United States Department of Agriculture

Economic Research Service

Situation and Outlook

SSS-M-343

March 15, 2017

Sugar and Sweeteners Outlook

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

Projected U.S. Beet Sugar Production in 2016/17 Lowered, Imports from Mexico Raised

The next release is April 17, 2017

Approved by the World Agricultural Outlook Board.

The March *World Agricultural Supply and Demand Estimates* (WASDE) lowers 2016/17 projected sugar supplies by 31,000 short tons, raw value (STRV), compared with the previous month's report. The reduction is due mainly to 265,000 STRV less beet sugar production projected. Domestic cane sugar projection remains unchanged. Projected imports are raised 234,000 STRV. This is mainly due to projected imports from Mexico being increased 190,000 from the anticipated calculation of the Export Limit by the U.S. Department of Commerce, according to the terms of the suspension agreements with the Government of Mexico. Projected total sugar use is raised 100,000 due to an increase of deliveries to domestic users for food and beverage use. Ending stocks are projected to be 131,000 STRV lower than the February report, resulting in a stocks-to-use ratio of 13.6 percent, compared with the previous month's ratio of 14.8 percent.

Mexico projected sugar production is unchanged from the previous month's 6.371 million metric tons, actual value (MT). Total supplies in Mexico are also projected to be unchanged at 7.468 million MT. Total use is lowered 49,000 MT from the February report, although domestic deliveries are unchanged. Exports to the United States are raised 162,000 MT, although shipments to other countries are lowered 211,000 MT, resulting in the net decline of projected total use. Mexico's ending stocks are projected to be 1.278 million MT, resulting in a stocks-to-consumption ratio of 29.1 percent—an increase from the previous month's projection of 28.0 percent.

Projected beet sugar production lowered based on lower reported rates of sugar extraction

The March USDA *World Agricultural Supply and Demand Estimates* (WASDE) projects total sugar supplies for 2016/17 at 14.007 million short tons, raw value (STRV), a 31,000-STRV decrease from the February projection. Beginning stocks remain unchanged at 2.054 million STRV. The reduction is mainly due to a 265,000 STRV reduction in domestic production, currently projected at 8.975 million STRV, which was offset by 234,000 STRV increase in projected imports.

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

Items	2014/15	2015/16 (estimate)	2016/17 (forecast)	2014/15	2015/16 (estimate)	2016/17 (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	8,975	7,853	8,155	8,142
Beet sugar	4,893	5,119	5,106	4,439	4,644	4,632
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	2,978	3,223	3,031	2,701
Tariff-rate quota imports	1,536	1,620	1,576	1,393	1,469	1,430
Other program imports	471	396	225	427	359	204
Non-program imports	1,546	1,325	1,177	1,403	1,202	1,068
Mexico	1,532	1,309	1,162	1,389	1,187	1,054
Total supply	14,019	14,145	14,007	12,718	12,832	12,707
Total exports	185	74	75	168	67	68
Miscellaneous	0	-33	0	0	-30	0
Deliveries for domestic use	12,019	12,051	12,255	10,903	10,932	11,118
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	12,100	10,785	10,778	10,977
Total Use	12,204	12,091	12,330	11,071	10,969	11,186
Ending stocks	1,815	2,054	1,677	1,647	1,863	1,521
Private	1,815	2,054	1,677	1,647	1,863	1,521
Commodity Credit Corporation (CCC)	0	0	0	0	0	0
Stocks-to-use ratio	14.87	16.99	13.60	14.87	16.99	13.60

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

Beet sugar production is projected to total 5.106 million STRV, a 265,000-STRV decrease from the previous month's projection. The decline is due to the cumulative sugar extraction rate from sliced sugarbeets remaining well below historical levels. Through January, as reported by the Farm Service Agency's *Sweetener Market Data* (SMD), sugar production (adjusted for sugar recovered from molasses) relative to the amount of sugarbeets sliced shows that substantially less sucrose is being extracted compared with historical rates. The current projections assume a rate of 13.9 percent, which is based on the cumulative rate of 13.7 percent from processors' reports from the crop year beginning August and running through January, plus the average differential between January rates and final rates based on previous years. Early-season extraction rates are typically volatile due to the variability in harvest periods and the processing of sugarbeets that have not been prepared for winter storage. Once processors transition to beets stored in winter piles, the extraction rate from slice typically stabilizes for the duration of the campaign season. Rates from the early portions of the slicing campaign have lagged behind recent historical rates.

As the season has progressed, though, rates have not reverted to the historical mean and are actually below the 10-year minimum. The adjusted slice extraction rate results in a reduced outlook for the crop-year sugar production. Early-season production for the 2017/18 sugarbeet crop remains unchanged at 483,000 STRV, which is in line with historical averages.

Table 2: Beet sugar production projection calculation, 2016/17

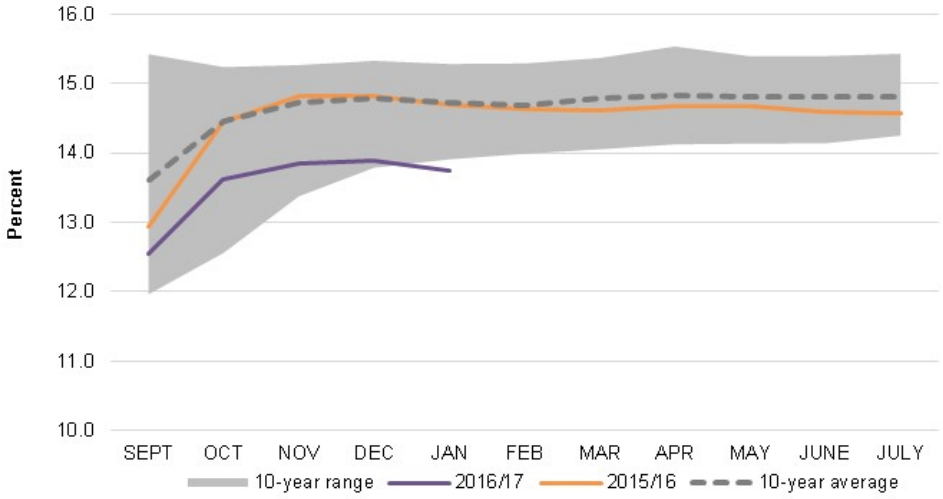
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 February	2016/17 March
Sugarbeet production (1,000 short tons) 1/	29,783	32,034	28,896	35,224	32,789	31,285	35,371	36,881	36,881
Sugarbeet shrink 2/	5.7%	5.9%	5.9%	4.8%	6.8%	5.4%	6.5%	5.8%	5.8%
Sugarbeets sliced (1,000 short tons)	28,097	30,137	27,184	33,532	30,545	29,595	33,066	34,742	34,742
Sugar extraction rate from slice	14.3%	15.4%	15.0%	15.3%	14.3%	14.6%	14.6%	14.7%	13.9%
Sugar from beets slice (1,000 STRV)	4,023	4,631	4,086	5,142	4,325	4,325	4,820	5,101	4,837
Sugar from molasses (1,000 STRV) 2/	325	357	401	327	324	341	362	353	353
Crop year sugar production (1,000 STRV) 3/	4,348	4,987	4,487	5,469	4,648	4,667	5,183	5,454	5,190
August-September sugar production (1,000 STRV)	396	623	294	708	315	461	688	606	606
August-September sugar production forecast (1,000 STRV) 4/	--	--	--	--	--	--	606	483	483
Sugar from imported beets (1,000 STRV) 5/	--	--	--	--	--	--	--	40	40
Fiscal year sugar production (1,000 STRV)	4,575	4,659	4,900	5,076	4,794	4,893	5,119	5,371	5,106

Notes: 1/ National Agricultural Statistics Service, U.S. Dept. of Agriculture. 2/Projections based on processor forecasts published by Farm Service Agency. 3/ August-July basis. 4/ Based on 2016/17 production. 5/ Sugar from imported beets split out for projections only. They are incorporated into total production in historical data.

Source: U.S. Dept. of Agriculture, Economic Research Service and World Agricultural Outlook Board.

Figure 1

Cumulative sugar extraction rate, beet sugar produced per sugarbeet sliced, crop year



Source: U.S. Dept. of Agriculture, Economic Research Service and Farm Service Agency.

Cane sugar production is projected to total 3.869 million STRV in 2016/17, unchanged from the February projection. No changes are made to the projections of sugarcane-producing States. The National Agricultural Statistics Service' (NASS) March *Crop Production* report reduced sugarcane production 2.9 percent compared with the February report to 30.371 million short tons, including a 4.3-percent reduction in sugarcane production in Florida. These changes match earlier processor reports that were cited as justification for reducing cane sugar production in the February WASDE. As a result, no further reductions are made to the March WASDE projections.

Imports from Mexico increased based on higher Export Limit anticipated from suspension agreements terms

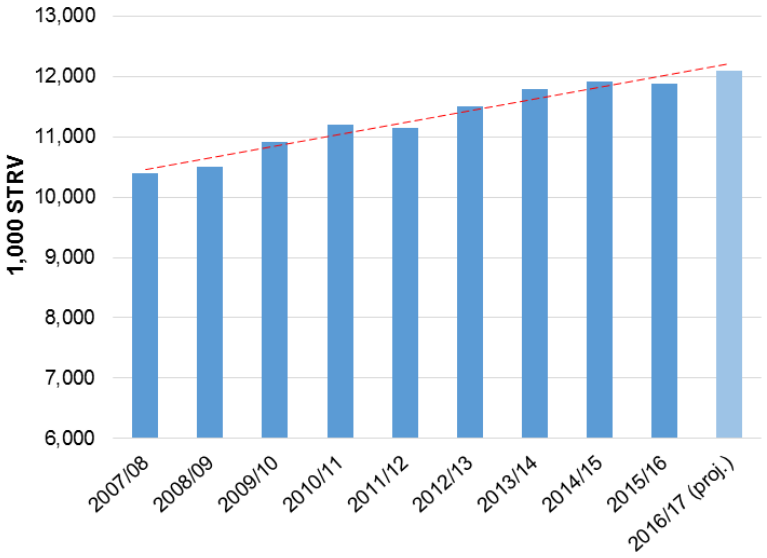
Total U.S. imports for 2016/17 are projected to total 2.978 million STRV, a 234,000-STRV increase from the previous month. Imports under quota programs are increased 44,000 STRV to 1.576 million STRV. The increase is

due entirely to a 44,000-STRV increase in the specialty sugar tariff-rate quota announced by the USDA on February 24, 2017. Imports from Mexico are increased 190,000 STRV to 1.162 million STRV. The increase in imports from Mexico is based on the anticipated calculation of the Export Limit based on the U.S. Needs calculation as defined by the suspension agreements signed between the U.S. Department of Commerce (USDOC) and the Government of Mexico in December 2014. Included as well is an additional 12,000 STRV that entered U.S. Census trade data in early October 2016 but entered under an export license from the 2015/16 Export Limit Period.

Projected domestic deliveries for 2016/17 increased based on strong pace-to-date and long-term growth trends

Total domestic deliveries for 2016/17 are projected to be 12.255 million STRV, a 100,000-STRV increase from the previous month's projection. Deliveries for food and beverage use account for the entirety of the 100,000 STRV increase, with 2016/17 projections raised to 12.100 million STRV. The raised projection represents a 1.8 percent increase from the 2015/16 total but is in line with longer-term historical trends.

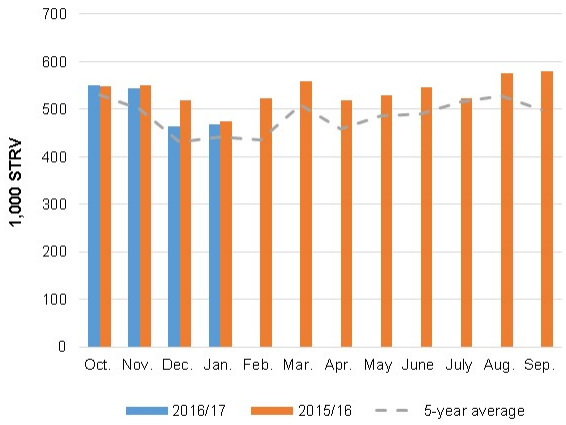
Figure 2
U.S. sugar deliveries for food and beverage use, fiscal year, 2007/08 to 2016/17



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

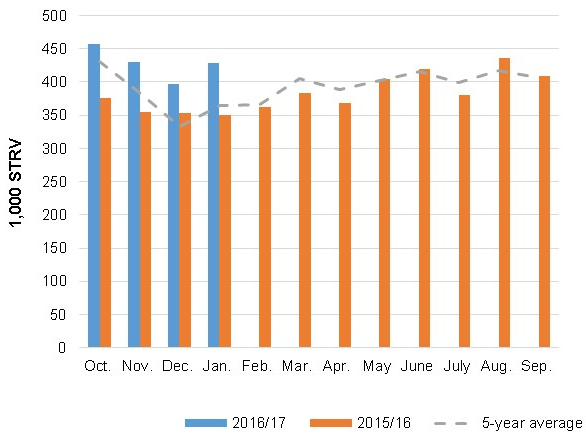
Through January, 2016/17 total sugar deliveries for human consumption are 8.7 percent higher compared with the same period the previous year. January deliveries continued to be strong for beet sugar processors. For the fiscal year through January, beet sugar deliveries are 19.3 percent larger than the previous year. This is partially bolstered by low deliveries in the early months of 2015/16. However, beet sugar deliveries have also been large relative to historical rates. Cane sugar deliveries are down 3.1 percent through January relative to the previous year, tempering the growth in total deliveries currently seen in beet sugar deliveries. Conversely to beet sugar deliveries, cane sugar deliveries were particularly strong in the early part of 2015/16, which has an impact on year-over-year comparisons. All reported months of cane sugar deliveries in 2016/17 have been above longer-term averages, however.

Figure 3
Cane sugar deliveries, monthly, 2010/11 to 2016/17



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

Figure 4
Beet sugar deliveries, monthly, 2010/11 to 2016/17



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

Domestic deliveries for other uses remain unchanged from the previous month's projection at 155,000 STRV. U.S. sugar exports also remain unchanged from the previous month, projected to total 75,000 STRV. Projected total use for 2016/17 is 12.330 million STRV.

U.S. ending stocks are projected to total 1.677 million STRV, a 131,000-STRV decline from the previous month. The result is a 13.6 percent stocks-to-use ratio, compared with the previous month's ratio of 14.8 percent.

U.S. refined sugar market still expected to result in divergent beet and cane sugar stock levels

Carrying forward on the comparison presented in the February 2017 *Sugar and Sweeteners Outlook*, there is still likely to be a significant gap in stock levels between the beet sugar and cane sugar markets. Assuming that food deliveries for cane and beet sugar follow the same proportion as in 2014/15, there would be a 30.0 percent stocks-to-use ratio in the beet sugar sector, while the cane sugar sector would end with a 2.8 percent stocks-to-use. If realized, this would result in an exacerbation of the trend that took hold in 2015/16. Compared with the calculations in the previous month, however, the gap would not be as severe.

Table 3: Beet and cane sugar supply and use hypothetical for 2016/17, by fiscal year (Oct./Sept.), March 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
	1,000 short tons, raw value								
Beginning stocks	553	747	1,244	1,257	1,068	810	1,810	1,815	2,054
Domestic production	4,659	4,900	5,106	3,589	3,906	3,869	8,656	8,989	8,975
Imports 1/	13	10	13	3,540	3,330	2,965	3,553	3,341	2,978
Total supply	5,225	5,658	6,363	8,385	8,304	7,644	14,019	14,145	14,007
Domestic deliveries for consumption 2/	4,730	4,598	4,801	7,191	7,283	7,299	11,921	11,881	12,100
Other deliveries 2/	20	47	43	110	123	112	131	170	155
Exports	1	2	50	184	72	25	185	74	75
Misc.	-273	-232	0	-168	16	0	-33	-33	0
Total use	4,478	4,414	4,894	7,317	7,494	7,436	12,204	12,091	12,330
Ending stocks	747	1,244	1,469	1,068	810	208	1,815	2,054	1,677
Stocks-to-use ratio	16.68%	28.18%	30.01%	14.60%	10.81%	2.80%	14.87%	16.99%	13.60%

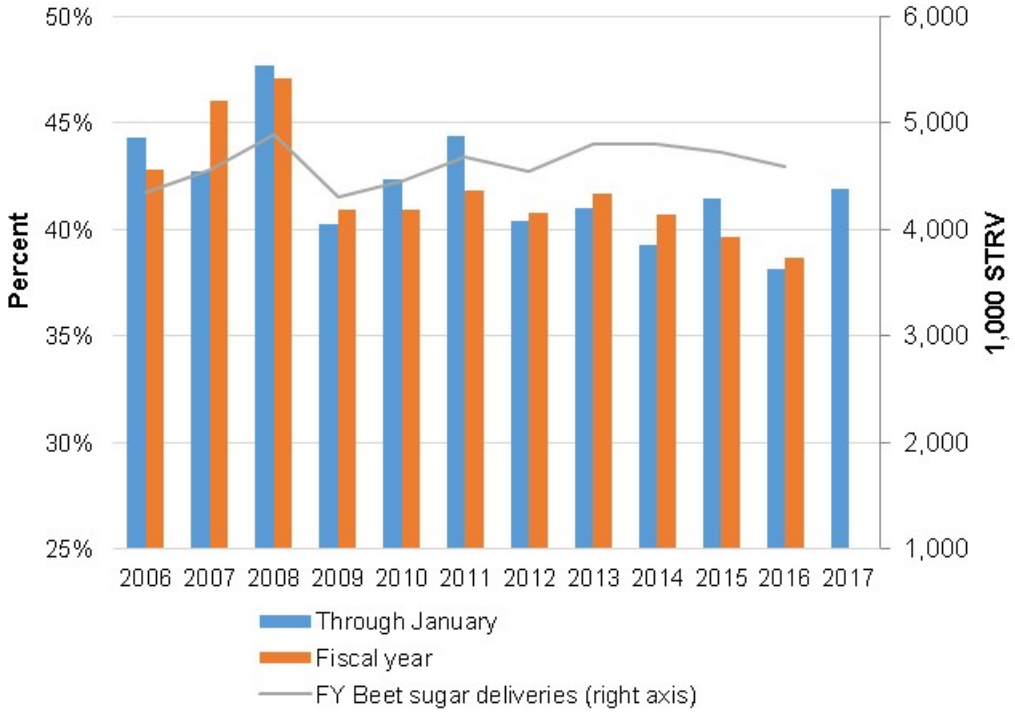
1/ Nearly all imports are counted as cane sugar, except Canada refined imports. It is possible that additional refined sugar imports may be from sugarbeet crops, although this proportion is likely minor. 2/ Beet and cane sugar human consumption for 2016/17 assume same proportion as 2014/15, while other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

One of the critical elements of the current sugar markets, however, is the proportion of deliveries for human use that come from beet sugar versus cane sugar. Using the 2014/15 proportions assumes that beet sugar accounts for 39.7 percent of total food deliveries. This is not as extreme as the 38.7 percent witnessed in 2016/17, where beet sugar deliveries were particularly low and cane sugar deliveries high. However, 2014/15 beet sugar deliveries as a proportion of total deliveries were the second-lowest since the implementation of NAFTA in 2008, so they still represent an outlier market by historical standards.

Figure 5
Share of sugar food and beverage deliveries from beet sugar procesors, FY2006 to FY2017



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

Through January, the proportion of beet sugar deliveries relative to total sugar deliveries has rebounded substantially, accounting for 41.9 percent. This is the highest level for this period since 2010/11. While proportions for the full fiscal year are not always indicative of deliveries through January, current data does seem to indicate a stronger performance for beet sugar deliveries than last year as a strong possibility.

There are no official USDA projections specifically for beet sugar and cane sugar deliveries. Wholesale refined beet sugar has been priced at a discount to cane sugar for several months. This has been one of the most important factors in beet sugar deliveries increasing in 2016/17, particularly in regions in the country farther from beet sugar processors' facilities that require higher freight costs, such as the South. The full-year's share of beet versus cane sugar deliveries will likely be driven by the relative costs for sugar users between the two sugar crop sources. An illustration of their ending stocks, given various beet sugar vs. cane sugar delivery proportions, demonstrates the sensitivity of the market to this particular dynamic, and the significance: a narrow range of delivery outcomes can result in a widening or convergence in the two sectors' balance sheets.

Table 4: Beet and cane sugar hypothetical food deliveries and ending stock scenarios 1/, 2016/17, March 2017.

	Beet sugar			Cane sugar		
Beet sugar proportion of total deliveries	Deliveries for consumption	Ending stocks	Stocks-to-use ratio	Deliveries for consumption	Ending stocks	Stocks-to-use ratio
Percent	*1,000 STRV*		*Percent*	*1,000 STRV*		*Percent*
35.0	4,235	2,035	47.0	7,865	-358	-4.5
37.5	4,538	1,733	37.4	7,563	-56	-0.7
40.0	4,840	1,430	29.0	7,260	247	3.3
42.5	5,143	1,128	21.5	6,958	549	7.7
45.0	5,445	825	14.9	6,655	852	12.5
47.5	5,748	523	8.9	6,353	1,154	17.8
50.0	6,050	220	3.6	6,050	1,457	23.5

1/ USDA does not make official projections for beet sugar and cane sugar deliveries for food and beverage use. Numbers reflect potential market outcomes within the March 2017 *WASDE*'s 2016/17 food deliveries and ending stocks.
Source: U.S. Dept. of Agriculture, Economic Research Service.

Mexico supply projections unchanged from previous month, exports to the United States raised

Sugar supplies in Mexico are projected to be 7.468 million metric tons, actual value (MT) in 2016/17, unchanged from the previous month. Beginning stocks are projected to be 1.037 million MT for the year, also unchanged from the February projection. Imports are projected to be 60,000 MT, with 10,000 MT of imports for domestic human consumption and 50,000 MT of imports for the IMMEX program, each unchanged from the previous month.

Table 5 -- Mexico sugar supply and use, 2014/15 - 2015/16 and projected 2016/17, March 2017.

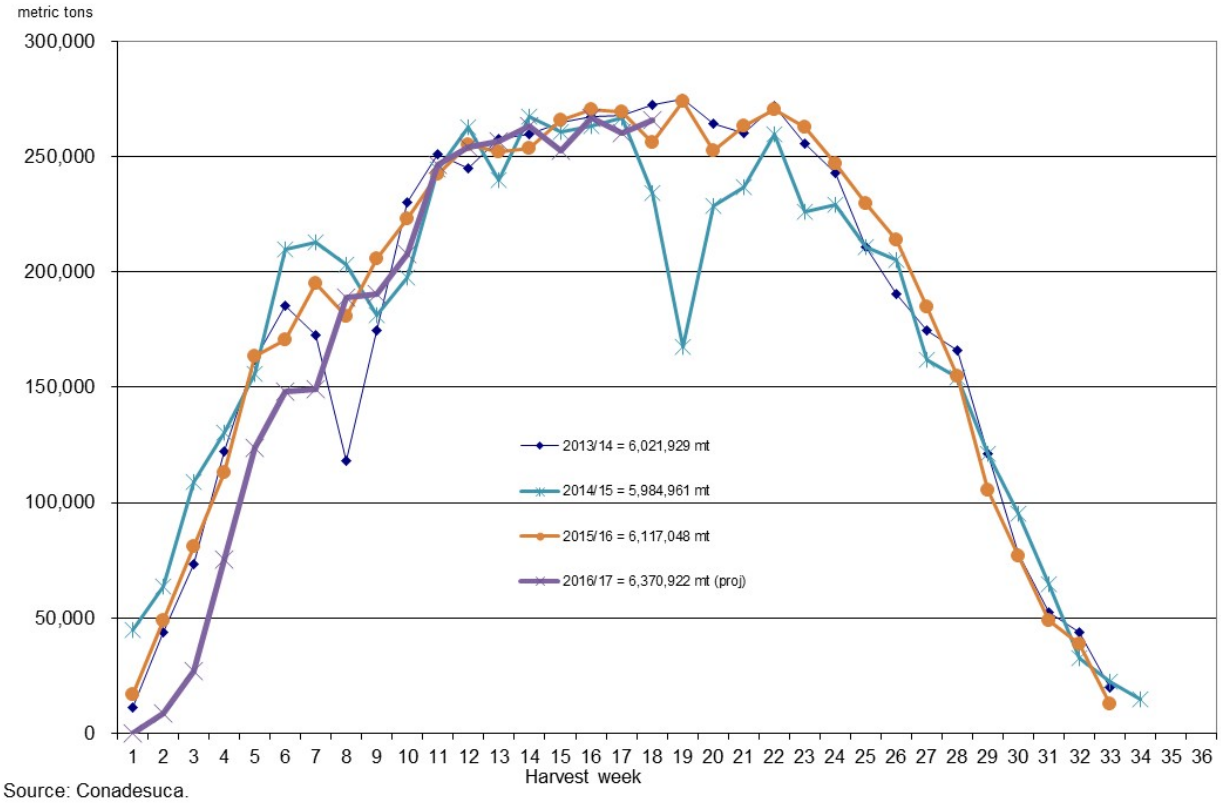
Items	2014/15	2015/16 (estimate)	2016/17 (forecast)
		1,000 metric tons, actual weight	
Beginning stocks	831	811	1,037
Production	5,985	6,117	6,371
Imports	128	83	60
Imports for consumption	8	17	10
Imports for sugar-containing product exports, IMMEX 1/	121	66	50
Total supply	6,944	7,011	7,468
Disappearance			
Human consumption	4,408	4,387	4,389
For sugar-containing product exports (IMMEX)	337	330	330
Other deliveries and end-of-year statistical adjustment	-54	50	50
Total	4,691	4,767	4,769
Exports	1,442	1,207	1,421
Exports to the United States & Puerto Rico	1,311	1,120	995
Exports to other countries	131	86	426
Total use	6,134	5,974	6,190
Ending stocks	811	1,037	1,278
		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
Other deliveries and end-of-year statistical adjustment	-57	53	53
Total	4,973	5,053	5,055
Exports	1,529	1,279	1,506
Exports to the United States & Puerto Rico	1,389	1,187	1,054
Exports to other countries	139	92	452
Total use	6,502	6,332	6,561
Ending stocks	859	1,099	1,355
Stocks-to-human consumption (percent)	18.4	23.6	29.1
Stocks-to-use (percent)	13.2	17.4	20.7
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 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 March 4, Mexico sugar mills have produced 3.186 million MT of sugar, 1.0 percent ahead of 2015/16. The current rate is 10.1 percent behind Conadesuca's initial estimate. The 2016/17 campaign's pace, however, started slowly at the beginning of the harvest. If there are no weather-related interruptions or other external events to disrupt production, the historical peak-production season would continue for another month or 2 of reporting. The full realization of 2016/17 production would likely be influenced by the size and duration of the latter half of the sugarcane mill's campaign.

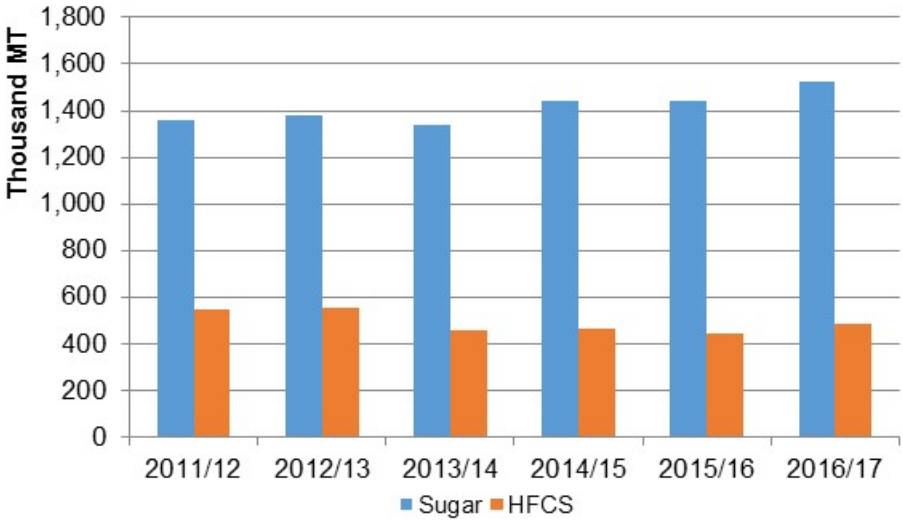
Figure 6
Mexico sugar production, by week of harvest, 2010/11-2016/17



Source: Conadesuca.

Domestic deliveries for 2016/17 are projected to be 4.769 million MT, unchanged from the previous month. Deliveries for domestic human consumption are projected to be 4.389 million MT and domestic deliveries for the IMMEX program 330,000 MT, both unchanged from the February report. Through January, sugar deliveries for human consumption have been 5.9 percent higher than the same period of the previous year. Deliveries of high-fructose corn syrup (HFCS) are also higher than last year through January, by 7.9 percent.

Figure 7
Mexican sweetener consumption October to November



Source: Conadesuca.

Total sugar exports in Mexico are projected to be 1.421 million MT, a 49,000-MT decline from the February projection. Exports to the United States are projected to be 995,000 MT, a 162,000-MT increase from the previous month. The projection reflects the updated calculation of the Export Limit, as defined in suspension agreements between the USDOC and the Government of Mexico, as well as an additional 11,000 MT that was recorded in the first few days of October by U.S. Census but entered with a 2015/16 Export Limit license. Exports to other countries are projected to be 426,000 MT, a 211,000 MT decrease from the February projections; foreign exports to other countries are calculated based on expected ending stocks. Additional exports to the United States, and a larger amount of sugar expected to be carried over compared with the previous month's projection, result in fewer shipments to other countries.

Ending stocks for 2016/17 are projected to be 1.278 million MT, a 49,000-STRV increase from the previous month. Ending stocks are expected to be large enough to account for 2-1/2 months of domestic deliveries, as well as enough supplies to ship to the United States in 2017/18 through the end of the calendar year under the Shipping Patterns provisions of the suspension agreements. The resulting stocks-to-consumption ratio is 29.1 percent, compared with the previous month's ratio 28.0 percent.

Contacts and Links

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

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

Subscription Information
Subscribe to ERS' e-mail notification service at http://www.ers.usda.gov/updates/ to receive timely notification of newsletter availability.

Data

Tables from the *Sugar and Sweeteners Yearbook* are available in the Sugar and Sweeteners Topics at http://www.ers.usda.gov/topics/sugar/. They contain the latest data and historical information on the production, use, prices, imports, and exports of sugar and sweeteners.

Related Websites

Sugar and Sweeteners Outlook http://www.ers.usda.gov/Publications/SSS/
WASDE http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documented=1194
Sugar Topics http://www.ers.usda.gov/topics/Sugar/

E-mail Notification

Readers of ERS outlook reports have two ways they can receive an e-mail notice about release of reports and associated data.

• Receive timely notification (soon after the report is posted on the web) via USDA's Economics, Statistics and Market Information System (which is housed at Cornell University's Mann Library). Go to http://usda.mannlib.cornell.edu/MannUsda/aboutEmailService.do and follow the instructions to receive e-mail notices about ERS, Agricultural Marketing Service, National Agricultural Statistics Service, and World Agricultural Outlook Board products.

• Receive weekly notification (on Friday afternoon) via the ERS website. Go to http://www.ers.usda.gov/Updates/ and follow the instructions to receive notices about ERS outlook reports, *Amber Waves* magazine, and other reports and data products on specific topics. ERS also offers RSS (really simple syndication) feeds for all ERS products. Go to http://www.ers.usda.gov/rss/ to get started.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and, where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.