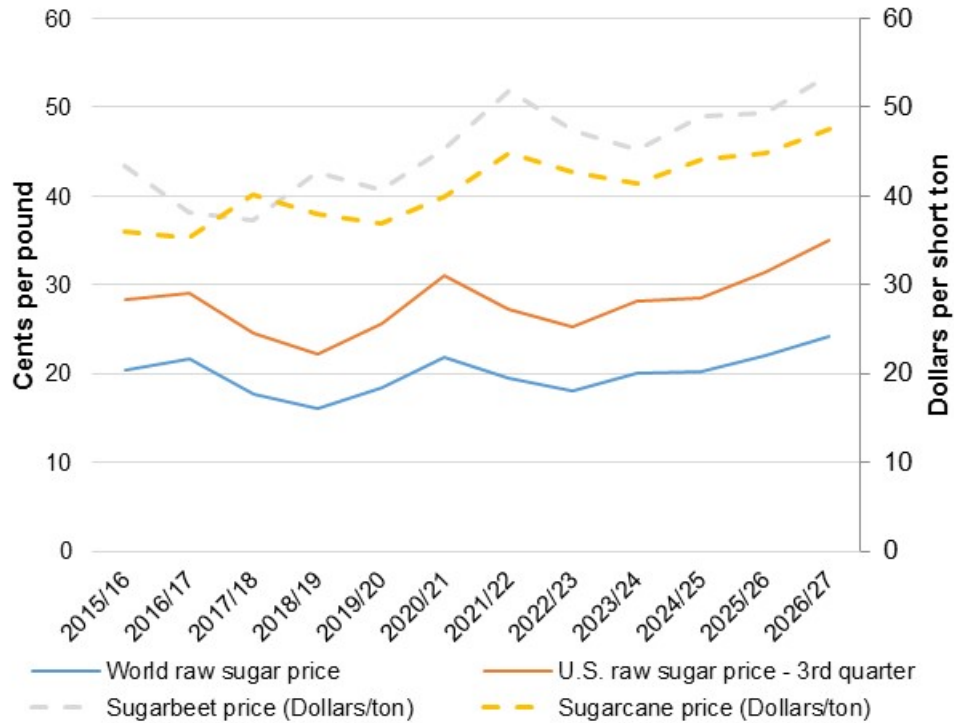
Figure 9
U.S. sugar import projections, base scenario, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Projected U.S. raw sugar prices in the base scenario fluctuate in line with world raw sugar price projections, as the stocks-to-use ratio remains flat throughout the duration. Crop prices for sugarbeet and sugarcane both trend upward throughout the projection period, reflecting steady market demand for domestic sugar production and the increased costs projected for growers of both sugar crops.

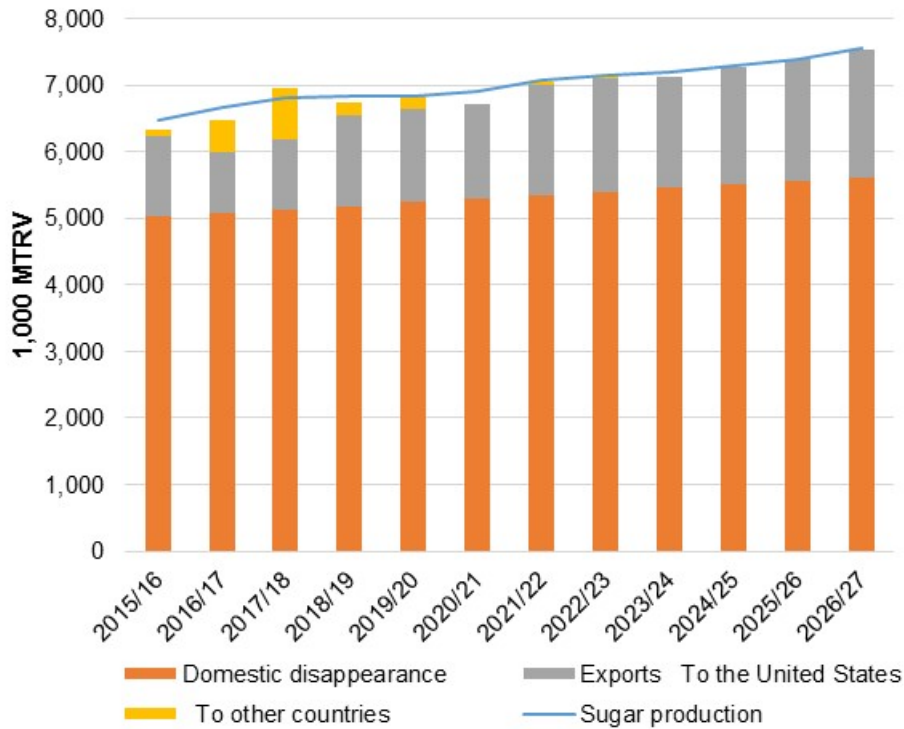
Figure 10
Sugar market price projections, base scenario, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Mexico is projected to steadily increase its sugar production over the course of the projection period under the base scenario. Production is projected to reach 7.550 million metric tons, raw value (MTRV), which would be a 1.1 percent annual increase compared with projections for 2017/18. Most of the increases would come from expansion of sugarcane area—with projected 2026/27 sugarcane area about 34,000 hectares more than 2015/16 levels of 781,000 hectares—as returns for domestic sugarcane growers are projected to be at levels that encourage an upward trend for planted area. Domestic deliveries are expected to increase as well. Deliveries for human consumption are projected to increase 1.1 percent per year, totaling 5.255 million MTRV by 2026/27. HFCS domestic deliveries for food and beverage use are projected to decline 2.2 percent per year over the same period.

Figure 11
Mexico sugar supply and use projections, base scenario, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Total exports from Mexico are projected to grow 0.5 percent per year, with the majority going to the United States. However, the growth in domestic demand constrains the amount of supplies available for the export market. As a result, exports to countries outside of the United States are projected to decline and eventually drop to zero during the projection period. Additionally, as mentioned above, exports to the United States eventually fall below the projected calculated U.S. Needs that determines Mexico’s market access into the U.S. sugar market under the current terms of the suspension agreements. Nonetheless, exports to the United States are projected to grow throughout the projection period, but only at a rate of 0.7 percent per year.

Anti-dumping/Countervailing Duty Sunset Scenario

The first alternative scenario assumes that the first sunset review of the AD/CVD investigation against sugar from Mexico results in the removal of duties and restrictions on trade placed by the suspension agreements. As a result, beginning in 2020/21, the projection reflects unrestricted trade flows from Mexico. In this scenario, producers in Mexico are expected to maintain a 22-percent stocks-to-consumption ratio to keep sufficient supplies to satisfy domestic demand before the subsequent harvest comes to market. Most of the exports are projected to be shipped to the United States, with an effective de minimus amount continued to be shipped to other countries.

Table 6 -- U.S. sugar supply and use projections AD/CVD sunset specifications

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	1,000 short tons, raw value											
Beginning stocks	1,815	2,055	1,897	1,688	1,711	1,734	1,981	1,878	1,802	1,825	1,848	1,871
Total production	8,989	9,331	9,477	9,515	9,660	9,555	9,583	9,623	9,576	9,568	9,674	9,692
Beet sugar	5,119	5,371	5,448	5,386	5,452	5,341	5,359	5,379	5,320	5,306	5,377	5,369
Cane sugar	3,870	3,960	4,029	4,129	4,208	4,214	4,224	4,243	4,256	4,262	4,297	4,323
Total imports	3,341	2,691	2,817	3,181	3,206	3,705	3,497	3,653	3,967	4,143	4,206	4,355
TRQ	1,620	1,533	1,522	1,526	1,529	1,533	1,534	1,637	1,936	2,034	2,021	2,040
Mexico	1,309	1,018	1,155	1,516	1,537	2,032	1,823	1,876	1,891	1,969	2,045	2,175
Other imports	412	140	140	140	140	140	140	140	140	140	140	140
Total supply	14,145	14,077	14,192	14,384	14,577	14,993	15,061	15,154	15,346	15,537	15,728	15,917
Exports	75	25	25	25	25	25	25	25	25	25	25	25
Total domestic deliveries	12,075	12,155	12,479	12,648	12,818	12,987	13,157	13,326	13,495	13,664	13,832	13,999
Deliveries for food and beverage use	11,905	12,000	12,324	12,493	12,663	12,832	13,002	13,171	13,340	13,509	13,677	13,844
Other deliveries	170	155	155	155	155	155	155	155	155	155	155	155
Total Use	12,090	12,180	12,504	12,673	12,843	13,012	13,182	13,351	13,520	13,689	13,857	14,024
Ending stocks	2,055	1,897	1,688	1,711	1,734	1,981	1,878	1,802	1,825	1,848	1,871	1,893
Stocks-to-use ratio	17.00	15.58	13.50	13.50	13.50	15.22	14.25	13.50	13.50	13.50	13.50	13.50
	cents per pound											
World raw sugar price	20.33	21.63	17.74	16.09	18.40	21.75	19.42	18.10	19.99	20.14	21.98	24.20
U.S. raw sugar price - 3rd quarter	28.28	28.98	24.63	22.25	25.68	29.47	26.67	25.20	28.22	28.46	31.43	35.06
Refined beet sugar spot price - 3q quarter	28.67	29.37	35.78	31.87	37.51	41.61	38.24	36.72	41.76	42.16	47.20	53.43
Sugarbeet price (Dollars/ton)	43.50	38.15	37.28	42.63	40.69	45.44	48.24	45.88	45.07	49.01	49.41	53.64
Sugarcane price (Dollars/ton)	35.96	35.33	40.16	38.07	36.95	40.06	42.66	41.75	41.43	44.22	44.83	47.55

Source: U.S. Department of Agriculture, Sugar and Sweetener Interagency Commodity Estimate Committee.

Table 7 -- Mexico sugar and high fructose corn syrup supply and use projections AD/CVD sunset specifications

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	1,000 metric tons, raw value											
Beginning stocks	859	1,099	1,312	1,175	1,283	1,403	1,088	1,099	1,111	1,123	1,134	1,145
Sugar production	6,484	6,678	6,811	6,841	6,844	6,912	7,103	7,204	7,269	7,392	7,511	7,678
Imports	74	11	11	11	11	11	11	11	11	11	11	11
Total supply	7,418	7,788	8,134	8,026	8,137	8,326	8,201	8,314	8,391	8,525	8,655	8,834
Domestic disappearance	5,039	5,071	5,128	5,184	5,240	5,294	5,347	5,400	5,453	5,504	5,555	5,605
Consumption	4,650	4,721	4,778	4,835	4,890	4,944	4,998	5,051	5,103	5,154	5,205	5,255
Other disappearance	350	350	350	350	350	350	350	350	350	350	350	350
Exports	1,279	1,404	1,831	1,559	1,495	1,944	1,754	1,803	1,816	1,887	1,955	2,074
To the United States	1,187	923	1,048	1,375	1,395	1,844	1,654	1,703	1,716	1,787	1,855	1,974
To other countries	92	481	783	184	100	100	100	100	100	100	100	100
Ending stocks	1,099	1,312	1,175	1,283	1,403	1,088	1,099	1,111	1,123	1,134	1,145	1,156
Stocks-to-consumption ratio	23.64	27.79	24.58	26.53	28.69	22.00	22.00	22.00	22.00	22.00	22.00	22.00
High fructose corn syrup deliveries	1,482	1,482	1,504	1,527	1,549	1,571	1,593	1,615	1,637	1,659	1,681	1,702

Source: U.S. Department of Agriculture, Sugar and Sweetener Interagency Commodity Estimate Committee.

Suspension Agreements Termination Scenario

The second alternative scenario assumes that the suspension agreements are terminated and AD/CVD duties go into place for imports from Mexico, effectively eliminating shipments of sugar from Mexico. Additionally, the projection assumes that Mexico imposes duties on U.S. HFCS imports, increasing domestic demand for refined sugar to help absorb the resulting sugar supplies. Ending stocks are projected to keep a 22-percent stocks-to-domestic consumption ratio, with any excess supplies projected to be exported to other countries.

Table 8 -- U.S. sugar supply and use projections suspension agreements termination specifications

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	1,000 short tons, raw value											
Beginning stocks	1,815	2,055	1,897	1,688	1,711	1,734	1,757	1,780	1,802	1,825	1,848	1,871
Total production	8,989	9,331	9,477	9,515	9,660	9,548	9,581	9,718	9,637	9,593	9,690	9,702
Beet sugar	5,119	5,371	5,448	5,386	5,452	5,336	5,359	5,447	5,350	5,310	5,379	5,369
Cane sugar	3,870	3,960	4,029	4,129	4,208	4,212	4,222	4,270	4,287	4,284	4,311	4,332
Total imports	3,341	2,691	2,817	3,181	3,206	3,487	3,624	3,657	3,907	4,119	4,190	4,345
TRQ	1,620	1,533	1,522	3,041	3,066	3,347	3,484	3,517	3,767	3,979	4,050	4,205
Mexico	1,309	1,018	1,155	0	0	0	0	0	0	0	0	0
Other imports	412	140	140	140	140	140	140	140	140	140	140	140
Total supply	14,145	14,077	14,192	14,384	14,577	14,769	14,962	15,154	15,346	15,537	15,728	15,917
Exports	75	25	25	25	25	25	25	25	25	25	25	25
Total domestic deliveries	12,075	12,155	12,479	12,648	12,818	12,987	13,157	13,326	13,495	13,664	13,832	13,999
Deliveries for food and beverage use	11,905	12,000	12,324	12,493	12,663	12,832	13,002	13,171	13,340	13,509	13,677	13,844
Other deliveries	170	155	155	155	155	155	155	155	155	155	155	155
Total Use	12,090	12,180	12,504	12,673	12,843	13,012	13,182	13,351	13,520	13,689	13,857	14,024
Ending stocks	2,055	1,897	1,688	1,711	1,734	1,757	1,780	1,802	1,825	1,848	1,871	1,893
Stocks-to-use ratio	17.00	15.58	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50
	cents per pound											
World raw sugar price	20.33	21.63	17.74	16.09	18.40	21.75	19.42	18.10	19.99	20.14	21.98	24.20
U.S. raw sugar price - 3rd quarter	28.28	28.98	24.63	22.05	25.68	31.07	27.31	25.20	28.22	28.46	31.43	35.06
Refined beet sugar spot price - 3q quarter	28.67	29.37	35.78	31.55	37.51	46.57	40.23	36.72	41.76	42.16	47.20	53.43
Sugarbeet price (Dollars/ton)	43.50	38.15	37.28	42.63	40.42	45.44	51.93	47.44	45.24	49.08	49.41	53.64
Sugarcane price (Dollars/ton)	35.96	35.33	40.16	38.07	36.78	40.06	44.85	42.67	41.40	44.16	44.78	47.52

Source: U.S. Department of Agriculture, Sugar and Sweetener Interagency Commodity Estimate Committee.

Table 9 -- Mexico sugar and high fructose corn syrup supply and use projections suspension agreements termination specifications

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	1,000 metric tons, raw value											
Beginning stocks	859	1,099	1,312	1,175	1,281	1,298	1,315	1,331	1,348	1,364	1,380	1,396
Sugar production	6,484	6,678	6,811	6,841	6,820	6,857	6,960	7,013	7,044	7,115	7,188	7,293
Imports	74	11	11	11	11	11	11	11	11	11	11	11
Total supply	7,418	7,788	8,134	8,026	8,111	8,166	8,286	8,355	8,402	8,490	8,579	8,700
Domestic disappearance	5,039	5,071	5,128	6,172	6,250	6,326	6,402	6,477	6,551	6,624	6,696	6,768
Consumption	4,650	4,721	4,778	5,823	5,900	5,977	6,052	6,127	6,201	6,274	6,347	6,418
Other disappearance	350	350	350	350	350	350	350	350	350	350	350	350
Exports	1,279	1,404	1,831	573	563	524	552	530	487	486	486	520
To the United States	1,187	923	1,048	0	0	0	0	0	0	0	0	0
To other countries	92	481	783	573	563	524	552	530	487	486	486	520
Ending stocks	1,099	1,312	1,175	1,281	1,298	1,315	1,331	1,348	1,364	1,380	1,396	1,412
Stocks-to-consumption ratio	23.64	27.79	24.58	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00
High fructose corn syrup deliveries	1,482	1,482	1,504	1,527	539	539	539	539	539	539	539	539

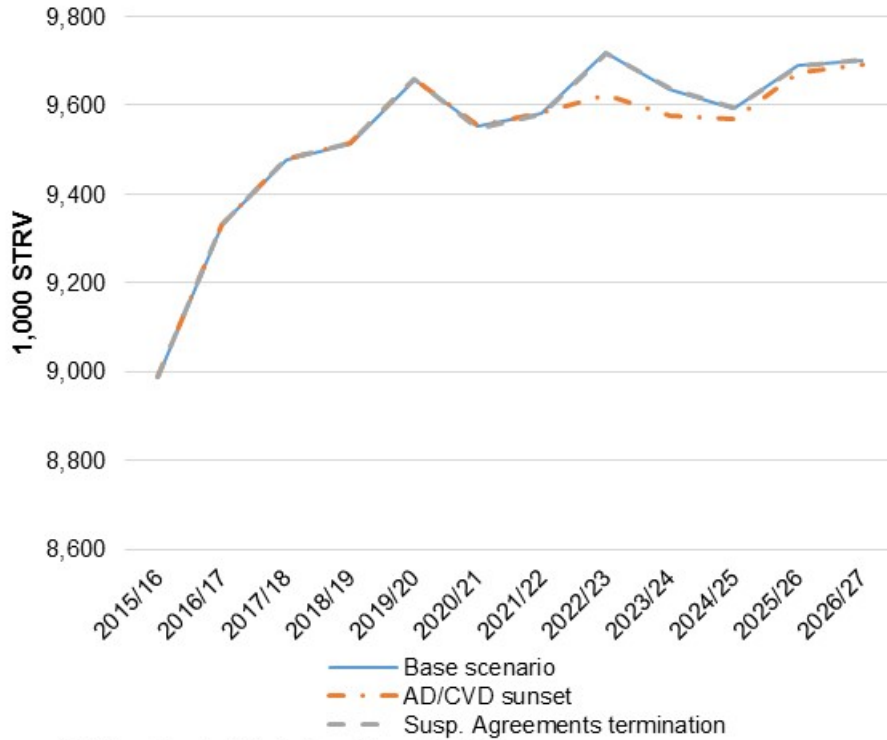
Source: U.S. Department of Agriculture, Sugar and Sweetener Interagency Commodity Estimate Committee.

Comparisons of Alternative Scenarios

One of the key findings of the alternative scenarios was that none produced a result of sugar forfeitures or government outlays under the Sugar Loan Program during the respective projection periods. Each scenario produced results that highlighted the differences in market outcomes under each of them, however.

Projected U.S. sugar production under the base scenario and the suspension agreements termination scenario are the same, as the projection assumes that imports from Mexico are replaced by TRQ imports, thus leaving the overall U.S. sugar supply and use balance unchanged. However, U.S. sugar production under the AD/CVD sunset scenario shows less domestic sugar production in the latter portion of the projection period, after duties are removed from sugar from Mexico. The impact to U.S. production is greatest immediately after the removal of duties, as imports from Mexico initially would increase sharply, reducing returns for domestic sugar crop growers. Compared with the base scenario, production levels under the AD/CVD sunset scenario narrow in each successive year, as domestic demand in Mexico is still expected to reduce the amount of exportable supplies that Mexico has available to ship to the United States. This is particularly true for beet sugar production, which can respond to market conditions on an annual basis more readily than cane sugar production. Domestic cane sugar production accounts for the relatively lower production in the final years of the projection period due to the multi-year planting cycle that results in lagged production responses. By 2026/27, projected U.S. sugar production in the AD/CVD sunset scenario is less than the base scenario, but only by 0.1 percent.

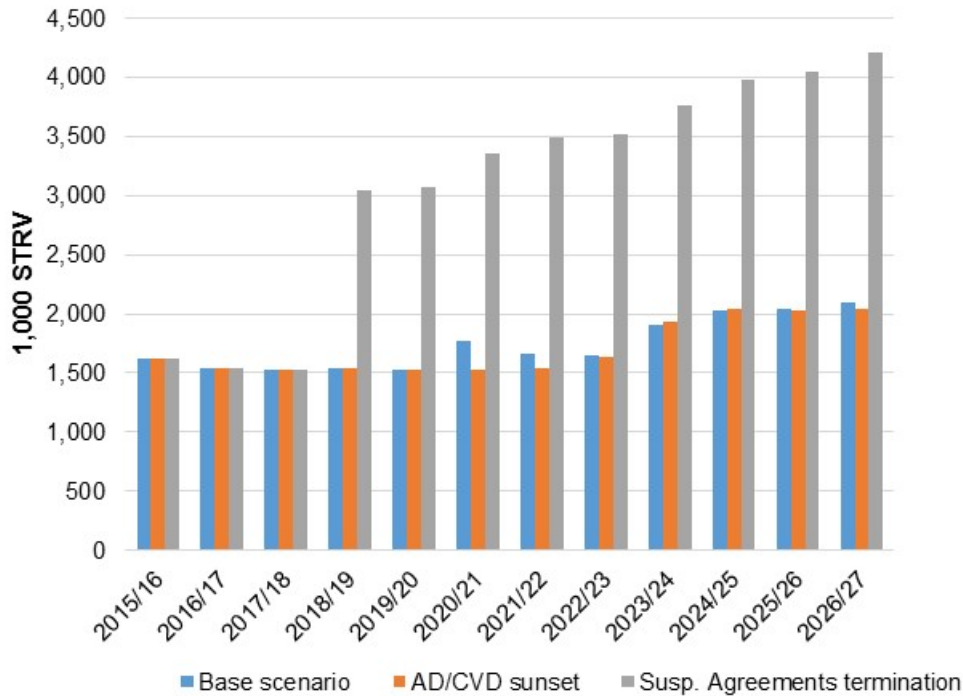
Figure 12
U.S. sugar production projections, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

There are also important distinctions between the scenarios based on the allocation of projected imports, as previously discussed. Under the AD/CVD sunset scenario, projected imports from TRQ programs are relatively similar to the base scenario. Both scenarios show that TRQ imports will have to increase at the end of the projection period in order to meet the growing U.S. use that cannot be fulfilled by available supplies in Mexico. The suspension agreement termination scenario, however, would require substantially more imports under TRQ programs in order to meet the needs of projected U.S. sugar use. Even going outside of the modeling framework of this scenario, where some supplies from Mexico are offset by increased domestic production, there would still be a need for substantially more TRQ imports.

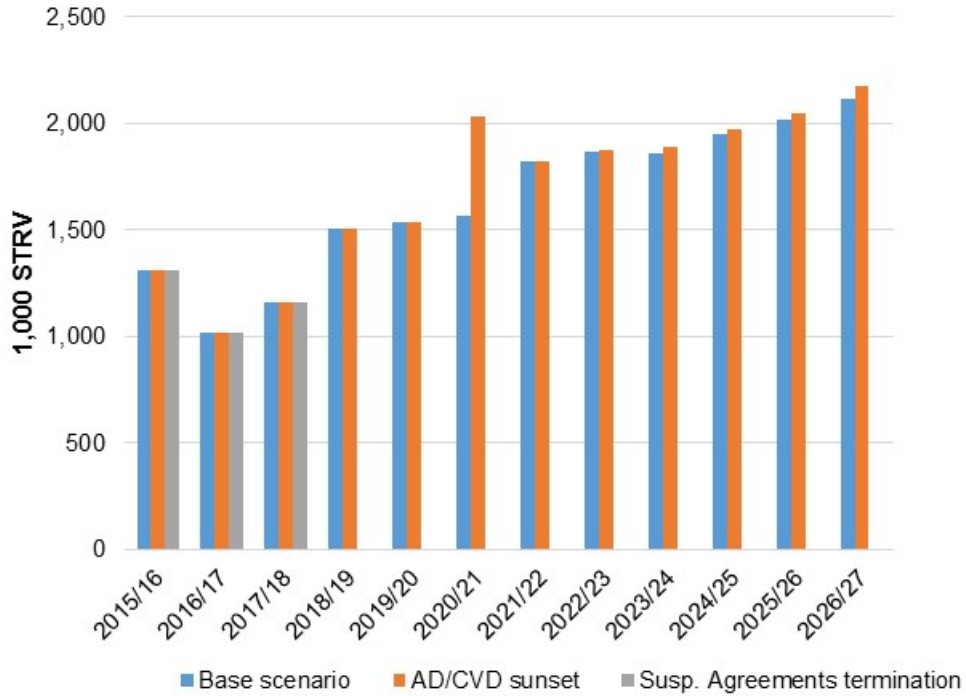
Figure 13
U.S. sugar TRQ import projections, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Projected imports from Mexico under the termination scenario are zero for much of the projection period, unsurprisingly, as duties imposed are modeled to eliminate the economic viability of sugar from Mexico in the United States. Compared with the base scenario, the AD/CVD scenario shows additional imports from Mexico. This result fits with the construct that without price or volume constraints on imports from Mexico, imports would increase. Of note, however, is the initial increase in imports after the sunset scenario as the U.S. and Mexico sugar markets reach a new equilibrium. In subsequent years, imports under the sunset scenario are higher than the base scenario, but not to the same magnitude as the initial year. Under the scenario, the end of the AD/CVD would increase shipments from Mexico to the United States, increase returns for Mexico’s growers, and increase sugar supplies in Mexico. This effect is moderated by the market fundamentals within Mexico of growing domestic demand still outpacing growth in production. As noted, however, this would still have an impact on domestic U.S. sugar crop growers and processors and would have an economic impact throughout the duration of the projection period.

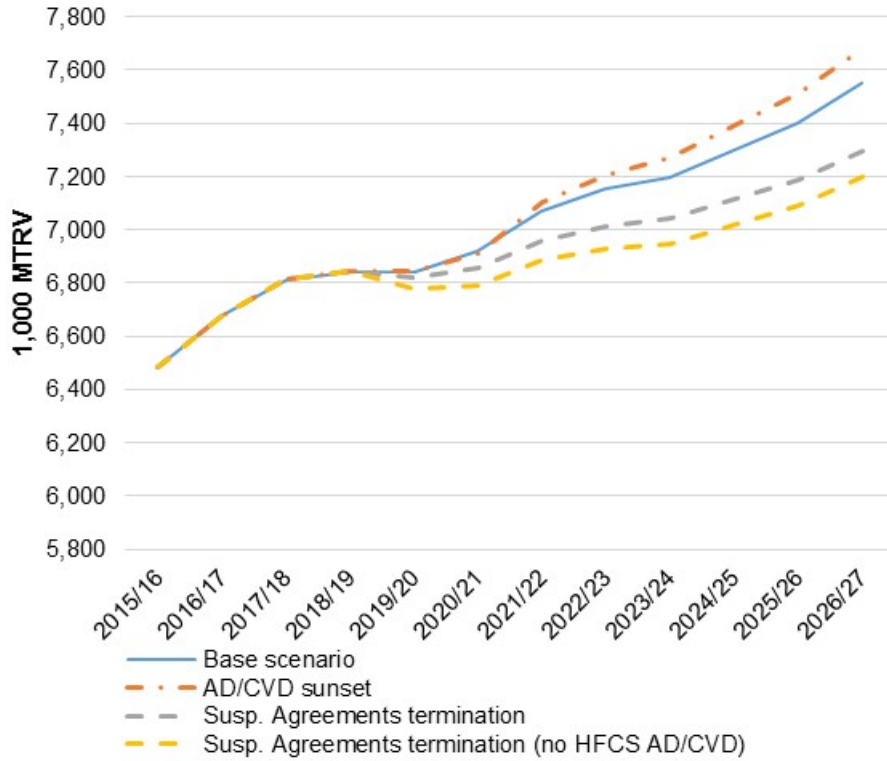
Figure 14
U.S. sugar Mexico import projections, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Finally, the AD/CVD sunset scenario produces results with the largest production levels in Mexico. Again, this is generated by unconstrained shipments to the United States that would improve returns for Mexico sugarcane producers and encourage an expansion of production. The suspension agreement termination scenario results in production levels that are substantially lower than the base scenario, as the domestic Mexican market is required to absorb additional supplies of domestic production, lowering returns for producers.

Figure 15
Mexico sugar production projections, 2015/16 to 2026/27



Source: U.S. Department of Agriculture, Sugar ICEC.

Looking at the impact of potential duties placed on U.S. HFCS within Mexico, the duties would have a positive effect on sugar production, as sugar would make up a larger proportion of domestic caloric sweetener consumption. However, the production levels remain well below the projections under the base scenario, implying that duties on imported HFCS would likely only partially offset the impact of loss of market access to the United States.

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Michael McConnell, (202) 694-5184, michael.mcconnell@ers.usda.gov (coordinator)

Verna Daniels, (202) 694-5301, vblake@ers.usda.gov (web publishing)

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