



# Sugar and Sweeteners Outlook

Michael McConnell, coordinator  
[michael.mcconnell@ers.usda.gov](mailto:michael.mcconnell@ers.usda.gov)

## Larger U.S. Sugar Imports for 2015/16 Increase Total Supplies and Carryover into 2016/17 Market

The next release is  
July 18, 2016

Approved by the  
World Agricultural  
Outlook Board.

U.S. ending stocks are estimated to be 1.939 short tons, raw value (STRV), a 195,000-STRV increase from the May estimate. The increase is primarily the result of a 182,000-STRV increase in imports due to actions taken by the U.S. Department of Agriculture and U.S. Department of Commerce to increase the raw sugar TRQ and the Export Limit for Mexico. U.S. sugar production is estimated to be 8.940 million STRV for 2015/16, an 8,000-STRV increase from adjustments as the Florida and Texas cane sugar production season concludes for the year. Domestic deliveries for 2015/16 are increased 30,000 STRV from the previous month's estimate at 12.165 million STRV, but deliveries for domestic consumption remain unchanged at 12.000 million STRV. Exports are reduced 35,000-STRV to 65,000 STRV due to a reduced pace of exports subsequent to changes in Mexico's IMMEX program.

U.S. sugar production in 2016/17 is projected to total 8.710 million STRV, unchanged from the previous month's projection. Projected imports are reduced by a relatively small 3,000 STRV to 3.476 million STRV. Domestic deliveries for 2016/17 are projected to total 12.235 million STRV, a 10,000-STRV increase from the May projection due to additional re-export product deliveries. Exports are projected to total 25,000 STRV, a 25,000-STRV reduction from the previous projection. Ending stocks for 2016/17 are projected to total 1.864 million STRV, a 207,000 increase from the May projection, primarily due to the larger beginning stocks that carried over from the 2015/16 fiscal year. The U.S. Department of Commerce will announce the first Export Limit for 2016/17 in July, and therefore the July WASDE's projected imports from Mexico will result in the stocks-to-use ratio equaling 13.5 percent, as opposed to the current projection of 15.2 percent.

Estimated sugar production in Mexico for 2015/16 remains unchanged at 6.184 million metric tons, actual weight (MT), as the harvest reaches its final weeks. Estimated deliveries to domestic users also remain unchanged at 4.586 million MT, including 4.331 million MT delivered for domestic human consumption. Exports are increased 91,000 MT to 1.213 million MT, including a 51,000-MT increase in exports to the United States and a 40,000-MT increase in exports to other destinations. As a result, estimated ending stocks for 2015/16 are 91,000 lower than the May report and the stocks-to-consumption ratio is reduced from 31.4 percent in May to the current 29.2 percent. There are no changes to the 2016/17 market outlook, with the exception of the lower projected beginning stocks carried over from 2015/16. As a result, the stocks-to-consumption ratio is reduced from the previous month's level of 29.6 percent to 27.5 percent.

## *Increased Raw Sugar TRQ and Export Limit for Mexico Raise Supplies for 2015/16*

U.S. sugar production in 2015/16 is estimated to total 8,940 million short tons, raw value (STRV), an 8,000-STRV increase from the May estimate. Beet sugar production remains unchanged at an estimate of 5,064 million STRV. Good weather conditions in major sugarbeet-growing regions during the spring that allowed for early planting, generally good moisture, and relatively few occurrences of replanting reported by growers create the potential for a large early-harvest production from the 2016/17 crop. Since this production would occur before the start of the new fiscal year on October 1, the early-season production from the current crop will be accounted for in 2015/16 production figures.

Table 1 -- U.S. sugar: supply and use, by fiscal year (Oct./Sept.), June 2016.

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	1,939	1,642	1,647	1,759
Total production	8,656	8,940	8,710	7,853	8,111	7,901
Beet sugar	4,893	5,064	5,090	4,439	4,594	4,617
Cane sugar	3,763	3,877	3,620	3,414	3,517	3,284
Florida	1,981	2,173	1,970	1,797	1,971	1,787
Louisiana	1,513	1,423	1,495	1,372	1,291	1,356
Texas	123	116	115	112	105	104
Hawaii	146	165	40	132	150	36
Total imports	3,553	3,413	3,476	3,223	3,096	3,153
Tariff-rate quota imports	1,536	1,739	1,528	1,393	1,578	1,386
Other program imports	471	300	175	427	272	159
Non-program imports	1,546	1,374	1,773	1,403	1,246	1,609
Mexico	1,532	1,359	1,758	1,389	1,233	1,595
Total supply	14,019	14,169	14,124	12,718	12,854	12,813
Total exports	185	65	25	168	59	23
Miscellaneous	0	0	0	0	0	0
Deliveries for domestic use	12,019	12,165	12,235	10,903	11,036	11,099
Transfer to sugar-containing products for exports under re-export program	103	130	120	93	118	109
Transfer to polyhydric alcohol, feed, other alcohol	28	35	35	25	32	32
Commodity Credit Corporation (CCC) sale for ethanol, other	0	0	0	0	0	0
Deliveries for domestic food and beverage use	11,888	12,000	12,080	10,785	10,886	10,959
Total Use	12,204	12,230	12,260	11,071	11,095	11,122
Ending stocks	1,815	1,939	1,864	1,647	1,759	1,691
Private	1,815	1,939	1,864	1,647	1,759	1,691
Commodity Credit Corporation (CCC)	0	0	0	0	0	1
Stocks-to-use ratio	14.87	15.85	15.21	14.87	15.85	15.21

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

The updated cane sugar production estimate of 3,877 million STRV accounts for the increase in total production in the June WASDE. The finishing date for cane sugar production in Florida for the 2015/16 crop had been pushed back due to wet weather conditions in January and February that hindered the progress of the harvest. As a result, processors in Florida continued processing sugarcane through May and into early June, as opposed to a typical completion date of April or early May. The 7,000 STRV increase in Florida production to 2,173 million STRV reflects official production figures through April and preliminary reports for May and early June. Texas's production for 2015/16 is also increased 1,000 STRV, based on final reports through the end of the production season in April.

U.S. sugar production in 2016/17 is projected at 8.710 million STRV, unchanged from the previous month's projection. Beet sugar production is projected to total 5.090 million STRV, which represents a 0.5-percent increase from the current 2015/16 estimate. The projection represents 2017/18 early harvest levels in line with historical averages. Cane sugar production is projected to total 3.620 million STRV, including 1.970 million STRV projected for Florida, 1.495 million STRV for Louisiana, 115,000 STRV for Texas, and 40,000 STRV for Hawaii. Projections for Florida, Louisiana, and Texas are based on trend yields and recovery levels in line with historical averages. The June 30, 2016, National Agricultural Statistics Service (NASS) *Acreage* report will provide the first survey-based forecast for harvested cane acreage for the 2016/17 crop. The projection for Hawaii reflects the closure of the State's last sugar processing mill by December 2016.

Estimated sugar imports for 2015/16 are expected to total 3.413 million STRV, an 182,000-STRV increase from the May estimate. Imports under quota programs are estimated to increase 123,000 STRV compared with the previous month's estimate to 1.739 million STRV. On May 17, 2016, the USDA announced a 140,000-STRV increase to the WTO Raw Sugar Tariff-Rate Quota (TRQ) as part of a series of policy announcements to ensure an adequate supply of sugar to the U.S. market. Subsequently, the Office of the U.S. Trade Representative (USTR) allocated the increase among quota-holding countries excluding countries who surrendered allocations in the earlier March 2016 TRQ reallocation. The difference between the 140,000-STRV TRQ increase and the 123,000-STRV estimated increase in imports from quota programs is accounted for by additional estimated shortfall—increasing from 27,558 STRV to 45,000 STRV.

Imports from Mexico in 2015/16 are estimated to total 1.359 million STRV, a 60,000 STRV-increase from the previous month. The USDA announcement on May 17 also included a request by the USDA to the U.S. Department of Commerce (USDOC) to increase Mexico's Export Limit by 60,000 STRV, as defined by the countervailing duty suspension agreement. The increased Export Limit also specified that sugar from Mexico have a polarity of 99.2, contrasting with the suspension agreement's definition of "Other Sugar" as having a polarity less than 99.5. The current estimate assumes that Mexico will ship its full Export Limit, including the additional amount, by the end of the Export Limit period on September 30, 2016.

Total projected imports for 2016/17 are 3.476 million STRV, a 3,256-STRV reduction from the May projection. Although Mexico received an allocation of the refined sugar TRQ, all sugar from the country is entered under the Mexico line in the WASDE report and is not accounted for under quota imports. Imports from Mexico are projected to total 1.758 million STRV, unchanged from the May WASDE projections. According to the terms of the CVD suspension agreement, USDOC will announce the first Export Limit for 2016/17 based on the July WASDE projections.

### ***Total Sugar Deliveries in 2015/16 Higher Than 2014/15, but Beet Sugar Deliveries Continue To Lag***

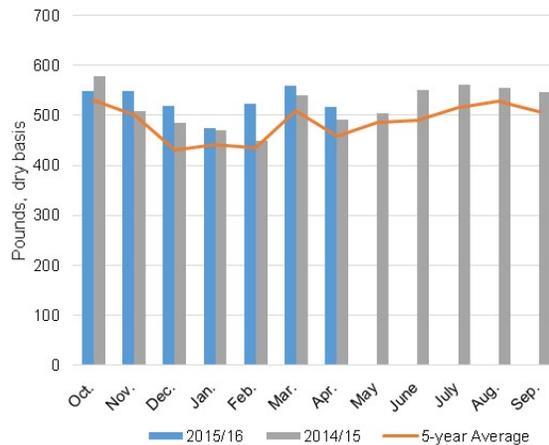
U.S. domestic sugar deliveries for human consumption in 2015/16 are projected to be 12.000 million STRV, unchanged from the May report. Through April, fiscal year sugar deliveries for human consumption have totaled 6.784 million STRV, a 3.0-percent increase over the same period the previous year. Beet sugar deliveries continue to lag behind the previous year's deliveries, as well as historical levels. Through April, beet sugar deliveries are 6.8 percent lower than 2014/15. Cane sugar deliveries, however, were 4.8 percent ahead of the same period last year, with monthly totals consistently larger than both the previous year and historical averages. Other domestic deliveries are projected to be 165,000 STRV, a 30,000 STRV increase due to increased expected deliveries to the re-export program, based on pace-to-date information thus far in the year.

Figure 1  
**Monthly beet sugar deliveries through April 2016, 2010/11 to 2015/16**



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

Figure 2  
**Monthly cane sugar deliveries through April 2016, 2010/11 to 2015/16**



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

Estimated sugar exports for 2015/16 are 65,000 STRV, a 35,000-decrease from the May estimate based on pace-to-date information through April and changes to the Mexican IMMEX program that make U.S. sugar that benefits from the U.S. re-export program ineligible for IMMEX benefits. Projected exports for 2016/17 are 25,000 STRV, a 25,000-STRV decrease, with no changes in the current IMMEX policies on the horizon, and seemingly few alternative export markets are available to replace trade flows to Mexico.

Ending stocks in 2015/16 are estimated to be 1.939 million STRV. This is a 195,000-STRV increase from the previous month due primarily to the increased supplies expected from imports. This increases the stocks-to-use ratio to 15.9 percent, compared with the May estimate of 14.3 percent. Projected ending stocks for 2016/17 are 1.864 million STRV, again primarily due to increased supplies through a higher carryin. The stocks-to-use ratio is projected to be 15.2 percent, substantially higher than the 13.5 percent projected the previous month. The incorporation of the U.S. Needs calculation for Mexican imports in the July WASDE would result in a return to a projected 13.5-percent stocks-to-use ratio in that month.

### ***Mexican Sugarcane Harvest Reaching Final Weeks for 2015/16***

Total sugar supply for Mexico in 2015/16 are estimated at 7.065 million metric tons, actual weight (MT), unchanged from the previous month's projection. Sugar imports is estimated to total 70,000 MT, including 60,000 MT of imports into the IMMEX program.

Table 2 -- Mexico sugar supply and use, 2014/15 - 2015/16 and projected 2016/17, June 2016

Items	2014/15	2015/16 (estimate)	2016/17 (forecast)
	1,000 metric tons, actual weight		
Beginning stocks	831	811	1,266
Production	5,985	6,184	6,100
Imports	128	70	10
Imports for consumption	8	10	10
Imports for sugar-containing product exports (IMMEX) 1/	121	60	0
Total supply	6,944	7,065	7,376
Disappearance			
Human consumption	4,408	4,331	4,398
For sugar-containing product exports (IMMEX)	337	255	255
Statistical adjustment	-54		
Total	4,691	4,586	4,652
Exports	1,442	1,213	1,515
Exports to the United States & Puerto Rico	1,311	1,163	1,505
Exports to other countries	131	50	10
Total use	6,134	5,799	6,167
Ending stocks	811	1,266	1,209.33
	1,000 metric tons, raw value		
Beginning stocks	881	859	1,342
Production	6,344	6,555	6,466
Imports	136	74	11
Imports for consumption	8	11	11
Imports for sugar-containing product exports (IMMEX)	128	63	0
Total supply	7,361	7,489	7,819
Disappearance			
Human consumption	4,673	4,591	4,661
For sugar-containing product exports (IMMEX)	357	270	270
Statistical adjustment	-57	0	0
Total	4,973	4,861	4,931
Exports	1,529	1,286	1,606
Exports to the United States & Puerto Rico	1,389	1,233	1,595
Exports to other countries	139	53	11
Total use	6,502	6,147	6,537
Ending stocks	859	1,342	1,282
Stocks-to-human consumption (percent)	18.4	29.2	27.5
Stocks-to-use (percent)	13.2	21.8	19.6
High fructose corn syrup (HFCS) consumption (dry weight)	1,444	1,478	1,478

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.

Sugar production in Mexico for 2015/16 is estimated to reach 6.184 million MT, unchanged from the previous month's projection. This total matches the latest projection released by Mexico's *Comité Nacional para el Desarrollo Sustentable de la Caña de Azúcar* (Conadesuca) in April. Through June 4, Mexican mills have produced 6.008 million MT of sugar from 53.226 million MT of sugarcane. The 2015/16 harvest campaign is coming to a close in Mexico, with only 12 mills—or slightly less than one-quarter of all mills—still running for the current harvest. The current estimate remains well within reach, though, given previous years' production in the final weeks of the harvest.

Mexico's domestic deliveries for human consumption in 2015/16 are estimated to total 4.331 million MT, unchanged from the previous month. Total domestic deliveries are also unchanged at 4.586 million MT, including 255,000 MT of deliveries to the IMMEX program.

Mexican sugar exports in 2015/16 are estimated to be 1.213 million MT, a 91,000-MT increase from the previous month's estimate. Exports to the United States are expected to increase 51,000 MT to 1.163 million MT, reflecting the USDOC's increase of Mexico's Export Limit, as requested by the USDA. Additionally, exports to third countries are estimated to be 50,000 MT, a 40,000-MT increase, based on reports of additional export activity coming later in the year.

With the increase in estimated exports and no changes in supply, 2015/16 ending stocks are estimated at 1.266 million MT. The resulting stocks-to-consumption ratio is 29.2 percent, compared with 31.3 percent in the previous month's estimate.

### ***Mexico Sugar Market in 2016/17 Projected To Have Ample Supplies***

Total sugar supplies for Mexico in 2016/17 are increased 91,000 MT due to higher beginning stocks. Projected Mexican sugar production for 2015/16 is unchanged from the previous month at 6.100 million MT. Imports are projected to total 10,000 MT, all of which is expected to be for domestic human consumption.

Mexican domestic deliveries are projected to total 4.652 million MT in 2016/17, unchanged from the previous month. Among domestic deliveries, 255,000 MT are projected to be delivered through the IMMEX program, while the remaining amount is projected to go for human consumption. Projected 2016/17 deliveries for human consumption represent a 1.5-percent increase from 2015/16 estimates. With high-fructose corn syrup (HFCS) projections totaling 1.478 million MT, unchanged from the previous year, the increase in projected sugar deliveries falls in line with population growth and constant per capita sweetener consumption.

Mexican sugar exports in 2016/17 are projected to total 1.515 million MT, unchanged from the previous month's projection. 1.505 million MT are projected to be shipped to the United States. In July, the USDOC will set the first 2016/17 Export Limit using the calculation of U.S Needs as defined in the countervailing duty suspension agreement signed between the Government of Mexico and USDOC in December 2014.

Mexico's ending stocks in 2016/17 are projected to total 1.209 million MT, a 91,000-MT decline from the May projection due to reduced beginning stocks. The resulting stocks-to-consumption ratio in 2016/17 is projected at 27.5 percent, down from the previous month's projection of 29.6 percent and below the 2015/16 estimate of 29.2 percent.

## Special Section: U.S. Caloric Sweetener Deliveries in 2015 Continue Trends from Late 1990s

Total caloric sweetener deliveries for food and beverage use increased by 0.5 percent in calendar year 2015 to 20.7 million tons on a dry basis, compared with the previous year's total of 20.6 million tons, as reported by data recently released by ERS. This increase was primarily the result of increased year-over-year refined sugar deliveries (1.8 percent) that exceeded the decline in deliveries of high-fructose corn syrup (HFCS) and other corn sweeteners (1.1 percent).

Table 3- U.S. total and per capita estimated deliveries of caloric sweeteners for domestic food and beverage use, by calendar year 1/

Calendar year	U.S. population 2/ (July 1) Millions	Refined sugar 3/	Corn sweeteners			Total	Pure honey	Edible syrups	Total caloric sweeteners
			HFCS	Glucose syrup	Dextrose				
<u>1,000 short tons, dry basis</u>									
2005	295.8	9,324	8,707	2,261	481	11,448	156	94	21,022
2006	298.8	9,286	8,643	2,053	463	11,159	174	98	20,718
2007	301.7	9,230	8,432	2,067	448	10,947	141	94	20,412
2008	304.5	9,911	8,021	2,036	419	10,476	151	93	20,631
2009	307.2	9,740	7,630	1,991	417	10,038	141	90	20,009
2010	309.3	10,208	7,487	1,956	450	9,893	160	104	20,365
2011	311.7	10,276	7,282	1,908	446	9,635	169	102	20,183
2012	314.1	10,466	7,187	1,969	420	9,577	169	104	20,315
2013	316.4	10,754	6,914	1,903	415	9,232	178	110	20,273
2014	318.9	10,903	6,960	1,941	472	9,373	195	128	20,597
2015	321.4	11,098	6,824	1,972	476	9,272	202	137	20,709
<u>Pounds per capita, dry basis</u>									
2005	295.8	63.1	58.9	15.3	3.3	77.4	1.1	0.6	142.2
2006	298.8	62.2	57.8	13.7	3.1	74.7	1.2	0.7	138.7
2007	301.7	61.2	55.9	13.7	3.0	72.6	0.9	0.6	135.3
2008	304.5	65.1	52.7	13.4	2.8	68.8	1.0	0.6	135.5
2009	307.2	63.4	49.7	13.0	2.7	65.3	0.9	0.6	130.3
2010	309.3	66.0	48.4	12.6	2.9	64.0	1.0	0.7	131.7
2011	311.7	65.9	46.7	12.2	2.9	61.8	1.1	0.7	129.5
2012	314.1	66.6	45.8	12.5	2.7	61.0	1.1	0.7	129.4
2013	316.4	68.0	43.7	12.0	2.6	58.4	1.1	0.7	128.1
2014	318.9	68.4	43.6	12.2	3.0	58.8	1.2	0.8	129.2
2015	321.4	69.1	42.5	12.3	3.0	57.7	1.3	0.9	128.9

1/ Per capita deliveries of sweeteners by U.S. processors and refiners and direct-consumption imports to food manufacturers, retailers, and other end users represent the per capita supply of caloric sweeteners. The data exclude deliveries to manufacturers of alcoholic beverages. Actual human intake of caloric sweeteners is lower because of uneaten food, spoilage, and other losses. See Table 51 of the Sugar and Sweeteners Yearbook series for estimated intake of sugar.

2/ Source: U.S. Census Bureau.

3/ Based on U.S. sugar deliveries for domestic food and beverage use.

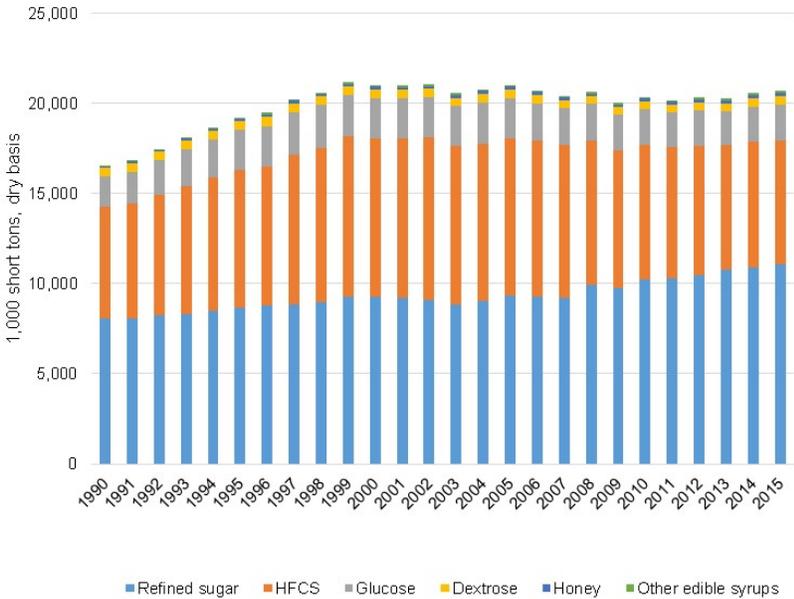
Source: USDA, Economic Research Service, Sugar and Sweeteners Outlook.

On a per capita basis, total caloric sweetener deliveries declined slightly, from 129.2 pounds per person in 2014 to 128.9 pounds per person in 2015. Per capita sugar deliveries increased to 69.1 pounds (a 1.0-percent increase) but did not offset the decrease in HFCS (2.7 percent). Honey and other edible syrups (such as molasses, maple syrup, and fructose syrups) had the highest annual increases, at 3.0 and 6.5 percent, respectively, but accounted for only a small percentage of the market.

It is important to distinguish between the definition of sweetener deliveries and sweetener consumption in analyzing and drawing conclusions from that data. Deliveries represent the amount of product that was marketed and shipped from processors or refiners to users and consumers. The volume of product described by deliveries does not represent the amount of sweetener that is ingested by consumers, as it does not take into account factors such as supply chain loss or shrinkage, or loss due to spoilage or uneaten products at the consumer level. Analyzing information and trends from delivery data is an important step in constructing the balance table for U.S. and North American sugar markets and is an important component in evaluating demand for refined sugar and other sweetener products. It is typically not the most appropriate metric for analyzing dietary- or human-health-related issues, however.

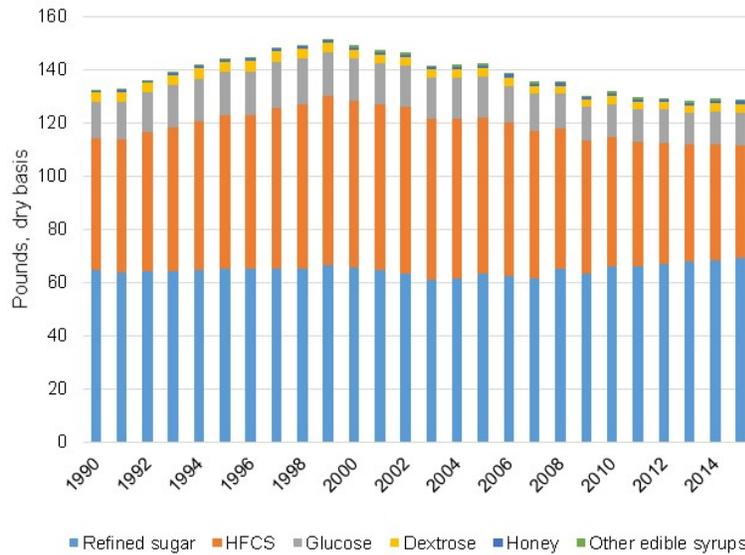
Updated 2015 delivery figures appear to follow longer term trends over the past several decades in the sweetener market. First, total sweetener deliveries have remained relatively flat since 1999, prior to which deliveries had consistently increased on an annual basis. Similarly, per capita deliveries have continued to trend down from a peak of 151.6 pounds in 1999. Per capita deliveries in 2015 declined slightly from 2014, but are still larger than the recent low of 128.1 pounds in 2013. Since 1999, there have been instances of year-over-year increases, but there has been a consistent negative trend in per capita sweetener deliveries.

Figure 3  
**Total U.S. caloric sweetener deliveries for food and beverage use, calendar year, 1990 to 2015**



Source: USDA, Economic Research Service.

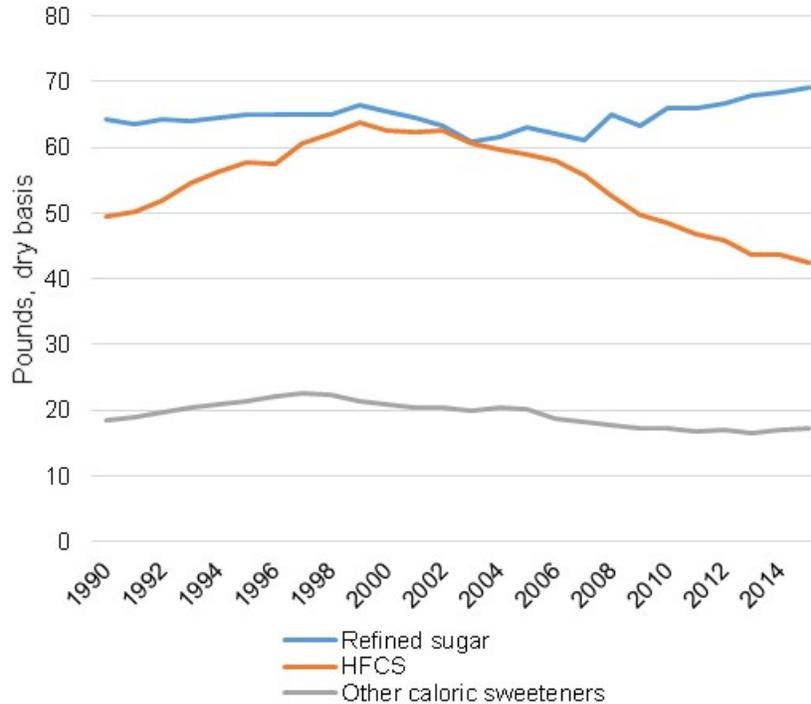
Figure 4  
**Per capita U.S. caloric sweetener deliveries for food and beverage use, calendar year, 1990 to 2015**



Source: USDA, Economic Research Service.

An important aspect of the sweetener deliveries over the past few decades has been the difference in sugar and HFCS trends. Per capita HFCS deliveries steadily grew until 1999, contributing to much of the higher total per capita sweetener figures. The trend abruptly changed beginning in 2000 as the corn milling sector restructured, beginning a declining trend that accelerated after 2007. Per capita sugar deliveries were relatively unchanged through 2007 and then subsequently increased. The change in trends in 2007 coincides with the integration of U.S. and Mexican sweetener markets due to the implementation of the sweetener provisions of the North American Free Trade Agreement (NAFTA), which resulted in more sugar imported from Mexico. The change also occurred during a period of high corn prices that were due to a number of factors, including substantially higher corn-based ethanol production in the United States that constrained corn availability. As a result, there was a divergence between the two sweeteners, as refined sugar accounted for a larger share of the caloric sweetener market, primarily at the expense of HFCS and corn sweeteners.

Figure 5  
**Per capita U.S. caloric sweetener deliveries for food and beverage use, calendar year, 1990 to 2015**



Source: USDA, Economic Research Service.

The changes in per capita sweetener consumption have begun to moderate in recent years. The average annual growth rates for sugar and HFCS over the past 2 years are not as large in absolute terms as the 7- and 10-year growth rates, and total caloric sweetener deliveries have actually grown over the past 2 years compared with declines measured over longer periods. This may suggest that, although the direction of the trends for sugar and HFCS persist, they are converging toward a new equilibrium after the changes of the past 20 years.

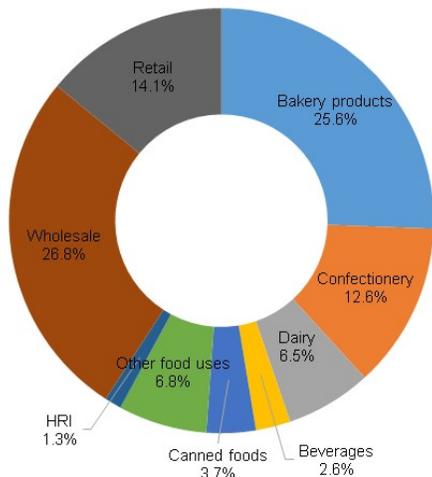
Table 4: Average annual growth rates for per capita caloric sweeteners deliveries, calendar year

	2-year	7-year	10-year	15-year	20-year
Refined sugar	0.80%	0.85%	0.91%	0.35%	0.30%
HFCS	-1.44%	-3.08%	-3.27%	-2.58%	-1.53%
Total caloric sweetener	0.28%	-0.72%	-0.98%	-0.97%	-0.56%

Source: USDA, Economic Research Service.

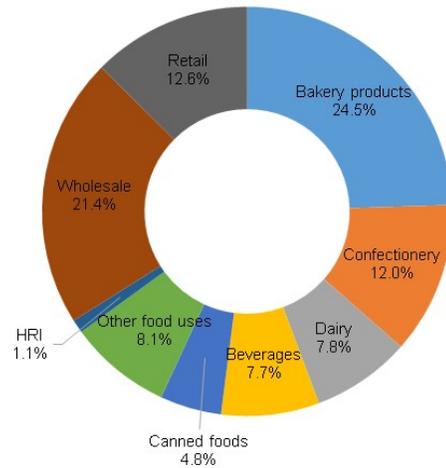
Data for sugar deliveries by types of downstream users also provide insights into the changes that have occurred in the sweetener market over the past decade. Reports from domestic beet processors and cane refiners show that the majority of deliveries are shipped to wholesale buyers, bakery and cereal producers, retailers and grocers, and confectionaries. The most substantial change between deliveries in 2005 and 2015 came from the beverage sector, which increased from 2.6 percent of total sugar deliveries in 2005 to 7.7 percent in 2015, likely due to the substitution of sugar for HFCS. The dairy sector, canned foods, and other food uses also increased their share of sugar deliveries.

Figure 6  
Per capita reported U.S. sugar deliveries for food and beverage use by type of user, calendar year, 2005



Source: USDA, Economic Research Service; USDA, Farm Service Agency.

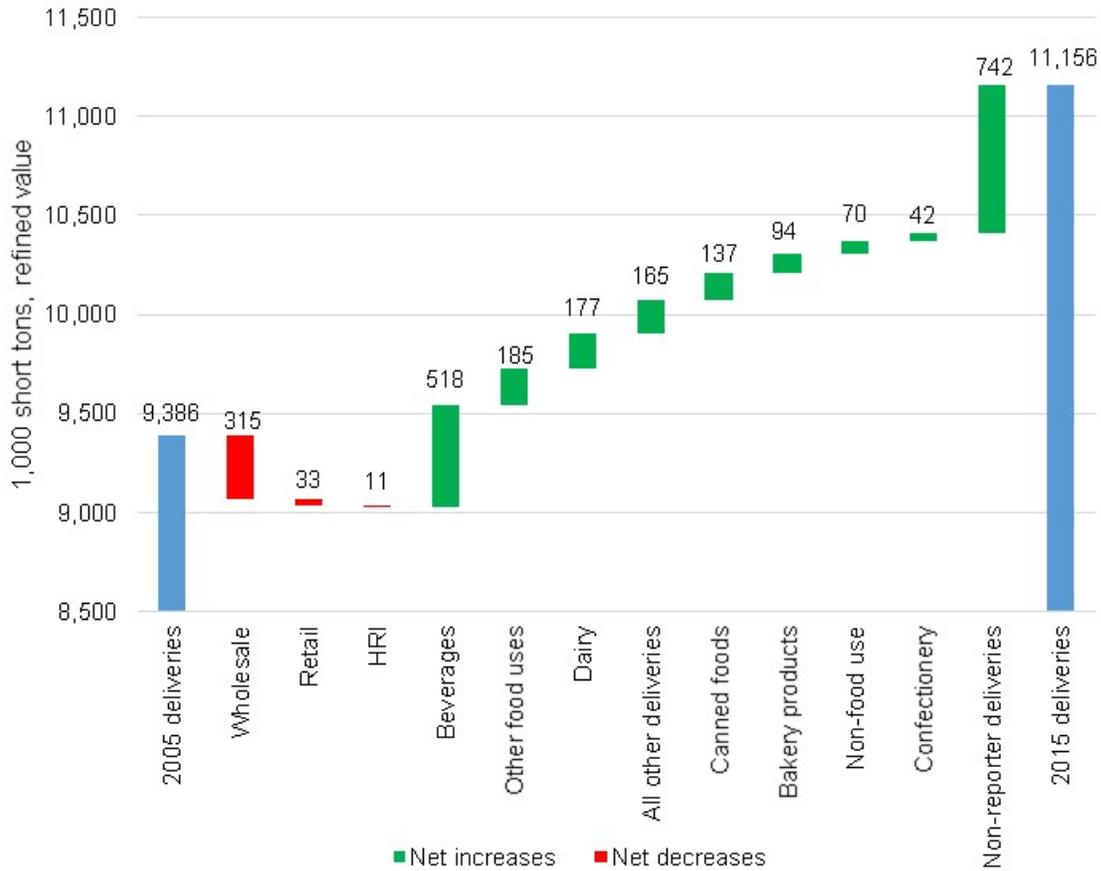
Figure 7  
Per capita reported U.S. sugar deliveries for food and beverage use by type of user, calendar year, 2015



Source: USDA, Economic Research Service; USDA, Farm Service Agency.

Growth in deliveries to the beverage sector accounted for more than one-quarter of all sugar delivery growth between 2005 and 2015, increasing by 518,000 short tons, refined value. This increase was nearly three-times as large as the growth in the next-largest growing sectors: other food uses, dairy products, and other deliveries. Wholesale buyers experienced the largest decrease during this time, declining by 315,000 short tons. During this period, deliveries from non-reporters also grew by 742,000 short tons. Growth in this category is largely due to increased direct consumption imports from Mexico. Since these deliveries to end users are not captured by SMD reporting, there are no data for downstream uses of the deliveries, meaning that trends may be dampened or potentially exacerbated. Nonetheless, SMD data still accounted for more than 90 percent of sugar deliveries in the United States in 2015 and provide a fairly comprehensive view of the U.S. sugar market.

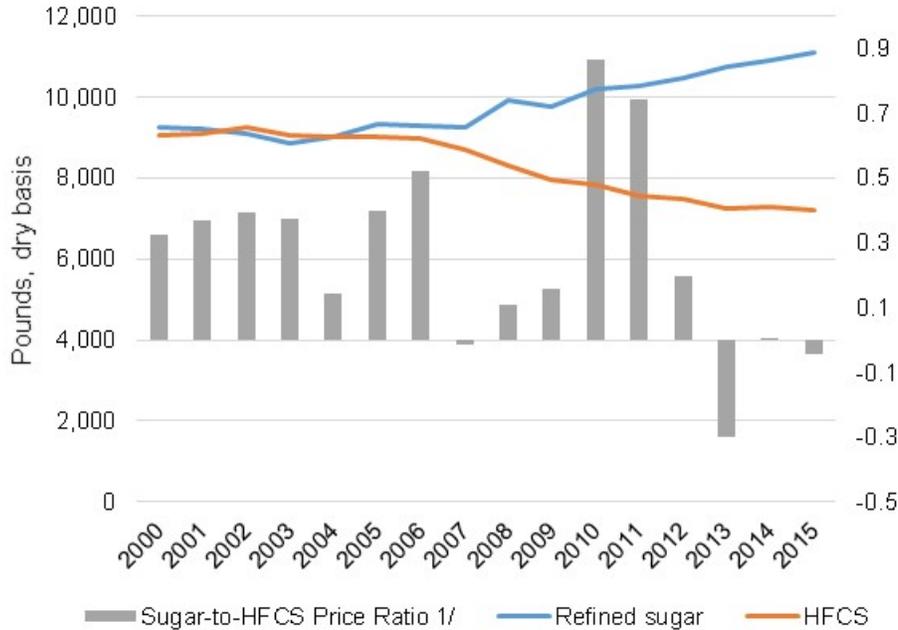
Figure 8  
**U.S. caloric sugar deliveries for food and beverage use net change, by type of user, calendar year, 2005 and 2015**



Source: USDA, Economic Research Service; USDA, Farm Service Agency.

There are several market factors potentially driving the trends in sweetener deliveries and consumption. Parsing out each factor with statistical approaches is difficult, however. Deliveries of sweeteners are not particularly responsive to monthly, or even annual, price movements of sweeteners. Despite several periods of increasing prices and price volatility in both the sugar and corn markets, trends in deliveries have remained consistent. Similarly, they have persisted both in market periods when sugar was less expensive than HFCS and when it was more expensive.

Figure 9  
**U.S. sugar and HFCS deliveries for food and beverage use and relative prices, calendar year, 2000 to 2015**



1/ Spot market prices for Midwest refined beet sugar and wholesale list price for Midwest HFCS-55.  
 Source: USDA, Economic Research Service.

Population growth and increased sugar deliveries show a strong correlation, particularly over the past 10 years. Declining total per capita sweetener deliveries, however, do not support a hypothesis that growth in the sugar deliveries is driven by additional consumers. In addition, time trends also explain variation in sugar deliveries as effectively as changes in population, particularly when accounting for structural changes in U.S.-Mexico sweetener trade policy beginning in 2008. As a result, population may not be the best indicator in forecasting future U.S. sugar demand. Customer preferences are difficult to capture with a single metric; however, the statistical relationship between simple time trends and sugar deliveries could be interpreted as gradual shifts in preferences by food processors and consumers.

The sugar delivery projections in the WASDE are constructed from the perspective of caloric sweetener demand as relatively stable on a per capita basis, with sugar accounting for an increasing proportion of the total complex. The size of these trends is adjusted on an ongoing basis to incorporate current data and market developments. The underlying fundamentals of demand in the caloric sweetener market have remained relatively consistent over the past 15 to 20 years, however.

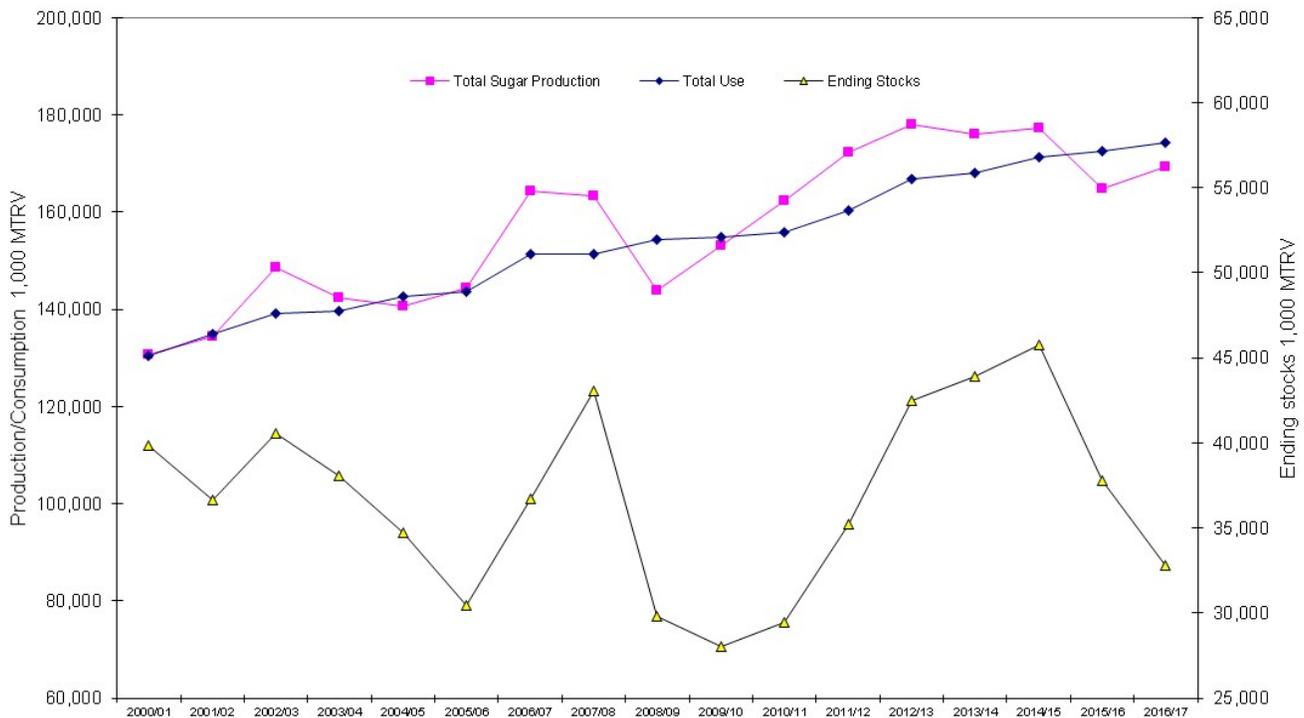
## Special Section: World Sugar Market Projected To Carry a Supply Deficit for Second Consecutive Year

On May 19, the USDA Foreign Agricultural Service (FAS) released updated global sugar supply and use projections in its publication *Sugar: World Markets and Trade*. Global consumption for 2016/17 is forecast at a record 174 million metric tons, raw value (MTRV), exceeding production and drawing stocks down to the lowest level since 2010/11. The USDA estimates the 2015/16 global sugar balance (production less consumption) at a deficit of 7.565 million MTRV and forecasts the 2016/17 balance at a deficit of 4.919 million MTRV. The rising pace of global consumption has been sustained by drawing down stock levels in recent years. Consequently, stocks are approaching what appear to be historically low levels.

World sugar production in 2015/16 is estimated to have fallen 12.301 million MTRV to 164.923 million, mainly due to difficult growing and harvesting conditions in major producing countries. Production is forecast to rebound in 2016/17, assuming normal weather conditions, especially in Brazil and the European Union. An exception is India where drought conditions will affect next year's crop in certain prime growing areas.

Since 2000/01, annual increases in world sugar production have averaged 1.76 percent per year and increases in total use have averaged 1.89 percent. Production growth has been more erratic than that of total use, showing year-to-year variability over four times as much as the steady annual consumption growth. As a result, ending stocks have shown corresponding wide variation, reaching 45.762 million MTRV in 2014/15 after having bottomed to 28.028 million in 2009/10.

Figure 10  
World sugar production, consumption, and ending stocks, 2000/01-projected 2016/17

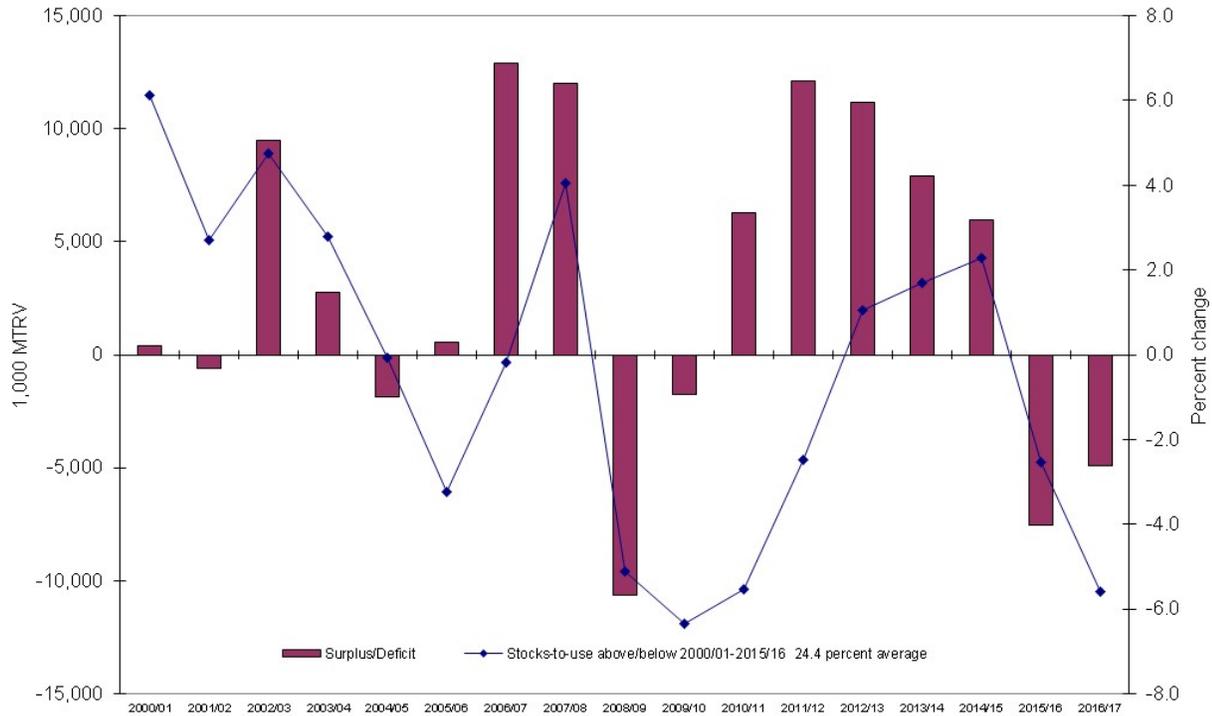


Source: USDA, Foreign Agricultural Service, PSD database.

World sugar in 2015/16 is estimated to have its first deficit after 5 years of stable world production surpluses. The 2010/11–2014/15 surpluses followed a previous pattern of wide fluctuations in production and stocks levels from 2000/01 to 2009/10.

Ending year stocks-to-use ratios have averaged 24.4 percent since 2000/01. It took sizeable surpluses during 2010/11–2012/13 to pull the ratio above the average after it reached a low of 18.1 percent in 2009/10. The estimate for 2015/16 is 21.9 percent and the forecast for 2016/17 is 18.8 percent, about the same as in 2010/11.

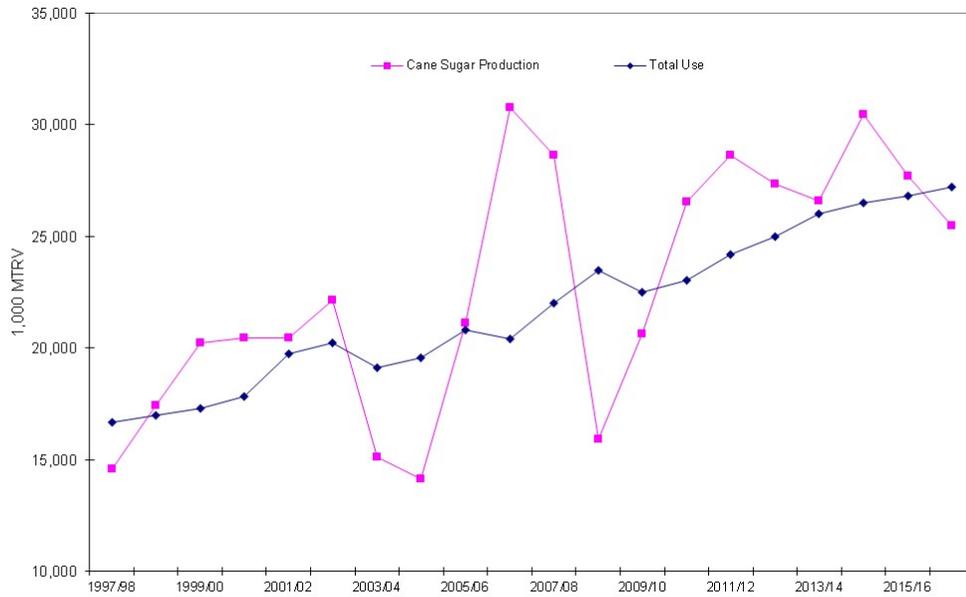
Figure 11  
World sugar surplus/deficit and stocks-to-use ratios



Source: USDA, Foreign Agricultural Service, PSD database.

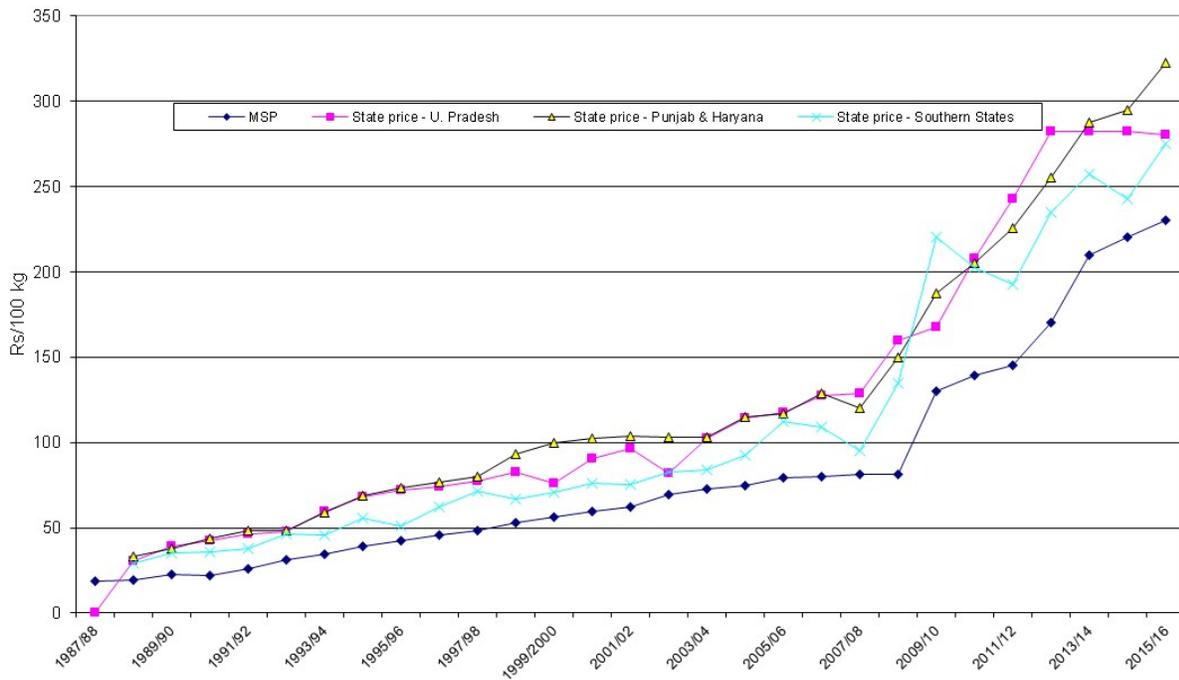
A major determinant of the recent stable world-surplus years has been stabilized sugar production in India. India, along with Pakistan and China, has been a major source of instability in world markets, with fluctuating production patterns. The fluctuations have been absent since 2010/11, and their absence is likely attributable to high State and Provincial support prices that kept production steady until 2015/16, with its weather-related production disturbances.

Figure 12  
**India production and use, 1997/98 -projected 2016/17**



Source: USDA, Foreign Agricultural Service, PSD database.

Figure 12  
**India National and State Sugarcane Support Prices**

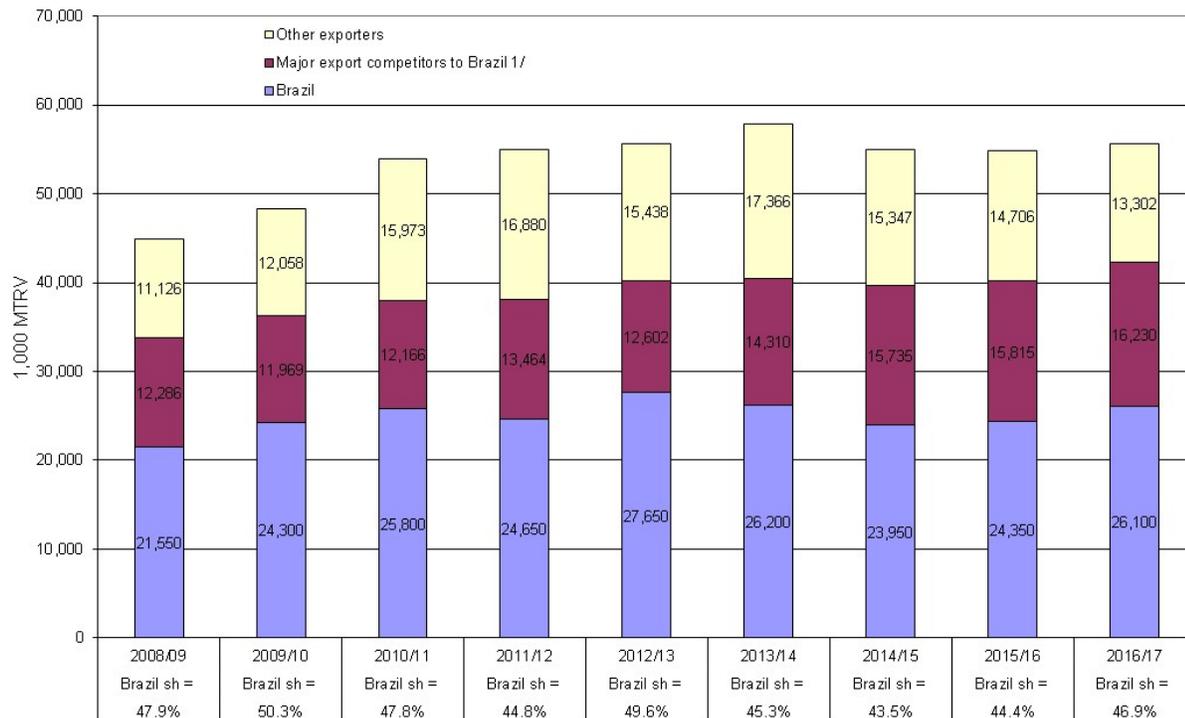


Source: Indian Sugar Mills Association.

## Brazil: Recovery in 2016/17 for the World's Largest Producer and Exporter

- Sugarcane production for 2016/17 is forecast at 680 million MT, including 630 million MT in the Center/South (up 12 million over last year) and 50 million in the North/Northeast (up slightly, but still affected by drought conditions from the preceding year).
- The crop for 2016/17 is expected to be split 43-percent sugar (41 percent in 2015/16) and 57-percent ethanol (59 percent, 2015/16). This reverses a 4-year trend toward more ethanol production.
- Sugar production for 2016/17 is forecast 2.42 percent higher at 37.07 million MTRV: Center/South at 34.15 million MTRV and North/Northeast at 2.92 million MTRV.
- Exports are projected at 26.1 million for 2016/17, a 7-percent increase from the previous year. Brazil's export share rises to 46.9 percent.

Figure 13  
World sugar exports, 2008/09 to 2016/17



1/ Australia, Colombia, Guatemala, South Africa, Thailand.  
Source: USDA, FAS, sugar PSD.

## China: The World's Largest Sugar Importer

- Sugarcane production has been decreasing due to falling prices and rising costs. Provincial minimum purchase prices for 2015/16 and after were eliminated in Yunnan, Guangdong, and Hainan. Weather-related events reduced the crop significantly in 2015/16. Labor and land-rental costs have risen, and there is little mechanization in cultivation or harvesting activities.
- Total sugar production for 2016/17 is projected at 8.2 million MTRV, down 200,000 from the 2015/16 revised production of 8.4 million. It is estimated that 90 percent of sugar manufacturers are operating at a loss as of March 2016. In addition to technical difficulties, processors have seen strong import competition that has limited their prospects.

- Imports are forecast at 7.9 million MTRV in 2016/17, a 1.2-million-MTRV increase from 2015/16. High domestic prices make imports attractive despite substantial over-quota tariffs. Smuggled sugar in 2015/16 is reportedly around 1.5 to 2.0 million MTRV. This sugar is produced in India and Thailand and smuggled in through Burma and Vietnam.

#### **Thailand: World's Second Largest Exporter Makes a Comeback**

- Sugarcane production is forecast at 98.0 million MT, up from 95.0 million in 2015/16. Expanded area harvested accounts for most of the increase, with yield increasing only slightly above the drought-affected 2015/16 level.
- Sugar production for 2016/17 is forecast at 10.1 million MTRV, up 3.7 percent from 9.74 million MTRV in 2015/16.
- Exports for 2016/17 are projected at 9.0 million MTRV and are estimated at 8.8 million for 2015/16. Higher expected world prices are expected to draw sugar from stocks into exports.

#### **European Union: 2016/17 the Last Year for Production Quotas**

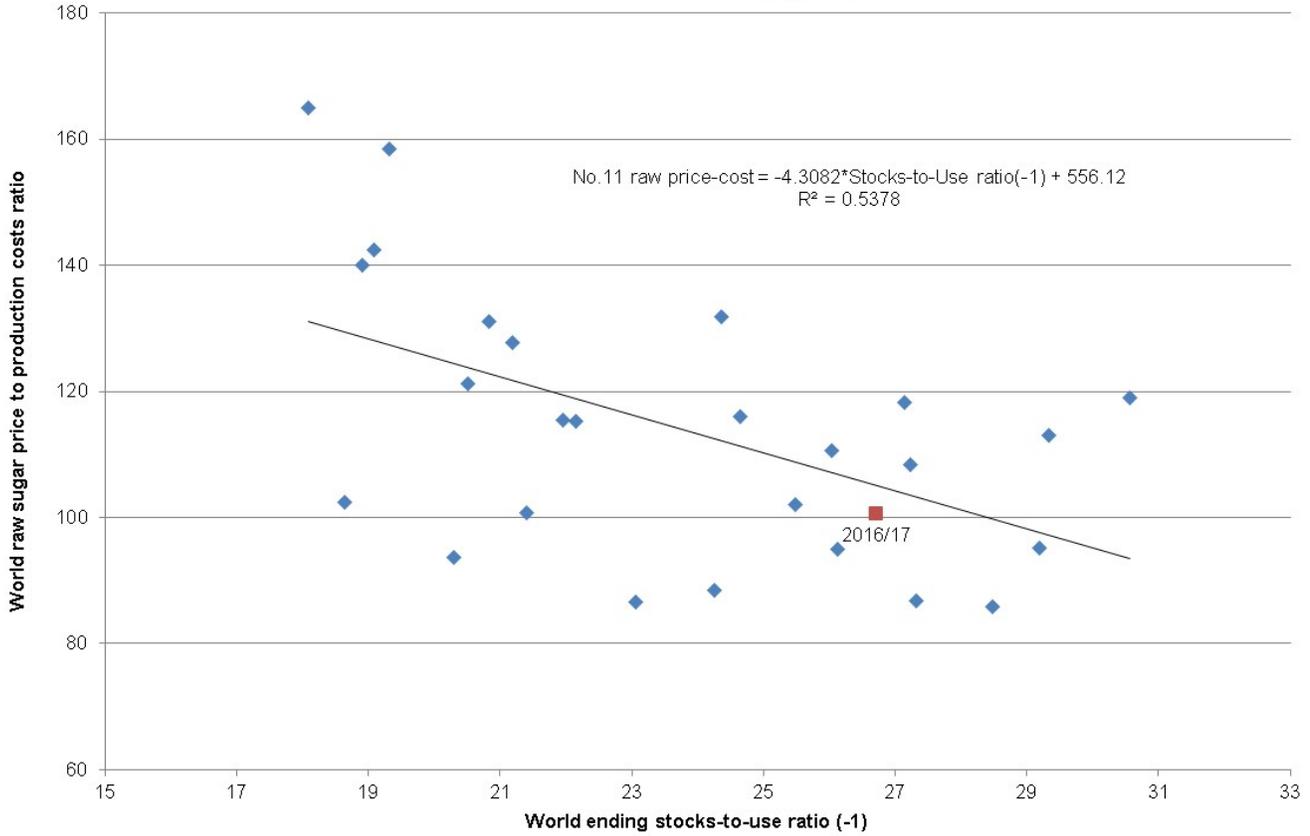
- Production for food use is projected at 16.5 million MTRV. Out-of-quota sugar meant for industrial uses is projected at 0.9 million, bringing total production to 17.4 million MT. Production for 2015/16 was only 14.0 million MT as 2.89 million of unsold out-of-quota sugar was carried in from the previous year and was counted as quota sugar for 2015/16. Unfavorable weather during 2015/16 further limited production prospects.
- With the abolition of the quota system, production is expected to increase in countries like France and Germany and in the Benelux countries. Producers expect to emphasize technical efficiencies as their sugar faces competition from isoglucose (fructose syrup) production that will not be constrained by quota. Ten of 19 member states will retain direct coupled support to sugar producers through the end of the 2019/20 crop year.

#### **Production Deficits and Low Stocks Imply Higher Prices for 2016/17**

World raw sugar prices, after falling for over a year and bottoming at less than 11 cents/lb in August 2015, are trending higher to around 17 cents in May 2016. As prices react to high demand and as the Brazilian *real* struggles to find equilibrium against the dollar, market returns are needed to provide incentives for producers to catch up with demand.

Figure 14

World raw price Brazil Center/South production cost ratio and world stocks use ratio, lagged 1-year



Source: USDA, Economic Research Service; LMC International

## 7 cblWg'UbX'@b\_g'

### **Eqpwev'Kphqo cvkp''**

Michael McConnell, (202) 694-5184, [michael.mcconnell@ers.usda.gov](mailto:michael.mcconnell@ers.usda.gov) (coordinator)  
Verna Daniels, (202) 694-5301, [vblake@ers.usda.gov](mailto:vblake@ers.usda.gov) (web publishing)

### **Uwduet'kvq'Kphqo cvkp''**

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

### **Fcv''**

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.

### **Tgrv'gf'Y'gdul'gu''**

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/>

### **G/o'cklP'qv'k'ec'v'kp''**

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, et c.) 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.