



Sugar and Sweeteners Outlook

Michael McConnell, coordinator

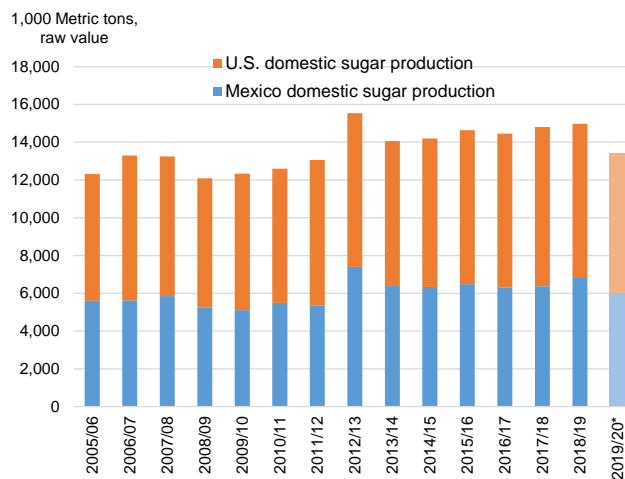
David Olson, contributor

U.S. Sugar Supplies Tighten due to Lower Production in Both United States and Mexico

Mexico sugar production is lowered in the February *World Agricultural Supply and Demand Estimates* (WASDE) due to continued delays of the drought-affected 2019/20 sugarcane crop. Lower production translates to fewer available supplies for export—for both the United States and other countries. Domestic deliveries are unchanged from the previous month, remaining relatively flat from 2018/19 levels.

Fewer projected exports out of Mexico result in fewer expected U.S. sugar supplies. U.S. sugar imports are lowered, as reduced imports from Mexico are only partially offset by an increase in imports under quota programs due to the reallocation of the WTO raw sugar tariff-rate quota. No changes are made to projected U.S. sugar use for 2019/20. As a result, ending stocks are forecast to be relatively smaller for the year.

United States and Mexico sugar production, 2005/06 to 2019/20



* = projected as of February 2020. Source: USDA, World Agricultural Outlook Board.

Mexico Outlook

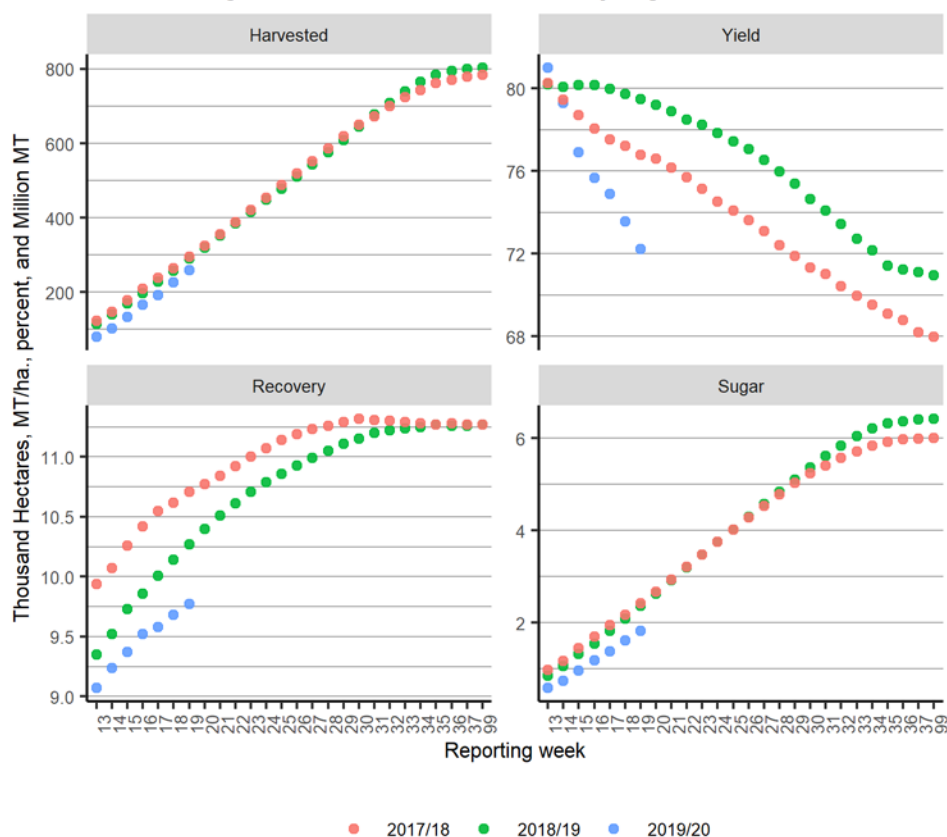
Delayed Harvest Reduces Expected Mexico Sugar Production

Mexico's sugarcane sector experienced widespread drought conditions leading up to the harvest season, which typically correlates with Mexico's seasonal dry period. Some unseasonable rains, however, have also kept harvesters out of the fields at certain times during the year. Both conditions have resulted in a delayed rate of harvest, further reducing the prospects for 2019/20 sugar production in Mexico. Sugar supplies in Mexico are projected to be 6.929 million metric tons, actual value (MT)—a 100,000-MT decrease from the January projection.

Sugar production in Mexico is projected at 5.672 million MT, accounting for the entirety of the reduced supply outlook. Through February 1, the Mexico sugarcane harvest was about 12-percent behind the previous year, based on total hectares harvested. The delayed pace of harvest has combined with lower yields and recovery rates—likely the result of the growing season's drought—to result in significantly less sugar production than in recent years.

Figure 1

Mexico sugarcane cumulative harvest progress



Source: Conadesuca; USDA, Economic Research Service.

Table 1: Mexico sugar supply and use, 2017/18 - 2018/19 and projected 2019/20, February 2020

Items	2017/18	2018/19 (estimate)	2019/20 (forecast)
	1,000 metric tons, actual weight		
Beginning stocks	1,002	1,395	1,169
Production	6,010	6,426	5,672
Imports	220	85	89
Imports for consumption	132	22	24
Imports for sugar-containing product exports, IMMEX 1/, other	88	63	65
Total supply	7,232	7,905	6,929
Disappearance			
Human consumption	4,228	4,092	4,057
For sugar-containing product exports (IMMEX)	482	460	435
Other deliveries and end-of-year statistical adjustment	29	-20	0
Total	4,739	4,532	4,492
Exports	1,099	2,204	1,502
Exports to the United States & Puerto Rico	1,047	856	1,469
Exports to other countries	52	1,348	33
Total use	5,838	6,737	5,994
Ending stocks	1,395	1,169	936
	1,000 metric tons, raw value		
Beginning stocks	1,062	1,478	1,239
Production	6,370	6,811	6,012
Imports	234	90	94
Imports for consumption	140	23	25
Imports for sugar-containing product exports (IMMEX)	93	67	69
Total supply	7,666	8,380	7,345
Disappearance			
Human consumption	4,482	4,337	4,300
For sugar-containing product exports (IMMEX)	510	488	461
Other deliveries and end-of-year statistical adjustment	31	-21	0
Total	5,023	4,804	4,761
Exports	1,165	2,337	1,592
Exports to the United States & Puerto Rico	1,110	908	1,557
Exports to other countries	55	1,429	35
Total use	6,188	7,141	6,353
Ending stocks	1,478	1,239	992
Stocks-to-human consumption (percent)	33.0	28.6	23.1
Stocks-to-use (percent)	23.9	17.3	15.6
High-fructose corn syrup (HFCS) consumption (dry weight)	1,593	1,528	1,520

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.

Conadesuca released its second estimate of the 2019/20 sugarcane crop, based on a survey of mills in Mexico. The second estimate showed lower expectations for yield and recovery than the initial estimate. This was partially offset by raised expectations of harvested area, with the current estimate projecting a record 811,000 hectares expected for this crop.

Table 2: Mexico sugar production, first estimate and final production report, 2014/15 to 2019/20 (forecast)

		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20 (forecast - Feb. 6, 2020)
Harvested Area (hectares)	First Estimate	816,505	801,745	808,218	801,907	822,935	809,212
	Final	783,416	778,930	777,078	784,661	805,511	810,803
Yield (MT/hectare)	First Estimate	67.36	67.70	69.79	69.38	68.80	63.17
	Final	68.42	69.57	68.60	67.89	70.81	62.79
Industrial Recovery (percent)	First Estimate	11.18	11.16	11.29	11.11	11.20	11.29
	Final	11.16	11.29	11.18	11.27	11.27	11.14
Production (MT, actual value)	First Estimate	6,151,372	6,056,025	6,370,922	6,182,273	6,358,193	5,771,680
	Final	5,984,903	6,117,048	5,957,170	6,009,237	6,425,332	5,671,686

Source: Conadesuca.

Historically, Mexico's sugar production season has largely been determined by how long the harvest season lasts. Typically, Mexico's peak harvest season begins to wind down by mid-April and the season is completed by late-June. If dry conditions continue into May and June, allowing for additional area to be harvested and the peak season to be extended for multiple weeks, Mexico's sugar production can be substantially higher. If, however, the rainy season begins earlier, then the harvest will finish sooner, with less production. The 2018/19 crop demonstrated the effects of a year with an extended harvest, as the country's second-largest sugar yield was primarily the result of good harvest conditions that continued and extended the season. It is difficult to forecast the potential of a crop in April and May, however, given that it is so dependent on the short-term weather outlook.

Based on historical performance, Conadesuca's current estimate for record-setting harvested area is likely optimistic given the delays that have already occurred throughout this harvest. Less harvested acres could be offset by higher yields than Conadesuca's latest forecast however, that are still consistent with drought-conditions. Nonetheless, there is a significant probability that Mexico production forecasts may be reduced further in the coming weeks if the current pace of harvest and production is maintained.

Table 3: Mexico sugar production scenarios for the 2019/20 sugarcane crop, February 2020 1/

	Yield (MT/ha.)	62.5	62.79	63	63.5	64	64.5	65	65.5
		<i>Metric tons, actual value</i>							
Harvested area (hectares)	810,803	5,645,491	5,671,686	5,690,655	5,735,819	5,780,983	5,826,147	5,871,311	5,916,474
	800,000	5,570,271	5,596,117	5,614,834	5,659,396	5,703,958	5,748,520	5,793,082	5,837,644
	795,000	5,535,457	5,561,142	5,579,741	5,624,024	5,668,308	5,712,592	5,756,875	5,801,159
	790,000	5,500,643	5,526,166	5,544,648	5,588,653	5,632,658	5,676,664	5,720,669	5,764,674
	785,000	5,465,829	5,491,190	5,509,555	5,553,282	5,597,009	5,640,735	5,684,462	5,728,189
	780,000	5,431,015	5,456,214	5,474,463	5,517,911	5,561,359	5,604,807	5,648,255	5,691,703
	775,000	5,396,200	5,421,239	5,439,370	5,482,540	5,525,709	5,568,879	5,612,048	5,655,218
	770,000	5,361,386	5,386,263	5,404,277	5,447,168	5,490,059	5,532,951	5,575,842	5,618,733
	765,000	5,326,572	5,351,287	5,369,185	5,411,797	5,454,410	5,497,022	5,539,635	5,582,247
	760,000	5,291,758	5,316,312	5,334,092	5,376,426	5,418,760	5,461,094	5,503,428	5,545,762

1/ Shaded results represent totals that are above the current USDA and Conadesuca forecasts.

Source: Conadesuca; USDA, Economic Research Service.

Less Production Results in Reduced Sugar Exports From Mexico for 2019/20

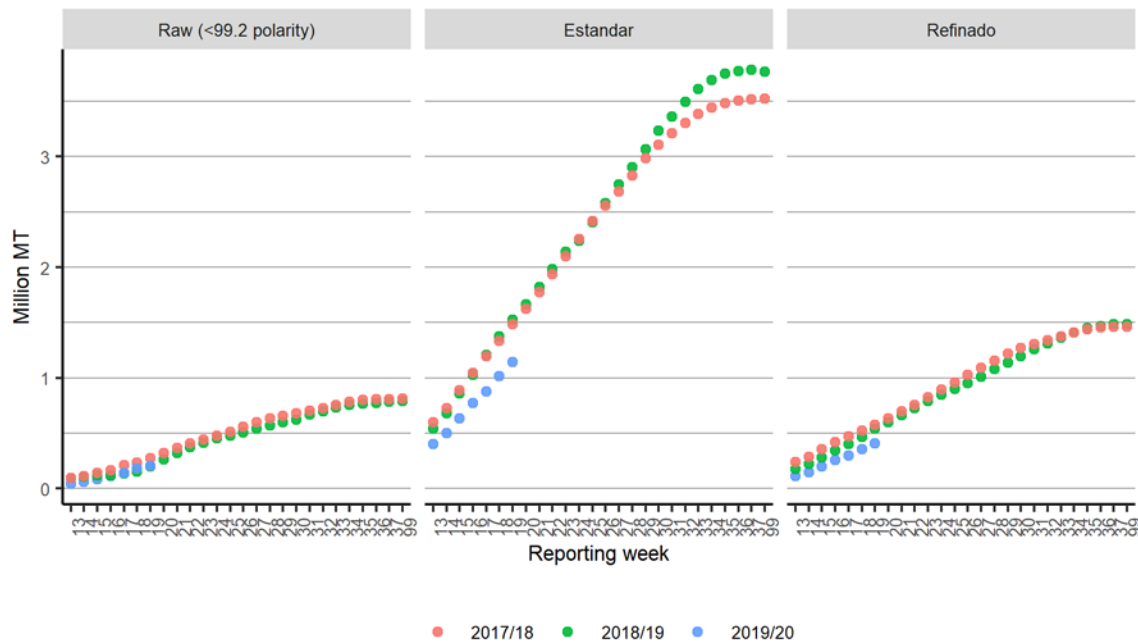
Less available supply in the Mexico sugar market is projected to reduce exports. For 2019/20, Mexico is projected to export 1.502 million MT in total—including 1.469 million MT to the United States and 33,000 MT to other countries. The current forecast represents a 101,000-MT reduction from the January report, including a 94,000-MT reduction in shipments to the United States. The reduction of exports to the United States means that Mexico is currently projected

not to fill its full expected Market Access to the United States, based on the U.S. Needs calculation done by the U.S. Department of Commerce (USDOC) from the December WASDE. Mexico's ultimate Export Limit for 2019/20 will be set by the USDOC's calculation of U.S. Needs from the March WASDE, however.

In addition to the overall volume of the Export Limit, shipments to the United States could be constrained by the structure of Mexico sugar production available. In particular, the current projections would allow Mexico to ship up to 1.028 million MT of raw sugar to the United States—as defined by the Suspension Agreements. This would represent a 26-percent increase from the previous year in production of sugar with less than 99.2 polarity. Through February 1, however, production of low-polarity sugar was only 16 percent higher than in 2018/19. Like the pace of harvest and sugarcane production, the pace of low-polarity sugar production will also have important ramifications for the sugar outlook for both the Mexico and the United States. This specification of sugar is only produced by a handful of Mexico's mills, however. If those operations make adjustments in the coming weeks, the pace could change fairly quickly.

Figure 2

Mexico weekly cumulative sugar production, by type of sugar



Source: Conadesuca; USDA, Economic Research Service.

U.S. Domestic Outlook

Production Outlook Unchanged for 2019/20

After an eventful fall harvest, the U.S. sugar production system has turned to its processing phase. Sugarbeet processors have been slicing sugarbeets stored in piles. Sugarcane processors in Florida and Texas continue to harvest their cane for raw sugar. The sugarcane sector in Louisiana completed its harvest and processing in the first week of January. Domestic production for 2019/20 is projected to total 8.158 million short tons, raw value (STRV), unchanged from the previous month.

Table 4: U.S. sugar: Supply and use, by fiscal year (Oct./Sept.), February 2020

Items	2017/18	2018/19 (estimate)	2019/20 (forecast)	2017/18	2018/19 (estimate)	2019/20 (forecast)
	1,000 Short tons, raw value			1,000 Metric tons, raw value		
Beginning stocks	1,876	2,008	1,783	1,702	1,822	1,617
Total production	9,293	8,999	8,158	8,430	8,163	7,401
Beet sugar	5,279	4,939	4,444	4,789	4,480	4,032
Cane sugar	4,014	4,060	3,713	3,641	3,683	3,369
Florida	1,983	2,005	2,069	1,799	1,819	1,877
Louisiana	1,862	1,907	1,513	1,689	1,730	1,372
Texas	169	147	131	153	134	119
Hawaii	0	0	0	0	0	0
Total imports	3,277	3,070	3,841	2,973	2,785	3,485
Tariff-rate quota imports	1,663	1,541	1,674	1,509	1,398	1,519
Other program imports	326	438	350	296	397	318
Non-program imports	1,287	1,092	1,817	1,168	990	1,648
Mexico	1,223	1,000	1,717	1,110	908	1,557
High-duty	64	91	100	58	83	91
Total supply	14,445	14,077	13,781	13,105	12,770	12,502
Total exports	170	35	35	154	31	32
Miscellaneous	82	28	0	75	26	0
Deliveries for domestic use	12,185	12,231	12,230	11,054	11,096	11,095
Transfer to sugar-containing products for exports under re-export program	110	98	80	100	89	73
Transfer to polyhydric alcohol, feed, other alcohol	28	27	25	25	25	23
Commodity Credit Corporation (CCC) sale for ethanol, other	0	0	0	0	0	0
Deliveries for domestic food and beverage use	12,048	12,106	12,125	10,930	10,982	11,000
Total use	12,438	12,294	12,265	11,283	11,153	11,127
Ending stocks	2,008	1,783	1,516	1,822	1,617	1,375
Private	2,008	1,783	1,516	1,822	1,617	1,375
Commodity Credit Corporation (CCC)	0	0	0	0	0	0
Stocks-to-use ratio	16.14	14.50	12.36	16.14	14.50	12.36

Source: USDA, Economic Research Service, Sugar and Sweetener Outlook.

Cane sugar production projections remain unchanged at 3.713 million STRV—as does the expected production for each respective cane-sugar-producing State. The National Agricultural Statistics Service (NASS) increased its national forecast for sugarcane production for sugar, based on forecasts of more harvested area and higher yields in Florida. Industry reports also supported the sugarcane production increase. However, processors' forecasts and industry reports also indicate that recovery rates are lower than previously expected, negating the sugarcane production increase.

Table 5: U.S. sugarcane and cane sugar production, by State, 2015/16 to 2019/20

	2015/16	2016/17	2017/18	2018/19	2019/20	Annual change Percent
Florida						
Sugarcane harvested for sugar (1,000 acres)	398	392	397	397	395	-0.5
Sugarcane yield (short tons per acre)	42.5	40.3	40.9	41.7	41.6	-0.2
Sugarcane production (1,000 short tons)	16,915	16,120	16,237	16,555	16,432	-0.7
Recovery rate (percent)	12.8	12.7	12.2	12.1	12.6	4.0
Sugar production (1,000 STRV)	2,173	2,055	1,983	2,005	2,069	3.2
Louisiana						
Sugarcane harvested for sugar (1,000 acres)	385	400	414	425	442	4.0
Sugarcane yield (short tons per acre)	29.6	28.8	32.5	35.3	28.5	-19.3
Sugarcane production (1,000 short tons)	11,396	11,520	13,455	15,003	12,597	-16.0
Recovery rate (percent)	12.5	14.2	13.8	12.5	12.0	-3.9
Sugar production (1,000 STRV)	1,428	1,632	1,862	1,875	1,513	-19.3
Texas						
Sugarcane harvested for sugar (1,000 acres)	35	38	41	38	32	-16.2
Sugarcane yield (short tons per acre)	31.4	37.0	36.8	36.6	36.3	-0.8
Sugarcane production (1,000 short tons)	1,105	1,395	1,490	1,376	1,143	-16.9
Recovery rate (percent)	10.5	9.9	11.3	10.7	11.5	7.1
Sugar production (1,000 STRV)	116	138	169	148	131	-11.0

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

Beet sugar production projections for 2019/20 also remain unchanged from the January report, totaling 4.444 million STRV. Through December, data reported by the Farm Service Agency's (FSA) *Sweetener Market Data* (SMD) show that processors' sugar extraction from sliced beets is 14.49 percent. This is slightly below the previous year and the 5-year average. Many processors throughout the country have had to slice weather-damaged beets in the early stages of their slicing campaigns. This is one impact of the challenging harvest conditions in the fall of 2019, with processors accepting damaged sugarbeets that they would reject under more normal conditions. Additionally, processors had to slice those beets quickly, since damaged beets do not store as well as healthy beets. The disproportionate amount of damaged sugarbeets being processed may be slightly skewing the cumulative extraction rate downward, resulting in no change to the current forecast.

Table 6: Beet sugar production projection calculation, 2018/19 and 2019/20

	2015/16	2016/17	2017/18	2018/19	2019/20 January	2019/20 February
Sugarbeet production (1,000 short tons) 1/	35,371	36,881	35,325	33,282	28,600	28,600
Sugarbeet shrink	6.5%	8.3%	7.3%	5.2%	4.0%	4.0%
Sugarbeet sliced (1,000 short tons)	33,066	33,834	32,742	31,561	27,456	27,456
Sugar extraction rate from slice	14.58%	13.72%	15.18%	14.77%	14.58%	14.58%
Sugar from beets slice (1,000 STRV) 2/	4,820	4,643	4,970	4,660	4,003	4,003
Sugar from molasses (1,000 STRV) 2/	380	352	368	352	350	350
Crop-year sugar production (1,000 STRV) 2/	5,201	4,995	5,338	5,012	4,353	4,353
August-September sugar production (1,000 STRV)	688	606	715	655	582	582
August-September sugar production of subsequent crop (1,000 STRV)	606	715	655	582	633	633
Sugar from imported beets (1,000 STRV) 3/	--	--	--	--	40	40
Fiscal year sugar production (1,000 STRV)	5,119	5,103	5,279	4,939	4,444	4,444

1/ USDA, National Agricultural Statistics Service for historical data. 2/ August-July basis. 3/ Sugar from imported beets split out for projections only, included in total once full crop-year slice is recorded. Sugar from imported beets is incorporated into total production in historical data.

Source: USDA, Economic Research Service and World Agricultural Outlook Board.

Reduced Imports from Mexico Partially Offset by Raised Quota Program Imports

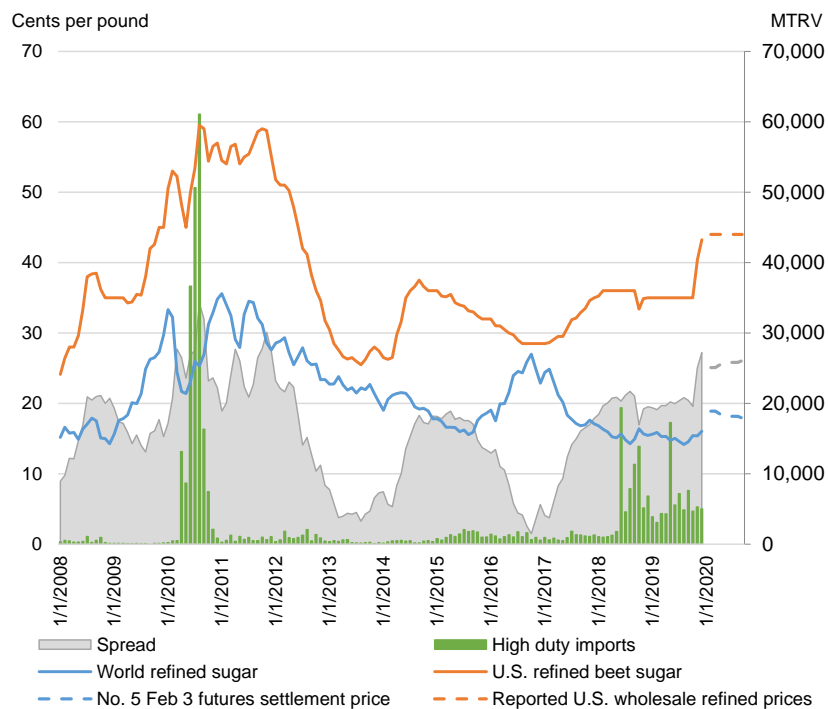
Projected imports are reduced compared with the January forecast, primarily due to the reduction in expected available supplies in Mexico. Total projected imports for 2019/20 are

projected to total 3.841 million STRV, a 40,000-STRV decrease from the January forecast. Imports from Mexico are projected to be 1.717 million STRV, based on the amount of supplies that Mexico will be able to ship to foreign markets while still maintaining targets for supplying its domestic market.

Imports under quota programs are projected to total 1.674 million STRV, a 70,000-STRV increase from the previous month. The United States Trade Representative's office announced on February 6, 2020, that it would reallocate the WTO raw sugar tariff-rate quota (TRQ), shifting allocation from quota holders who did not intend to fill its allocation to quota holders with the capacity to ship additional supplies to the United States. The next effect of the reallocation is to reduce the forecast shortfall from 110,000 STRV to 40,000 STRV.

High-tier imports remain unchanged from the previous month, totaling 100,000 STRV for 2019/20. Refined sugar price levels on the world futures market increased during January, narrowing the differential between U.S. and global refined sugar prices. Nonetheless, the differential is still large enough to allow sugar imports paying out-of-quota duties to be economically viable in most parts of the country—at least on the basis of price. If sugar-users still need to contract or purchase sugar for 2019/20, these imports could increase. Even with the *force majeure* announcements from several domestically sourced sugar producers, most sugar needs have likely been contracted well before market prices increased due to poor harvest conditions in the United States. Any outstanding needs, however, will likely have to be met by foreign-sourced sugar, including imports that pay higher duties.

Figure 3
U.S. and World refined sugar prices, monthly, January 2008 to September 2020



Source: USDA, Economic Research Service.

Deliveries During First Quarter of 2019/20 Down, but Projections Remain Unchanged

Through the first 3 months of 2019/20, U.S. sugar deliveries for food and beverage use totaled 2.952 million STRV—or 2.9 percent lower than the prior year. Much of the decline is due to lower calculated deliveries from nonreporter, direct-consumption imports—which are volatile on a monthly basis. Deliveries from reporting cane refiners and beet processors were 2.7 percent higher than the same period last year. The reported period thus far, however, does not include any deliveries expected to be impacted by the *force major* by several domestically sourced sugar providers. This means that the pace of reporter deliveries is likely to decline, especially for beet sugar processors that were impacted by the reduction in sugarbeet production from poor harvest conditions in the fall of 2019.

Table 7: Food and beverage deliveries, 2014/15 to 2019/20, October through December

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Annual change
	1,000 STRV						Percent
Beet sugar processors	1,200	1,084	1,295	1,372	1,222	1,277	4.5
Cane sugar refiners	1,573	1,617	1,558	1,491	1,597	1,616	1.2
Total reporters	2,773	2,700	2,854	2,863	2,818	2,893	2.7
Nonreporter, direct consumption	42	127	208	180	221	59	-73.3
Total deliveries	2,815	2,827	3,062	3,043	3,039	2,952	-2.9
Final fiscal year deliveries 1/	11,921	11,881	12,102	12,048	12,106	12,125	0.2

1/ Latest WASDE estimate for 2019/20.

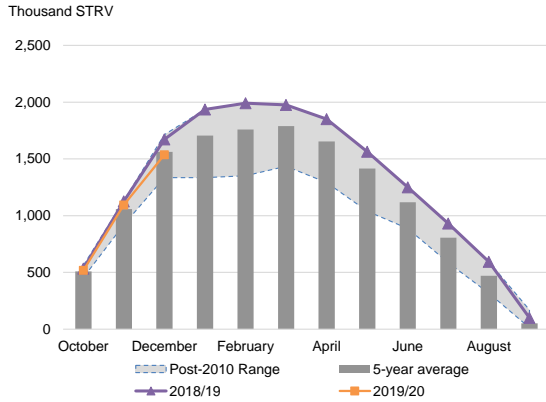
Source: USDA, Farm Service Agency.

The outlook for deliveries in 2019/20 is particularly opaque given the expected tight supplies of beet sugar, the likely shift in domestic capacity toward cane refiners that might test the limits in that sector, and the uncertainties in Mexico's ability to fill its components of the Export Limit, as well as the potential for a substantial increase for high-tier imports. The February WASDE projects food and beverage deliveries at 12.125 million STRV, unchanged from the previous month, and a 0.2-percent increase from 2018/19 deliveries. The current forecast is consistent with the recent trends of lower annual growth in the U.S. sugar market over the past several years. Given the current outlook on production and imports, while sugar supplies may be tight, there does not appear to be any suggestion that the relatively high spot prices would result in sugar buyers reducing their sugar demand or formulations in the near term.

U.S. Inventories Are Tight Through December, Refined Sugar Prices Reflect Tight Market for Remainder of 2019/20

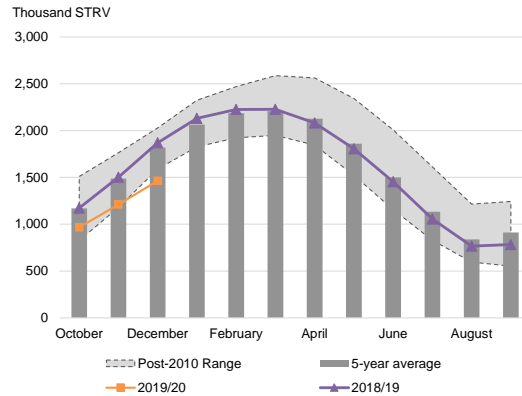
Total sugar inventories totaled 3.893 million STRV on December 31, 2019, 11.1-percent lower than the same period in 2018. The tighter supplies are primarily due to lower supplies held by sugarbeet and sugarcane processors—23-percent and 8-percent lower, respectively. Both segments typically keep very little inventory from year-to-year. With the lower-than-expected production coming from the beet sector and Louisiana sugarcane industry, inventory levels are already well below recent levels. Cane refineries have increased their inventories of both raw and refined sugar (by 14 and 7 percent, respectively). This sector has a much smaller share of the U.S. industry's storage capacity, with much of the raw sugar stored "on the water," so to speak, as cane refineries are expected to demand more raw sugar imports in 2019/20 than recent years.

Figure 4
Sugarcane processors' inventories, monthly, 2016/17 to 2019/20



Source: USDA, Farm Service Agency.

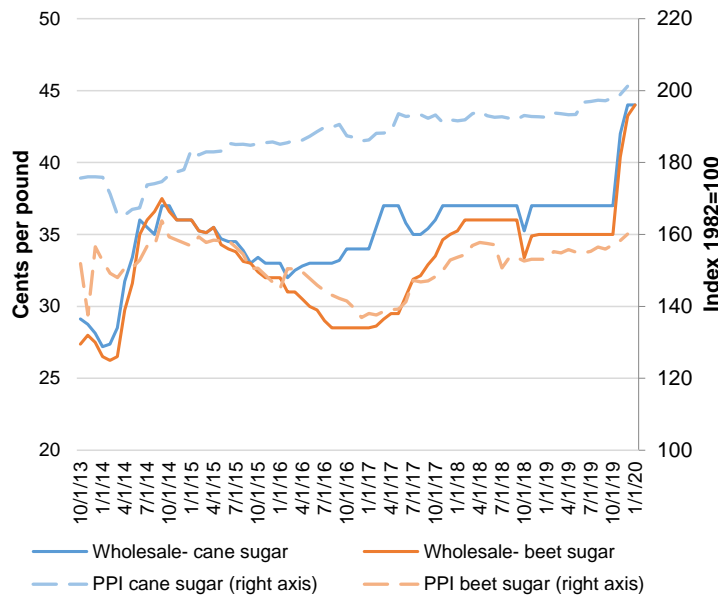
Figure 5
Sugarbeet processors' total sugar inventories, monthly, 2016/17 to 2019/20



Source: USDA, Farm Service Agency.

Spot market prices for wholesale refined Midwestern beet sugar and refined Northeast cane sugar are both at 44 cents per pound through February 8 according to *Milling and Baking News*, compared with 35 and 37 cents a year ago, respectively. The prices increased during the fall sugarbeet harvest season and have remained elevated. While spot prices remain high, it is important to take into account that most sugar is priced through longer-term contracts. The Producer Price Indices for sugar, published by the Bureau of Labor Statistics, do not yet show signs of corresponding increased costs for delivered refined sugar. Those data have only been released through December, however, and could provide additional insight as the year progresses on how much of an impact the tighter supplies will have on delivered costs of refined sugar for users.

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



Source: USDA, Economic Research Service.

Special Article: Long-Term Projections

Long-Term Projection Scenarios and Underlying Assumptions

The USDA released the Agricultural Projections to 2029 tables in November 2019 and its full report in February 2020. Included in these publications are the updated long-term projections for the U.S. sugar program, running through the 2029/30 fiscal year. The projections are developed by the sugar Interagency Commodity Estimates Committee (ICEC) and are used to evaluate the likelihood and amount of costs associated with current U.S. sugar policy programs that are incorporated into the President's annual budget, published by the Office of Management and Budget (OMB).

In addition to the information published in the tables and report, the ICEC also evaluates a number of alternative scenarios. These alternative scenarios are used to test the impact of various market and policy conditions on U.S. sugar programs and the U.S. sugar market. The analysis is based on a bilateral partial-equilibrium model that models the sugar markets in the United States and Mexico. The model treats U.S. and global macroeconomic conditions and world sugar prices as exogenous.

The scenarios evaluated include the following:

- **Baseline** scenario assumes that all agricultural and trade policies in place at the time of the October WASDE remain in place for the remainder of the projection period. This includes the Suspension Agreements governing trade between the United States and Mexico. The scenario also follows the macroeconomic assumptions of the USDA's *Agricultural Projections to 2029/30*.
- The **Raised stocks-to-use** scenario includes the same underlying policy and economic assumptions of the baseline, with the exception that the Export Limit within the Suspension Agreements is calculated to a 14.5-percent stocks-to-use ratio, rather than the baseline's 13.5 percent.
- The **No suspension agreement** scenario assumes that the terms of trade governed by the Suspension Agreement are removed beginning in 2020/21. Trade between the United States and Mexico is, instead, governed on the basis of an equilibrium price between the two markets.
- The **High oil price** and **Low oil price** scenarios follow all the same assumptions of the baseline, with the exception of the macroeconomic oil price projection. Instead, the high-price scenario increases oil prices by 25 percent, while the low-price scenario decreases prices by 25 percent of the baseline. To put this sensitivity in perspective, for 2029/30, the baseline Brent spot price is 121.29 dollars per barrel. The high and low price scenario prices are 151.61 and 90.97 dollars per barrel, respectively. This affects the projections in two ways. First, it alters the world sugar price—as the model projects the world price against oil prices and the Brazilian exchange rate. Second, it affects the costs of production faced by sugarbeet and sugarcane growers, which influences planting and production decisions.

Baseline Scenario

The Baseline scenario results, which are the results published in the *Agricultural Projections to 2029*, show that under the current policy conditions, there is not expected to be any program costs due to forfeitures on sugar loans. Forfeitures occur when U.S. sugar prices are low enough that it is rational for holders of the non-recourse loans to surrender their collateral sugar

to the USDA's Commodity Credit Corporation (CCC) rather than repay the loan, as is allowed under the program. When collateral is forfeited, it requires the USDA to market the sugar as a biofuels feedstock or in another nonfood market, likely at a value lower than its value in the food market.

There are several important economic results in the baseline scenario. First, because sugar in the United States is not sensitive to price or income effects, the growth in sugar deliveries is expected to be driven by population growth and per capita caloric sweetener consumption patterns. Total domestic deliveries are projected to be about 0.3 percent per year for the duration of the period. This is consistent with how the market has performed since 2016/17 and reflects lower growth than witnessed over much of the past decade. The food and beverage market is expected to be the driver of deliveries in the United States, increasing from 12.2 million short tons, raw value (STRV) in 2020/21 to 12.5 million STRV by 2029/30. Exports and other domestic deliveries are projected to remain constant over the course of the projection period.

Table 8: U.S. supply and use projections, baseline scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarbeet harvested area (1,000 acres)	1,095	1,117	1,125	1,138	1,113	1,102	1,087	1,077	1,065	1,055	1,043	1,032
Sugarbeet yield (short tons/acre)	30.3	30.1	31.8	32.2	32.5	32.9	33.2	33.6	33.9	34.2	34.5	34.8
Sugarcane harvested area (1,000 acres)	860	883	879	879	877	876	875	875	875	874	875	875
Sugarcane yield (short tons/acre)	38.3	37.7	36.4	36.6	36.8	37.0	37.2	37.4	37.6	37.8	38.0	38.2
<i>1,000 short tons, raw value</i>												
Beginning stocks	2,008	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705
Total production	8,935	9,184	9,444	9,611	9,593	9,639	9,666	9,716	9,761	9,811	9,855	9,904
Beet sugar	4,907	5,055	5,312	5,444	5,392	5,405	5,398	5,412	5,419	5,431	5,435	5,444
Cane sugar	4,028	4,129	4,131	4,168	4,200	4,234	4,268	4,304	4,341	4,380	4,420	4,460
Total imports	3,067	3,165	2,776	2,779	2,841	2,835	2,845	2,829	2,816	2,795	2,777	2,749
TRQ-entries	1,540	1,627	1,583	1,587	1,591	1,594	1,598	1,602	1,606	1,609	1,613	1,617
Other program imports	438	350	350	350	350	350	350	350	350	350	350	350
Non-program imports	1,089	1,188	843	842	900	890	897	878	861	836	814	782
Mexico	997	1,118	790	795	855	847	855	836	820	796	774	744
High tier	93	70	53	47	45	44	43	42	41	40	39	38
Total supply	14,010	14,074	14,004	14,056	14,105	14,151	14,194	14,234	14,270	14,303	14,333	14,359
Total exports	35	35	35	35	35	35	35	35	35	35	35	35
Deliveries for domestic use	12,250	12,255	12,303	12,349	12,393	12,433	12,471	12,506	12,538	12,567	12,593	12,616
Reexport program	100	80	80	80	80	80	80	80	80	80	80	80
Transfer to polyhydric alcohol, feed, ethanol	25	25	25	25	25	25	25	25	25	25	25	25
Deliveries for domestic food and beverage use	12,125	12,150	12,198	12,244	12,288	12,328	12,366	12,401	12,433	12,462	12,488	12,511
Total use	12,285	12,290	12,338	12,384	12,428	12,468	12,506	12,541	12,573	12,602	12,628	12,651
Ending stocks	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705	1,708
Privately owned	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705	1,708
CCC	0	0	0	0	0	0	0	0	0	0	0	0
Stocks-to-use ratio	14.0	14.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
World raw sugar price (U.S. cents per pound)	11.62	12.67	13.55	14.53	15.03	15.45	15.79	16.08	16.43	16.72	17.05	17.36
Raw sugar price, 3q No. 16 (U.S. cents per pound)	25.70	25.36	26.76	27.28	27.54	27.75	27.91	28.05	28.22	28.35	28.50	28.65
Refined beet sugar price, 3q Midwest (U.S. cents per pound)	35.00	35.00	35.26	35.92	36.25	36.52	36.73	36.91	37.13	37.30	37.50	37.68
Sugarbeet price (U.S. dollars per short ton)	35.50	50.66	50.86	49.63	52.31	51.84	52.61	52.61	52.90	52.81	53.06	52.96
Sugarcane price (U.S. dollars per short ton)	33.40	32.58	36.38	36.95	37.39	37.80	38.20	38.58	38.98	39.36	39.76	40.15

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

Table 9: Mexico sugar supply and use projections, baseline scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarcane harvested area (1,000 hectares)	806	806	814	819	822	823	823	822	820	818	814	810
Sugarcane yield (metric tons/hectare)	70.8	67.0	67.4	67.8	68.2	68.6	69.0	69.5	69.9	70.3	70.7	71.1
<i>1,000 metric tons, actual value</i>												
Beginning stocks	1,394	1,148	963	961	965	982	982	985	981	978	972	966
Production	6,426	6,065	6,178	6,221	6,297	6,339	6,384	6,418	6,436	6,456	6,465	6,471
Imports	86	70	70	70	70	70	70	70	70	70	70	70
Total supply	7,906	7,283	7,211	7,252	7,332	7,391	7,436	7,473	7,487	7,504	7,507	7,507
Disappearance												
Human consumption	4,140	4,199	4,214	4,226	4,237	4,247	4,254	4,259	4,262	4,264	4,263	4,260
Other consumption	425	425	425	425	425	425	425	425	425	425	425	425
Total domestic deliveries	4,565	4,624	4,639	4,651	4,662	4,672	4,679	4,684	4,687	4,689	4,688	4,685
Exports	2,194	1,695	1,611	1,636	1,687	1,738	1,772	1,808	1,822	1,843	1,853	1,864
To the United States	853	957	676	680	732	725	732	716	702	681	663	637
To rest of world	1,341	739	935	956	955	1,013	1,040	1,092	1,120	1,162	1,190	1,227
Total use	6,759	6,320	6,250	6,287	6,350	6,409	6,450	6,492	6,509	6,532	6,541	6,549
Ending stocks	1,148	963	961	965	982	982	985	981	978	972	966	958
Stocks-to-human consumption	27.7%	22.9%	22.8%	22.8%	23.2%	23.1%	23.2%	23.0%	22.9%	22.8%	22.7%	22.5%
Stocks-to-use	17.0%	15.2%	15.4%	15.3%	15.5%	15.3%	15.3%	15.1%	15.0%	14.9%	14.8%	14.6%
HFCS consumption (1,000 metric tons, dry weight)	1,520	1,520	1,555	1,590	1,625	1,661	1,697	1,732	1,768	1,805	1,841	1,877

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

Domestic sugar production is projected to increase 0.4 percent over the course of the baseline period, from 9.6 million STRV in 2020/21 to 9.9 million STRV in 2029/30. Beet sugar production is expected to increase a slight 0.1 percent, as increasing field and factory yields will more than offset gradually lower harvested area. The trend in harvested area is reflective of higher expected input costs, driven by higher oil prices. Cane sugar production is projected to increase slightly more, 0.7 percent, as it is less responsive to increased input costs. The growth in cane sugar production is also expected to be from field and factory yields, as harvested area remains essentially flat over the projection period.

Imports are also projected to steadily increase in the beginning of the projection period, peak in 2024/25, and then steadily decline until the end of the period. This is due to the growth in use initially outpacing domestic production, before domestic production eventually catches up with expected demand. Program imports, which include imports through quotas, free-trade agreements (FTAs), and the re-export program, are expected to increase slightly due to increases scheduled within individual FTAs. Most of the changes in imports, however, are from imports from Mexico, governed by the Suspension Agreements, with Mexico's market access corresponding to the agreements' calculation of U.S. Needs. Like total imports, imports from Mexico are projected to increase through 2024/25, before steadily falling—leading to a net growth rate of -1.5 percent per year.

Given the steady projected stocks-to-use ratio of 13.5 percent, U.S. sugar prices are projected to steadily increase, although at a modest rate. Wholesale refined beet sugar prices are projected to start at just under 36 cents per pound in 2020/21 and rise to just under 38 cents per pound by 2029/30. Similar trends are seen in raw sugar prices, as well as crop prices, with sugarcane prices increasing at a higher rate than sugarbeet prices.

For Mexico, the baseline scenario shows production and exports increasing, at 0.3 and 1.1 percent, respectively. Production is growth is driven by yield increases, particularly in the second half of the projection period when exports to the United States begin to decline and shift toward other, less-valuable foreign markets. By the end of the projection period, Mexico's exports to non-U.S. destinations comes close to—but does not quite match—the total that was achieved in 2018/19.

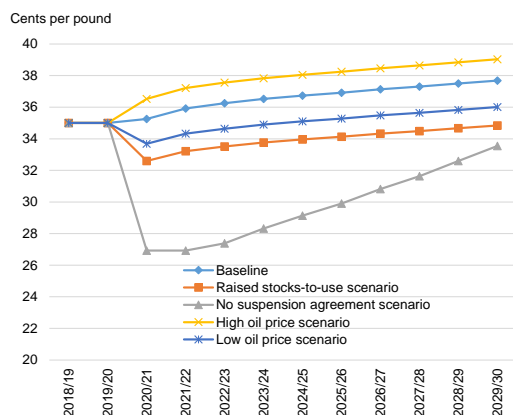
Mexico domestic deliveries are projected to remain relatively flat. Deliveries for domestic human consumption are projected to remain about 4.3 million metric tons, actual value (MT),

throughout the period. Consumption of high-fructose corn syrup (HFCS) is projected to steadily increase at a rate of 1.6 percent, keeping total caloric sweetener deliveries in line with population growth.

Results From the Alternative Scenarios

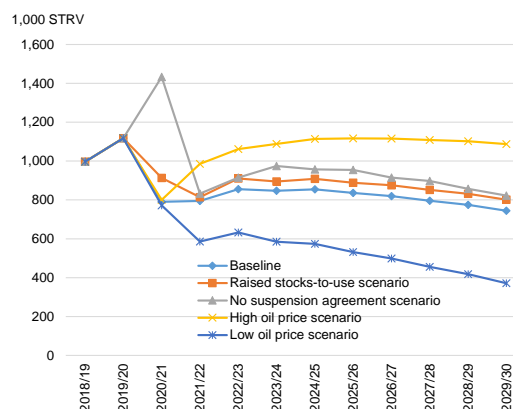
The alternative scenarios demonstrate how the U.S. market would be sensitive to changes in the underlying market and policy conditions. For instance, price levels vary by scenario. The most dramatic change would be if the Suspension Agreements were removed and trade between the United States and Mexico were governed by an equilibrium price. The result would be a substantial increase in imports from Mexico, particularly in the initial year of the policy change. Subsequent years project that imports from Mexico would be higher than the baseline, but to a much smaller degree. The resulting initial increase in supplies would mean a drop in prices during the transition, followed by prices steadily recovering to levels closer to—but still below—the baseline scenario as supplies gradually tightened in both markets. This scenario is the only one that would likely trigger forfeitures under the sugar loan program, with only the first year resulting in an estimated 84,000 STRV of sugar being diverted to the Feedstock Flexibility Program. All other scenarios project no costs under the U.S. sugar program. Prices would also respond under the other scenarios, although the prices remain in a relatively narrow range, with 2029/30 prices ranging from just under 35 cents per pound in the Raised stocks-to-use scenario to 39 cents per pound under the High oil prices scenario.

Figure 7
Wholesale refined beet sugar price projections, 2018/19 to 2029/30



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

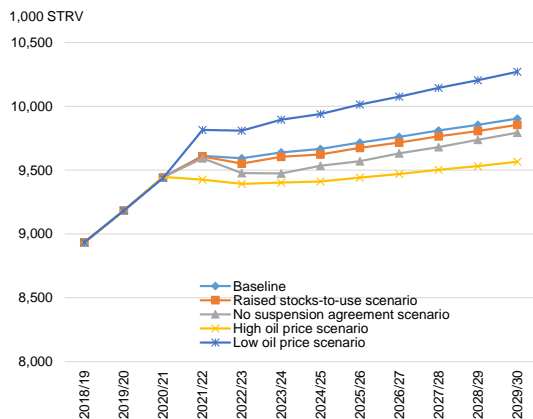
Figure 8
U.S. sugar imports from Mexico projections, 2018/19 to 2029/30



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

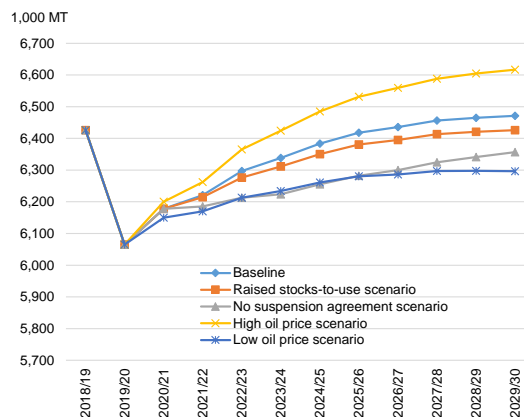
Production levels would also vary depending on the underlying assumptions. For both the United States and Mexico, the extremes are represented by the High and Low oil price scenarios. With the price of oil affecting both world sugar prices and the costs-of-production for all producers, these scenarios have diverging results for sugarcane and sugarbeet growers in the United States and Mexico.

Figure 9
U.S. domestic sugar production projections, 2018/19 to 2029/30



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

Figure 10
Mexico sugar production projections, 2018/19 to 2029/30



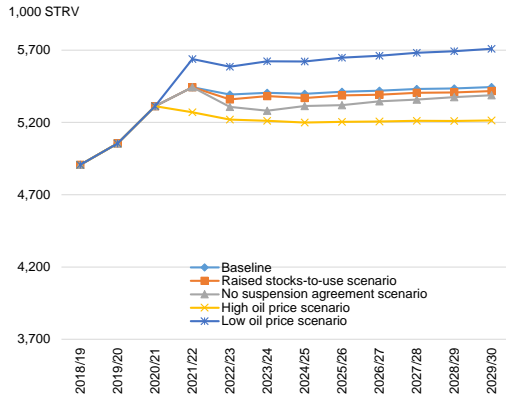
Source: USDA, Economic Research Service; USDA, World Agricultural Outlook Board.

Under market conditions with higher oil prices, the United States would produce less sugar in each year moving forward. This is because growers would face higher average costs and would therefore harvest fewer acres. Conversely, because there would be a greater domestic supply deficit in the United States, Mexico would increase its harvested area to export more sugar to its preferred foreign market. Although Mexico growers would also be facing higher costs, the returns of exporting to the United States would outweigh the added cost and encourage expansion.

The opposite would be true under the Low oil price scenario. Lower input costs would encourage U.S. growers to expand area and satisfy a higher proportion of domestic demand. This would result in less demand for imported sugar, and reduced harvested area in Mexico, relative to the baseline scenario.

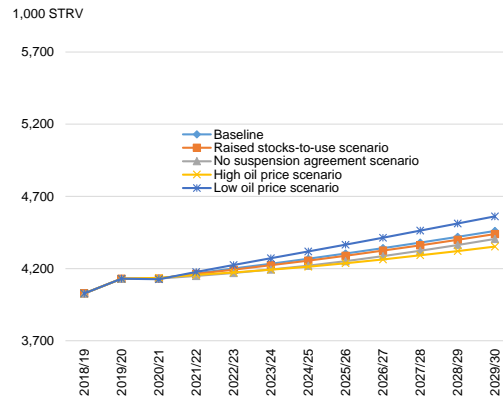
Due to differences in agronomic conditions, sugarbeet and sugarcane growers respond differently to market conditions. All scenarios result in the majority of domestic sugar production coming from the sugarbeet sector—as has been the case historically. The beet sector is much more responsive to changes in market conditions, however. Altering the costs-of-production result in the significant changes to the market projections. Increasing oil prices results in the sugarbeet sector reducing its harvested area; although productivity gains would continue to be made, mitigating the decline in area. The sugarcane sector is projected to have a narrower range of outcomes across the different scenarios. While the cane sector is projected to remain the smaller of the two sugar-producing industries, growth is projected across all modeled scenarios. Cane sugar production would increase as much as 0.9 percent per year under the Low oil prices and little as 0.5 percent under High oil prices.

Figure 11
U.S. beet sugar production projections, 2018/19 to 2029/30



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

Figure 12
U.S. cane sugar production projections, 2018/19 to 2029/30



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

Full Results Tables for the Alternative Scenarios

Full results are presented for the United States and Mexico under the scenarios below:

Table 10: U.S. supply and use projections, raised stocks-to-use scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarbeet harvested area (1,000 acres)	1,095	1,117	1,125	1,138	1,107	1,097	1,081	1,072	1,060	1,049	1,038	1,027
Sugarbeet yield (short tons/acre)	30.3	30.1	31.8	32.2	32.5	32.9	33.2	33.6	33.9	34.2	34.5	34.8
Sugarcane harvested area (1,000 acres)	860	883	879	878	876	874	873	872	871	871	871	871
Sugarcane yield (short tons/acre)	38.3	37.7	36.4	36.6	36.8	37.0	37.2	37.4	37.6	37.8	38.0	38.2
<i>1,000 short tons, raw value</i>												
Beginning stocks	2,008	1,725	1,784	1,789	1,796	1,802	1,808	1,813	1,818	1,823	1,827	1,831
Total production	8,935	9,184	9,444	9,607	9,552	9,605	9,624	9,675	9,716	9,765	9,807	9,856
Beet sugar	4,907	5,055	5,312	5,444	5,359	5,382	5,369	5,387	5,392	5,404	5,408	5,417
Cane sugar	4,028	4,129	4,131	4,163	4,193	4,223	4,255	4,289	4,324	4,361	4,399	4,438
Total imports	3,067	3,165	2,899	2,783	2,882	2,869	2,887	2,871	2,861	2,841	2,825	2,798
TRQ-entries	1,540	1,627	1,583	1,587	1,591	1,594	1,598	1,602	1,606	1,609	1,613	1,617
Other program imports	438	350	350	350	350	350	350	350	350	350	350	350
Non-program imports	1,089	1,188	966	847	941	925	939	919	906	881	861	831
Mexico	997	1,118	913	815	910	894	909	889	876	851	831	801
High tier	93	70	53	32	31	31	30	30	30	30	30	30
Total supply	14,010	14,074	14,127	14,180	14,230	14,276	14,319	14,359	14,396	14,429	14,459	14,485
Total exports	35	35	35	35	35	35	35	35	35	35	35	35
Deliveries for domestic use	12,250	12,255	12,303	12,349	12,393	12,433	12,471	12,506	12,538	12,567	12,593	12,616
Reexport program	100	80	80	80	80	80	80	80	80	80	80	80
Transfer to polyhydric alcohol, feed, ethanol	25	25	25	25	25	25	25	25	25	25	25	25
Deliveries for domestic food and beverage use	12,125	12,150	12,198	12,244	12,288	12,328	12,366	12,401	12,433	12,462	12,488	12,511
Total use	12,285	12,290	12,338	12,384	12,428	12,468	12,506	12,541	12,573	12,602	12,628	12,651
Ending stocks	1,725	1,784	1,789	1,796	1,802	1,808	1,813	1,818	1,823	1,827	1,831	1,834
Privately owned	1,725	1,784	1,789	1,796	1,802	1,808	1,813	1,818	1,823	1,827	1,831	1,834
CCC	0	0	0	0	0	0	0	0	0	0	0	0
Stocks-to-use ratio	14.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
World raw sugar price (U.S. cents per pound)	11.62	12.67	13.55	14.53	15.03	15.45	15.79	16.08	16.43	16.72	17.05	17.36
Raw sugar price, 3q No. 16 (U.S. cents per pound)	25.70	25.36	25.84	26.34	26.59	26.79	26.95	27.08	27.24	27.37	27.52	27.66
Refined beet sugar price, 3q Midwest (U.S. cents per pound)	35.00	35.00	32.59	33.21	33.52	33.77	33.96	34.13	34.33	34.49	34.67	34.84
Sugarbeet price (U.S. dollars per short ton)	35.50	50.66	50.86	47.29	50.53	49.73	50.68	50.56	50.92	50.79	51.05	50.94
Sugarcane price (U.S. dollars per short ton)	33.40	32.58	35.88	36.44	36.87	37.28	37.67	38.05	38.44	38.82	39.21	39.60

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

Table 11: Mexico sugar supply and use projections, raised stocks-to-use scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarcane harvested area (1,000 hectares)	806	806	814	818	819	820	819	818	815	812	809	805
Sugarcane yield (metric tons/hectare)	70.8	67.0	67.4	67.8	68.2	68.6	69.0	69.5	69.9	70.3	70.7	71.1
<i>1,000 metric tons, actual value</i>												
Beginning stocks	1,394	1,148	963	993	970	997	994	999	995	992	986	981
Production	6,426	6,065	6,178	6,215	6,276	6,311	6,350	6,381	6,395	6,414	6,421	6,426
Imports	86	70	70	70	70	70	70	70	70	70	70	70
Total supply	7,906	7,283	7,211	7,278	7,316	7,378	7,414	7,450	7,460	7,476	7,477	7,477
Disappearance												
Human consumption	4,140	4,199	4,214	4,226	4,237	4,247	4,254	4,259	4,262	4,264	4,263	4,260
Other consumption	425	425	425	425	425	425	425	425	425	425	425	425
Total domestic deliveries	4,565	4,624	4,639	4,651	4,662	4,672	4,679	4,684	4,687	4,689	4,688	4,685
Exports	2,194	1,695	1,579	1,656	1,657	1,712	1,737	1,771	1,781	1,801	1,808	1,819
To the United States	853	957	782	697	779	766	778	761	750	729	712	686
To rest of world	1,341	739	797	959	878	946	958	1,010	1,031	1,072	1,097	1,133
Total use	6,759	6,320	6,218	6,308	6,320	6,384	6,415	6,455	6,468	6,490	6,496	6,504
Ending stocks	1,148	963	993	970	997	994	999	995	992	986	981	973
Stocks-to-human consumption	27.7%	22.9%	23.6%	22.9%	23.5%	23.4%	23.5%	23.4%	23.3%	23.1%	23.0%	22.8%
Stocks-to-use	17.0%	15.2%	16.0%	15.4%	15.8%	15.6%	15.6%	15.4%	15.3%	15.2%	15.1%	15.0%
HFCS consumption (1,000 metric tons, dry weight)	1,520	1,520	1,555	1,590	1,625	1,661	1,697	1,732	1,768	1,805	1,841	1,877

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

Table 12: U.S. supply and use projections, suspension agreement removal scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarbeet harvested area (1,000 acres)	1,095	1,117	1,125	1,138	1,096	1,077	1,070	1,058	1,051	1,040	1,031	1,022
Sugarbeet yield (short tons/acre)	30.3	30.1	31.8	32.2	32.5	32.9	33.2	33.6	33.9	34.2	34.5	34.8
Sugarcane harvested area (1,000 acres)	860	883	879	875	871	868	866	864	863	863	863	864
Sugarcane yield (short tons/acre)	38.3	37.7	36.4	36.6	36.8	37.0	37.2	37.4	37.6	37.8	38.0	38.2
<i>1,000 short tons, raw value</i>												
Beginning stocks	2,008	1,725	1,784	2,308	2,231	2,166	2,121	2,085	2,051	2,011	1,976	1,937
Total production	8,935	9,184	9,444	9,593	9,477	9,474	9,534	9,571	9,632	9,681	9,738	9,793
Beet sugar	4,907	5,055	5,312	5,443	5,307	5,281	5,313	5,319	5,345	5,357	5,375	5,389
Cane sugar	4,028	4,129	4,131	4,150	4,169	4,193	4,221	4,252	4,286	4,324	4,363	4,405
Total imports	3,067	3,165	3,418	2,799	2,885	2,949	2,935	2,936	2,901	2,887	2,851	2,819
TRQ- entries	1,540	1,627	1,583	1,587	1,591	1,594	1,598	1,602	1,606	1,609	1,613	1,617
Other program imports	438	350	350	350	350	350	350	350	350	350	350	350
Non-program imports	1,089	1,188	1,485	862	945	1,005	987	984	945	927	887	852
Mexico	997	1,118	1,432	832	915	975	957	954	915	897	857	822
High tier	93	70	53	30	30	30	30	30	30	30	30	30
Total supply	14,010	14,074	14,646	14,700	14,593	14,590	14,591	14,592	14,584	14,578	14,565	14,549
Total exports	35	35	35	35	35	35	35	35	35	35	35	35
Deliveries for domestic use	12,250	12,255	12,303	12,433	12,393	12,433	12,471	12,506	12,538	12,567	12,593	12,616
Reexport program	100	80	80	80	80	80	80	80	80	80	80	80
Transfer to polyhydric alcohol, feed, ethanol	25	25	25	109	25	25	25	25	25	25	25	25
Deliveries for domestic food and beverage use	12,125	12,150	12,198	12,244	12,288	12,328	12,366	12,401	12,433	12,462	12,488	12,511
Total use	12,285	12,290	12,338	12,468	12,428	12,468	12,506	12,541	12,573	12,602	12,628	12,651
Ending stocks	1,725	1,784	2,308	2,231	2,166	2,121	2,085	2,051	2,011	1,976	1,937	1,898
Privately owned	1,725	1,784	2,224	2,231	2,166	2,121	2,085	2,051	2,011	1,976	1,937	1,898
CCC	0	0	84	0	0	0	0	0	0	0	0	0
Stocks-to-use ratio	14.0	14.5	18.7	17.9	17.4	17.0	16.7	16.4	16.0	15.7	15.3	15.0
World raw sugar price (U.S. cents per pound)	11.62	12.67	13.55	14.53	15.03	15.45	15.79	16.08	16.43	16.72	17.05	17.36
Raw sugar price, 3q No. 16 (U.S. cents per pound)	25.70	25.36	22.80	23.75	24.29	24.76	25.16	25.53	25.96	26.34	26.77	27.19
Refined beet sugar price, 3q Midwest (U.S. cents per pound)	35.00	35.00	26.93	26.93	27.39	28.33	29.14	29.90	30.82	31.64	32.59	33.55
Sugarbeet price (U.S. dollars per short ton)	35.50	50.46	50.81	43.83	43.63	45.83	45.94	47.25	47.57	48.40	48.97	49.61
Sugarcane price (U.S. dollars per short ton)	33.40	32.58	34.15	34.99	35.58	36.14	36.66	37.17	37.72	38.23	38.79	39.34

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

Table 13: Mexico sugar supply and use projections, suspension agreement removal scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarcane harvested area (1,000 hectares)	806	806	814	814	811	808	807	805	803	801	799	796
Sugarcane yield (metric tons/hectare)	70.8	67.0	67.4	67.8	68.2	68.6	69.0	69.5	69.9	70.3	70.7	71.1
<i>1,000 metric tons, actual value</i>												
Beginning stocks	1,394	1,148	963	1,044	1,047	1,049	1,051	1,053	1,054	1,055	1,055	1,055
Production	6,426	6,065	6,178	6,185	6,213	6,223	6,255	6,282	6,300	6,325	6,341	6,357
Imports	86	70	70	70	70	70	70	70	70	70	70	70
Total supply	7,906	7,283	7,211	7,299	7,329	7,342	7,376	7,405	7,424	7,449	7,466	7,482
Disappearance												
Human consumption	4,140	4,199	4,214	4,226	4,237	4,247	4,254	4,259	4,262	4,264	4,263	4,260
Other consumption	425	425	425	425	425	425	425	425	425	425	425	425
Total domestic deliveries	4,565	4,624	4,639	4,651	4,662	4,672	4,679	4,684	4,687	4,689	4,688	4,685
Exports	2,194	1,695	1,529	1,601	1,618	1,620	1,645	1,667	1,682	1,706	1,723	1,742
To the United States	853	957	1,226	712	783	835	819	817	784	768	734	704
To rest of world	1,341	739	302	888	835	785	825	850	899	938	989	1,039
Total use	6,759	6,320	6,167	6,252	6,280	6,291	6,324	6,351	6,369	6,394	6,411	6,427
Ending stocks	1,148	963	1,044	1,047	1,049	1,051	1,053	1,054	1,055	1,055	1,055	1,054
Stocks-to-human consumption	27.7%	22.9%	24.8%	24.8%	24.8%	24.8%	24.7%	24.7%	24.7%	24.7%	24.7%	24.7%
Stocks-to-use	17.0%	15.2%	16.9%	16.7%	16.7%	16.7%	16.6%	16.6%	16.6%	16.5%	16.5%	16.4%
HFCS consumption (1,000 metric tons, dry weight)	1,520	1,520	1,555	1,590	1,625	1,661	1,697	1,732	1,768	1,805	1,841	1,877

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

Table 14: U.S. supply and use projections, high oil price scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarbeet harvested area (1,000 acres)	1,095	1,117	1,125	1,102	1,078	1,063	1,047	1,035	1,023	1,012	1,000	989
Sugarbeet yield (short tons/acre)	30.3	30.1	31.8	32.2	32.5	32.9	33.2	33.6	33.9	34.2	34.5	34.8
Sugarcane harvested area (1,000 acres)	860	883	880	876	872	868	864	861	859	857	855	854
Sugarcane yield (short tons/acre)	38.3	37.7	36.4	36.6	36.8	37.0	37.2	37.4	37.6	37.8	38.0	38.2
<i>1,000 short tons, raw value</i>												
Beginning stocks	2,008	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705
Total production	8,935	9,184	9,448	9,426	9,392	9,403	9,412	9,441	9,470	9,503	9,532	9,567
Beet sugar	4,907	5,055	5,312	5,270	5,219	5,211	5,199	5,204	5,207	5,211	5,210	5,214
Cane sugar	4,028	4,129	4,135	4,156	4,173	4,192	4,213	4,237	4,264	4,292	4,322	4,353
Total imports	3,067	3,165	2,772	2,964	3,041	3,070	3,099	3,104	3,107	3,103	3,100	3,087
TRQ- entries	1,540	1,627	1,583	1,587	1,591	1,594	1,598	1,602	1,606	1,609	1,613	1,617
Other program imports	438	350	350	350	350	350	350	350	350	350	350	350
Non-program imports	1,089	1,188	839	1,028	1,101	1,126	1,151	1,152	1,151	1,143	1,136	1,120
Mexico	997	1,118	800	985	1,061	1,088	1,114	1,116	1,116	1,109	1,102	1,087
High tier	93	70	39	43	40	38	37	36	36	35	34	33
Total supply	14,010	14,074	14,004	14,056	14,105	14,151	14,194	14,234	14,270	14,303	14,333	14,359
Total exports	35	35	35	35	35	35	35	35	35	35	35	35
Deliveries for domestic use	12,250	12,255	12,303	12,349	12,393	12,433	12,471	12,506	12,538	12,567	12,593	12,616
Reexport program	100	80	80	80	80	80	80	80	80	80	80	80
Transfer to polyhydric alcohol, feed, ethanol	25	25	25	25	25	25	25	25	25	25	25	25
Deliveries for domestic food and beverage use	12,125	12,150	12,198	12,244	12,288	12,328	12,366	12,401	12,433	12,462	12,488	12,511
Total use	12,285	12,290	12,338	12,384	12,428	12,468	12,506	12,541	12,573	12,602	12,628	12,651
Ending stocks	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705	1,708
Privately owned	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705	1,708
CCC	0	0	0	0	0	0	0	0	0	0	0	0
Stocks-to-use ratio	14.0	14.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
World raw sugar price (U.S. cents per pound)	11.62	14.45	15.45	16.57	17.14	17.63	18.01	18.34	18.74	19.07	19.44	19.80
Raw sugar price, 3q No. 16 (U.S. cents per pound)	25.70	25.36	27.75	28.28	28.55	28.76	28.93	29.08	29.25	29.39	29.55	29.70
Refined beet sugar price, 3q Midwest (U.S. cents per pound)	35.00	35.00	36.52	37.21	37.55	37.84	38.05	38.24	38.46	38.64	38.84	39.04
Sugarbeet price (U.S. dollars per short ton)	35.50	50.66	50.86	50.45	52.37	52.02	52.54	52.60	52.79	52.69	52.89	52.76
Sugarcane price (U.S. dollars per short ton)	33.40	33.05	36.90	37.48	37.92	38.34	38.74	39.13	39.53	39.92	40.33	40.73

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

Table 15: Mexico sugar supply and use projections, high oil price scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarcane harvested area (1,000 hectares)	806	806	817	824	831	834	836	837	836	834	832	829
Sugarcane yield (metric tons/hectare)	70.8	67.0	67.4	67.8	68.2	68.6	69.0	69.5	69.9	70.3	70.7	71.1
<i>1,000 metric tons, actual value</i>												
Beginning stocks	1,394	1,148	963	964	1,014	1,035	1,044	1,052	1,053	1,054	1,052	1,050
Production	6,426	6,065	6,201	6,262	6,365	6,424	6,485	6,531	6,559	6,588	6,604	6,617
Imports	86	70	70	70	70	70	70	70	70	70	70	70
Total supply	7,906	7,283	7,234	7,296	7,449	7,529	7,599	7,653	7,682	7,712	7,727	7,737
Disappearance												
Human consumption	4,140	4,199	4,214	4,226	4,237	4,247	4,254	4,259	4,262	4,264	4,263	4,260
Other consumption	425	425	425	425	425	425	425	425	425	425	425	425
Total domestic deliveries	4,565	4,624	4,639	4,651	4,662	4,672	4,679	4,684	4,687	4,689	4,688	4,685
Exports	2,194	1,695	1,631	1,631	1,751	1,814	1,868	1,916	1,941	1,971	1,988	2,006
To the United States	853	957	685	843	908	931	954	956	955	949	944	931
To rest of world	1,341	739	946	788	843	883	914	960	986	1,022	1,045	1,075
Total use	6,759	6,320	6,270	6,283	6,414	6,486	6,547	6,600	6,629	6,660	6,676	6,691
Ending stocks	1,148	963	964	1,014	1,035	1,044	1,052	1,053	1,054	1,052	1,050	1,046
Stocks-to-human consumption	27.7%	22.9%	22.9%	24.0%	24.4%	24.6%	24.7%	24.7%	24.7%	24.7%	24.6%	24.6%
Stocks-to-use	17.0%	15.2%	15.4%	16.1%	16.1%	16.1%	16.1%	16.0%	15.9%	15.8%	15.7%	15.6%
HFCS consumption (1,000 metric tons, dry weight)	1,520	1,520	1,555	1,590	1,625	1,661	1,697	1,732	1,768	1,805	1,841	1,877

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

Table 16: U.S. supply and use projections, low oil price scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarbeet harvested area (1,000 acres)	1,095	1,117	1,125	1,179	1,153	1,147	1,132	1,124	1,113	1,103	1,092	1,082
Sugarbeet yield (short tons/acre)	30.3	30.1	31.8	32.2	32.5	32.9	33.2	33.6	33.9	34.2	34.5	34.8
Sugarcane harvested area (1,000 acres)	860	883	878	881	883	884	886	887	889	891	893	895
Sugarcane yield (short tons/acre)	38.3	37.7	36.4	36.6	36.8	37.0	37.2	37.4	37.6	37.8	38.0	38.2
<i>1,000 short tons, raw value</i>												
Beginning stocks	2,008	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705
Total production	8,935	9,184	9,439	9,815	9,810	9,895	9,940	10,014	10,076	10,144	10,204	10,270
Beet sugar	4,907	5,055	5,312	5,638	5,585	5,623	5,622	5,648	5,661	5,681	5,692	5,709
Cane sugar	4,028	4,129	4,127	4,177	4,225	4,272	4,318	4,366	4,414	4,463	4,512	4,562
Total imports	3,067	3,165	2,781	2,575	2,624	2,579	2,571	2,532	2,502	2,462	2,427	2,383
TRQ- entries	1,540	1,627	1,583	1,587	1,591	1,594	1,598	1,602	1,606	1,609	1,613	1,617
Other program imports	438	350	350	350	350	350	350	350	350	350	350	350
Non-program imports	1,089	1,188	848	639	683	635	623	580	546	503	464	416
Mexico	997	1,118	772	586	633	585	574	532	499	456	418	371
High tier	93	70	76	52	51	50	49	48	47	47	46	45
Total supply	14,010	14,074	14,004	14,056	14,105	14,151	14,194	14,234	14,270	14,303	14,333	14,359
Total exports	35	35	35	35	35	35	35	35	35	35	35	35
Deliveries for domestic use	12,250	12,255	12,303	12,349	12,393	12,433	12,471	12,506	12,538	12,567	12,593	12,616
Reexport program	100	80	80	80	80	80	80	80	80	80	80	80
Transfer to polyhydric alcohol, feed, ethanol	25	25	25	25	25	25	25	25	25	25	25	25
Deliveries for domestic food and beverage use	12,125	12,150	12,198	12,244	12,288	12,328	12,366	12,401	12,433	12,462	12,488	12,511
Total use	12,285	12,290	12,338	12,384	12,428	12,468	12,506	12,541	12,573	12,602	12,628	12,651
Ending stocks	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705	1,708
Privately owned	1,725	1,784	1,666	1,672	1,678	1,683	1,688	1,693	1,697	1,701	1,705	1,708
CCC	0	0	0	0	0	0	0	0	0	0	0	0
Stocks-to-use ratio	14.0	14.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
World raw sugar price (U.S. cents per pound)	11.62	10.70	11.43	12.26	12.68	13.04	13.32	13.57	13.87	14.11	14.39	14.65
Raw sugar price, 3q No. 16 (U.S. cents per pound)	25.70	25.36	25.55	26.04	26.29	26.49	26.64	26.78	26.94	27.06	27.21	27.35
Refined beet sugar price, 3q Midwest (U.S. cents per pound)	35.00	35.00	33.69	34.33	34.64	34.90	35.10	35.27	35.48	35.64	35.83	36.01
Sugarbeet price (U.S. dollars per short ton)	35.50	50.66	50.86	48.59	52.06	51.47	52.49	52.44	52.85	52.77	53.07	53.01
Sugarcane price (U.S. dollars per short ton)	33.40	31.99	35.72	36.28	36.71	37.12	37.50	37.88	38.27	38.65	39.04	39.42

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

Table 17: Mexico sugar supply and use projections, low oil price scenario

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Sugarcane harvested area (1,000 hectares)	806	806	811	812	811	810	808	805	801	798	793	789
Sugarcane yield (metric tons/hectare)	70.8	67.0	67.4	67.8	68.2	68.6	69.0	69.5	69.9	70.3	70.7	71.1
<i>1,000 metric tons, actual value</i>												
Beginning stocks	1,394	1,148	963	957	911	925	915	913	903	895	885	875
Production	6,426	6,065	6,150	6,170	6,213	6,234	6,261	6,281	6,286	6,297	6,298	6,297
Imports	86	70	70	70	70	70	70	70	70	70	70	70
Total supply	7,906	7,283	7,183	7,196	7,194	7,229	7,245	7,264	7,260	7,262	7,252	7,241
Disappearance												
Human consumption	4,140	4,199	4,214	4,226	4,237	4,247	4,254	4,259	4,262	4,264	4,263	4,260
Other consumption	425	425	425	425	425	425	425	425	425	425	425	425
Total domestic deliveries	4,565	4,624	4,639	4,651	4,662	4,672	4,679	4,684	4,687	4,689	4,688	4,685
Exports	2,194	1,695	1,587	1,634	1,607	1,643	1,654	1,676	1,677	1,689	1,690	1,694
To the United States	853	957	661	502	542	501	491	455	427	390	358	318
To rest of world	1,341	739	927	1,132	1,065	1,142	1,162	1,221	1,250	1,299	1,332	1,376
Total use	6,759	6,320	6,226	6,285	6,269	6,314	6,332	6,361	6,364	6,378	6,378	6,379
Ending stocks	1,148	963	957	911	925	915	913	903	895	885	875	862
Stocks-to-human consumption	27.7%	22.9%	22.7%	21.6%	21.8%	21.5%	21.5%	21.2%	21.0%	20.7%	20.5%	20.2%
Stocks-to-use	17.0%	15.2%	15.4%	14.5%	14.8%	14.5%	14.4%	14.2%	14.1%	13.9%	13.7%	13.5%
HFCS consumption (1,000 metric tons, dry weight)	1,520	1,520	1,555	1,590	1,625	1,661	1,697	1,732	1,768	1,805	1,841	1,877

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

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