AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

WORLD AND U.S. OUTLOOK FOR SUGAR AND SWEETENERS

ROBERT BARRY
Farm Service Agency
and
RON LORD
Economic Research Service

INTRODUCTION

Soon, in 1999, the World Trade Organization will be renewing negotiations to further reduce barriers to world agricultural trade. Progress was made in the Uruguay Round which, among the various "rounds" of the General Agreement on Tariffs and Trade (GATT) to eliminate trade impediments, was the first to seriously include consideration of agriculture. The Uruguay Round, which came into force in 1995, made only modest gains in agricultural trade, but nonetheless is a significant step through an agreement on commitments and disciplines on market access, export subsidies, and internal support. The direction of change is important for sugar, a commodity with world market prices notoriously volatile and uncertain because of universal intervention by national governments in production and distribution. Sugar is an important food derided as "empty calories" by some, but undeniably a significant source of vital energy for most people and a valued food ingredient in many products, desired not only for its unique "sweetness profile" but its preservative, browning, bulking, and other food preparation virtues. There are many sweeteners, but the "gold standard" remains sugar. Multilateral reductions in trade barriers,with appropriate transition periods for fair consideration of environmental and labor disparities, would permit comparative advantage to determine sugar production and distribution, lower world average cost of production, and raise income.

The U.S. is a major consumer of sugar and a major producer with some of the most efficient producers and processors in the world. Average cost of production has been trending down, making the U.S. more competitive. In this Outlook Forum, my colleague Ron Lord and I will be providing some indicators of a dynamic industry that has experienced major competitive restructuring in the past decade. We shall also present a shortterm outlook for the 1996/97 fiscal year which is the first year of the Federal Agriculture Improvement and Reform Act of 1996 that puts the industry on a more competitive, market-oriented basis, and we provide longerterm projections to fiscal 2003, the closing year of the 1996 Farm Act. No longterm projections of world sugar will be given, as the world market is a reflection of disparate national entities, many of which are important enough to be pricemakers in world trade. We do have a view of the current 1996/97 year, and we shall begin with that, in the context of changes in the past decade. These changes clearly indicate the rising importance of developing countries and in particular Asia in world sugar production, consumption, and trade potentials.

WORLD SUGAR OUTLOOK

Production

World sugar production in 1996/97 is forecast at a record 125.1 million metric tons (mmt), raw value, up 2.1 percent following increases of 5.5 and 5.8 percent in the previous two years. Over the decade (average 1984/85-1994/96), production increased at an average annual rate of 1.9 percent.

Asia has become the largest source of sugar production in the world, rising to 1/3 of world output from just over 1/5. A big contributor to that is India, whose production more than doubled (110 percent increase). In 1996/97 Asia's production will be down slightly, primarily from lower production in India. India's harvested cane area and yield are somewhat reduced, but also influential is the role of domestic prices which were low enough to divert some cane from centrifugal sugar production into gur (a crude noncentrifugal sugar). China, the second largest producer in Asia, is forecast to increase production by about 250,000 tons, to 7 million tons in 1996/97, about 80 percent in cane and the rest beet sugar. Thailand, The third largest producer in Asia, is forecast to produce a record 6.5 million tons this year. Like India over the decade Thailand has increased production 110 percent. Production cost is among the lowest in the world, but the government controls monthly sales and export licenses.

Latin America (Central and South America, Caribbean, and Mexico) is forecast to produce 34 million tons in 1996/97, an increase of almost 3 percent (about 1 million tons, of which 80 percent from Brazil and 15 percent from Cuba). Brazil's forecast production would be a record 14.5 million tons, resulting from higher area, cane yields, and factory recovery of sugar from cane. Brazil has increased production over the decade by about 55 percent. In contrast, Cuba's production over the decade has declined 45 percent, as its lucrative oil-for-sugar barter with the former Soviet Union (FSU) was cancelled. A new barter arrangement has come into force, without the highly escalated sugar price equivalents. Over the past decade, Latin America's sugar production increased 14 percent, but its share of world output is smaller, down to 27 percent as a result of Asia's ascendancy.

Production in the FSU is forecast to be down 15 percent to about 5.4 million tons, with reductions in both the Ukraine (minus 800,000 tons) and slightly in the Russian Federation. Production has fallen drastically following the breakup of the USSR, and average 3-year production in 1994/95-1996/97 is placed at 5.8 million tons, down from 8.5 million in 1984/85-1986/87.

The European Union (EU) is forecast to increase production to 17.2 million tons in 1996/97 (largest in the world if the EU were considered a country), up nearly 1.5 percent from last year but below its 1993/1994 record of 18.4 million. The United States, which ranks as the world's fifth largest producer (just below China and just above Thailand) will produce about 1 percent less in 1996/97.

Consumption

World sugar consumption is forecast at 123.1 million metric tons in 1996/97, up 3.8 percent on top of an increase of 4.4 percent last year. Over the two years, the increase would be almost 9.5 million tons, in contrast to stagnation in the early 1990's. (Between 1990/91 and 1994/95 consumption increased only 1.7 million tons, at an average annual rate of .4 percent compared with the average rate of 1.6 percent for the period 1984/85-86/87 to 1994/95-96/97. The lower rate in the early 1990's reflects primarily the disruption of consumption in the FSU. Consumption fell 2.9 million tons, almost as much as production. Central Europe, too, experienced drastic decline in both output and consumption in that 4-year span. However, consumption seems to have stabilized in those two areas over the last two years.)

In 1996/97, Asia's sugar consumption is forecast to rise about 5 percent (2 million tons), on top of an increase of 4.4 percent the previous year. Strong increases are also forecast for Latin America (3.3 percent in South America) and North Africa-Middle East (3.2 percent). Asia now accounts for about 34 percent of world sugar consumption compared with 28 percent a decade ago. Developing countries now acount for 66 % of world sugar consumption, compared with 58 percent a decade ago.This could strengthen the factor that has helped hold price to moderate levels since the last price spike of 1980/81: the fact that countries with lower incomes tend to drop out of the market when prices are exceedingly high. We note, however, that "developing countries" is a term increasingly tenuous because of rapid industrializtion in many of these countries.

Stocks, Trade Potentials, and Prices

Production over the past two years exceeded consumption, and this is expected again in 1996/97, so that stocks are estimated to rise to 26.8 million tons. The world sugar stocks-to-use ratio has also been rising, from 16.5 percent in 1993/94 to an estimated 21.8 percent in 1996/97, putting pressure on world sugar prices. The world raw sugar spot price (Contract # 11, f.o.b. stowed in Caribbean ports including Brazil, bulk) eased from the 1994/95 average of 13.9 cents a pound to 12.4 cents in 1995/96 and averaged 11.4 cents in the first fiscal quarter of October-December 1996. Since then the price has softened. How far will prices fall?

Futures prices relative to the spot price are currently inverted, perhaps in the expectation of a third consecutive year of world record production. Predicting price is a chancy matter in any case because policy decisions of any of a number of countries, intervening in the market, can easily tip the outcome. India, for example, accumulated substantial stocks in 1994/95 and 1995/96 and could export 1.5 million tons in 1996/97. An estimated reduction of half a million tons of stocks in 1996/97 would still leave stocks at about 7.2 mmt, just half of which would amount to 10 percent of world exports of 35.5 million forecast in 1996/97, which is a very substantial potential impact on trade.

China is forecast to import 2.5 million tons in 1996/97, yet is always hard to predict because government imposes supra-commercial goals. Per capita sugar consumption can be decreed instead of allowed to be settled by the market, as in 1993/94 when China was actually a net exporter, having imported as little as 0.9 million tons and exported 1.1 million, and consumption was permitted to fall. Data on per capita consumption tend to be tenuous but estimates are that China ordinarily consumes 6-7 kilograms, compared with 12-13 kilograms for Indonesia, 18-19 . for Japan, 41-42 for Mexico, and 34-35 for the EU.

With the demise of the USSR-Cuba special trading arrangement at premium prices above the world price quote, the major premium-price arrangements remaining are the EU's Lome' Agreement and the U.S. tariff-rate import quota for 40 countries. However, the world price quote is still far from being a free market result. The artificially low price level and uncertainty of the so-called world price stems from the heavy hand of government intervention in sugar industries throughout the world. Two-thirds of world exports are accounted for by Brazil, the EU, Thailand, Australia, and Cuba, all of which, in varying degrees, officially intervene in sugar marketing. Australia has recently decided to eliminate its tariff on sugar imports but continues with "single desk" selling. Given the uncertainties which underlie the so-called world market price, it is difficult to have much confidence in forecasting prices, but we are willing enough to enter into the spirit of "fearless forecasts" and predict a 1996/97 average world sugar price, measured by the # 11 contract, at 10.5-11 cents a pound.

U.S. SUGAR OUTLOOK

The U.S. sweetener market is the largest and most diverse in the world. The U.S. produces more sugar than all but three other countries--Brazil, India, and China--and is one of the few countries with significant production of both sugar beets and sugarcane. This year the U.S. is the third largest importer and second largest consumer of sugar in the world. The U.S. produces about 75 percent of the world's high-fructose corn syrup output, and also produces and consumes large amounts of high-intensity (low-calorie) sweeteners.

Like other sugar and sweetener producing countries, the U.S. has taken measures to protect its industry from a world market that reflects a great deal of national intervention. While arguments are aplenty on who is the greater market intervenor, one characteristic of the U.S. market is the fierce competition within the nation's borders. There is no single-agency selling, and there is competition between beet and cane sugar sellers as well as among beet processors, among cane refiners, and between sugar and alternative sweetener suppliers. Along with the competition has been a process of rationalizing the industry toward greater and more efficient operating capacities.

Structural Change

Within the beet sector, there has been much restructuring. Sugar beet production is up, to an

average 28.8 million short tons in fiscal years 1995 to 1997 from 23.3 million short tons a decade ago (24 percent), but California has lost 1.7 million and now accounts for only 11 percent of the U.S. total versus 21 percent a decade ago. Minnesota and North Dakota combined have raised their U.S. share to 42 percent from 32 percent. The number of factories processing sugarbeets has declined from 42 to 30, but average factory slicing capacity has risen to 6,054 tons per day, up from 4,074 in 1982 when the sugar loan program started. Beet processing capacity is estimated at about 181,600 short tons of sugar beets per day, 6 percent above 1982 but 2 percent less than in 1994.

Within the cane sector, sugarcane production rose 11 percent over the decade to an average 30.3 million tons in fiscal years 1995-1997. Production rose in all States except Hawaii where harvested area fell almost 50 percent. Seven Hawaiian cane processing companies have shut down in the past decade. On the other hand, Louisiana now commands 32 percent of the total, up from 21, with average grinding capacity up 46 percent.

In cane refining, the industry structure similarly shows much change. Companies have been reduced to 6 from 14 in 1982, and the number of factories reduced to 11 from 22. Despite an increase of 40 percent in average melting capacity, total U.S. refining capacity is down 27 percent. The decline of cane refining output is partly the result of the increased share of beet sugar production relative to cane, but largely from decreased demand for sugar brought on by HFCS substitution through the mid-1980s, and the subsequent reduction in sugar imports. The share of U.S. sugar consumption provided by domestic sugar production has risen from 55 percent in the early 1970s to about 85 percent in the early 1990s, dropping to 75 percent recently because of lower U.S. sugar production.

Cane refining capacity, however, is poised for expansion. Capacity utilization in major refineries in 1996/97 has been close to the limit, at times operating above the 300 days per year rate and helping keep refined sugar prices at the highest levels since 1990. In Florida, a cane milling company has recently announced the building of a sugar refinery to be operational in 1998. Eventually the refinery is reported to reach an annual capacity of about 600,000 tons of refined sugar, equivalent to adding about 9 percent to total U.S. refining capacity of 6.8 million tons of raw sugar per day (7.125 million, including Puerto Rico and the cane co-processing unit of a beet processor). Additional refining capacity appears in prospect with the application of membrane filtration technology to provide direct refined sugar at the raw cane mill.

The dynamism of the sugar industry is manifest in the consolidation of industry through cane refining company acquisitions of beet processing and corn wet millling; strengthened strategic marketing through creation of joint selling and larger storage capacities; and strengthened financial structure through formation of grower cooperatives. The cooperatives have the virtue of a greater assurance of getting sufficient supply of the crop (this is especially relevant in beets), more flexibility in the allocation of returns between growers and processors (they are one and the same) and therefore can more aggressively discount sugar prices while avoiding anti-trust concerns, and also enjoy certain tax advantages. One beet processing company has recently been

bought up by its growers, and another beet processing cooperative is starting up.

Cost of Production

In both raw cane sugar and refined beet sugar production and processing, average costs per pound of sugar have generally declined in the past decade through the 1995 crop, despite price inflation. The one exception is Hawaii, and its cane sugar production has declined to less than half its traditional output of 1 million tons of raw cane sugar per year.

On a cents-per-pound basis, Eastern beet sugar production costs dropped from 21.8 cents a pound in 1982-84 to 20.1 cents in 1992-95, a decline of about 8 percent. The Western area is generally irrigated and higher-yielding but also higher-cost. The Western average cost was 24.4 cents a pound in 1982-84, and dropped only 4 percent to 23.5 cents a pound over 1992-95. Sugarbeet acreage has shifted east reflecting the lower costs, with the Eastern region share rising from 46 percent to 55 percent of the national total in a decade.

While national average costs are down in cents per pound of sugar, costs per acre have been rising. This indicates that sugar per acre has risen faster than costs per acre. For example, the 1982-84 average beet sugar per acre yield was 2.6 tons, while the 1992-95 average was 3.0 tons per acre, a rise of 15 percent.

The lowest-cost State for raw cane sugar production is Florida, which averaged 19.8 cents a pound, raw value, for both the 1982-84 and 1992-95 periods. While costs are sometimes shown on a dollars per acre, or dollars per ton of sugarcane, the focus of the producer is really to minimize cost on a cents per pound of sugar basis. Florida's yield of sugar per acre in 1982-84 was 3.6 tons, but in 1992-95 averaged 4.12 tons an acre, and was never below 4 tons.

Louisiana and Texas costs are now combined for statistical reasons, and for the 1992-95 crops for the combined region averaged 19.9 cents a pound, not much different from Florida. In the 1982-84 period, Louisiana had averaged 21.4 cents a pound, and Texas 27.2 cents a pound. Louisiana's yield has risen from an average of 2.5 tons of sugar, raw value, per acre in 1982-84 to 2.70 in 1992-95, an 8 percent increase. (This does not include the 1996 Louisiana crop, which set a record of over 3.1 tons of sugar per acre.) Sugar per acre in Texas averaged 2.3 tons in 1982-84, but had risen to 3.4 tons in 1992-95, a rise of 48 percent.

Hawaii has usually been the highest-cost State, and in 1992-95 costs averaged 26.2 cents a pound of sugar, raw value, up from 23.8 in 1982-84. Sugar yield was 11.4 tons per acre in 1982-84, but had dropped 9 percent to 10.4 tons in 1992-95 -- the only State to show a decline in sugar per acre over the decade.

Given a highly competitive domestic market, U.S. sugar companies cannot afford to be complacent either among each other or against other sweeteners. Sugar consumption suffered a spectacular fall from 10.9 million tons in 1976 to 7.8 million in 1986 when lower-priced HFCS

edged out sugar in liquid applications (primarily soft drinks and beverages). Crystalline fructose has been nibbling at the edge of sugar's markets but at the moment, given its relatively high cost and price, is confined to niche markets. Corn wet millers, however, have expanded capacity to where prices are very low, increasing the pressure to further stretch HFCS's technical limits to bite into sugar's market through incremental substitution or new products. (More on HFCS later in our presentation.)

Toward A More Market-Oriented,Sugar Industry

WTO. During the Uruguay Round of multilateral trade negotiations, as part of the general movement to eliminate non-tariff barriers (e.g. quotas), the United States and its trading partners put into place the process of tariffication; that is, replacing a non-tariff barrier with its tariff equivalent on quantities above a minimum access commitment. The result is the tariff-rate quota--a quantity admitted at a low duty with additional quantities at a duty high enough to replace the NTB. Over time the higher duty is reduced and the "in-quota quantity" is increased, leading to gradual liberalization.

For sugar, the United States committed in its WTO schedule to an in-quota quantity of no less than 1.139 million metric tons, raw value (1.117 million for raw sugar and 22,000 for refined and specialty sugars), or 1.256 million short tons. This is only marginally above the 1.25 million short tons which effectively served as a minimum under the 1990 Farm Act, and compares with the U.S. tariff-rate import quota average of 1.34 million short tons for fiscal years 1993-1995 and a level of less than 1 million short tons in some years in the late 1980's. The high-tier tariff which applies to over-quota sugar imports is being reduced to 15.36 cents a pound by the year 2000; such a tariff would fail to support a domestic price of 22 cents per pound only if the world price fell below 6 cents--which is highly unlikely. While the process of formal liberalization proceeds gradually, the US import system permits market forces within the United States to impact on market access: the TRQ for fiscal 1996 was well over 2 million short tons, and the fiscal 1997 TRQ will remain close to that level.

NAFTA. The agriculture and sugar provisions of the NAFTA differ with respect to Canada and Mexico. Canada, which supplies refined sugar, is now subject to the 22,000-metric-ton global tariff-rate quota on refined sugar. The low-tier duty is being phased down to zero by January 1, 1998, as provided in the U.S.-Canada Free Trade Agreement incorporated into the NAFTA. The duty on HFCS will also be eliminated by that date. The agreement with Mexico provides for eventual complete and reciprocal liberalization during a staged transition period which ends in the year 2008.

Canada has seen its export of refined sugar to the United States drop from the early part of this decade when it shipped over 30,000 metric tons a year. Mexico, on the other hand, has achieved the status of a net surplus producer for the 1996/97 tariff-rate quota year, producing more than it

consumes, and can therefore ship 25,000 metric tons, raw value, of sugar duty-free to the United States, in either raw or refined form.

1996 Farm Act. The Federal Agriculture and Reform Act of 1996, signed into law on April 4 last year made significant changes to the sugar program, lowering support levels, reducing Government involvement, and putting sugar producers and processors on a higher risk, more market-oriented position. Support was lowered by:
--freezing loan rates at 1995 levels of 18 cents per pound for raw cane sugar and 22.9 cents per pound for refined beet sugar;
--making nonrecourse loans conditional on a minimum TRQ import above 1.5 million short tons, raw value;
--increasing the cost of loans by charging 1 percentage point above the Commodity Credit Corporation's cost of borrowing from the Treasury ;
--increasing marketing assessments 25 percent to 0.198 cents per pound for cane sugar and 0.2123 cents per pound for refined beet sugar;

Most importantly, the authority to impose marketing allotments was suspended, eliminating limits on the sale and thereby the production of domestically produced sugar. The role of Government in price support has been confined to the loan program and the TRQ. Allotments also ceased on sales of crystalline fructose.

With the greater opportunity to produce, the 1996 Act also has raised risk. If the TRQ is set at or less than 1.5 million short tons, loans are recourse, which means that the borrower (sugar processor) would have to repay the loan in cash. With nonrecourse loans, the borrower can choose to forfeit the sugar he used as loan collateral and satisfy payment regardless of the price of the sugar in the market (the Government would have no recourse but accept).

Even with a nonrecourse loan, the the 1996 Act now imposes a 1 cent per pound penalty for forfeiture, effectively lowering price support by 1 cent. The grower faces greater risk too, through suspension of a legislative provision that, in the event of processor bankruptcy, the Government would ensure farmers receive minimum grower payments.

First Year of the 1996 Farm Act: Fiscal 1997

Production. USDA each month estimates US sugar supply and use for the current fiscal year. The February report estimates fiscal 1997 production at 7.29 million short tons. Beet sugar production is projected to be 55 percent of the total, at 4 million tons, slightly below last year and the second consecutive poor crop after the record 4.5 million tons in fiscal 1995. Beet sugar's share of consumption rose from 35 percent in the early 1980's to about 45 percent in the early 1990's, dropping to about 40 percent after 1995 as bad weather and lower acreage cut U.S. output.

Sugar beet acreage expanded from about 1 million acres in the early 1980's to the 1994/95 peak of 1.44 million acres, as the U.S. sugar program provided relatively stable prices while productivity gains lowered costs and raised yields. In 1996/97, harvested sugar beet area was only 1.32 million acres, with much of the 120,000-acre decline resulting from farmers switching to corn, wheat, and other commodities that commanded high prices in 1996.

The average sugar beet yield is forecast at 20.2 tons an acre in 1996/97, comparable to the average of recent years. Although wet weather hampered field work last spring and some planting was as late as any year on record, good weather in the fall allowed yields to recover.

Cane sugar production in fiscal 1997 is forecast at 3.29 million tons, raw value, down from 3.45 million last year and the record of 3.57 million tons in 1994. Florida, which produces more cane sugar than any other State , is forecast to produce 1.76 million tons, about the same as last year and close to the 5-year average. This level of output would be about 54 percent of U.S. cane sugar output. Although Florida's sugarcane yield is projected to be 34 tons an acre, down from 34.6 tons last year, sucrose content of the cane is reported to be higher than last year, yielding about the same volume of sugar an acre. The area harvested for sugar in Florida is 420,000 acres, up slightly from last year.

Sugarcane acreage in Florida expanded to a peak of 428,000 acres in 1991/92, and since then has varied little. Freezes in January this year put some of the crop at risk, but it appears most of the cane will be harvested and production is not likely to be affected. However, freeze damage to sugarcane plants needed for planting new fields may have been extensive, which could affect the 1997/98 crop. Florida plans to finish harvesting by mid-March.

Louisiana is the second-largest producer of cane sugar, and usually harvests during a short season between October and December. The current crop continued to be harvesed into the first week of January, and total production was 1.045 million tons, not far from the record 1.06 million tons last year.

A freeze in Louisiana in early 1996 damaged many acres which had to be abandoned, and early forecasts assumed a lower crop. But fall weather was excellent, the sugarcane was able to continue adding sugar, and the abandoned fields would have been the lowest yielding, so that the final average yields were 27 tons an acre, 2 tons higher than expected earlier in the fall. Two new varieties were helpful, with some fields getting over 50 tons an acre.

Louisiana harvested 335,000 acres of sugarcane, down from record of 368,000 acres in 1995/96, with much of the decline due to abandonment of freeze-damaged fields. Sugar yield was a record 3.12 tons an acre, far above the previous high of 2.9 tons in 1994/95. The fields intended for harvest in 1997 have survived the freezes up to the middle of February and look promising for a good crop.

Hawaii's sugar production has been declining for a decade. Its last 1-million-ton crop was in 1986

and the forecast is for another year of decline, to 370,000 tons this year. Costs for land, labor, transportation of sugar to the mainland, and environmental compliance are high. Six of 12 mills have closed since 1992, with 2 mills closing in 1996. Some of the remaining mills appear to be in precarious financial position.

Sugarcane in Hawaii is grown for almost 2 years before being harvested, so cane yields--forecast at 87 tons an acre this year--are among the highest in the world. Sugar yield is forecast at 10.9 tons an acre, up slightly from recent years but lower than the yields of over 12 tons of sugar an acre in the mid-1980's.

Texas is forecast to produce 85,000 tons of cane sugar in fiscal 1997, down from levels of over 100,000 tons of sugar in the last 5 years, and far below the record 146,000 tons in 1995. Water has been very short this season, and even with recent rains, there was not enough moisture for a good crop.

USDA will provide its first survey of sugar beet acreage for the 1997/98 crop in the *Prospective Plantings* report scheduled for release March 31. Sugar beet acreage was down in 1996/97 in part because of the high prices of alternative crops, and reduced sugar beet prices in the previous year. Refined beet sugar prices--the basis for sugar beet grower returns--had averaged 25.3 cents a pound (bulk, Midwest, f.o.b. factory) in fiscal 1995, the fourth straight year in a narrow range of 24.5 to 25.6 cents. Prices have been 29 cents or higher for over a year, and the last sugar beet payments for many farmers were higher than the previous year. Overall, conditions in early 1997 indicate that total U.S. sugar beet acreage is likely to rise in 1997/98. Sugarcane acreage, on the other hand, may rise in Louisiana, remain stable in Florida and Texas, and fall marginally in Hawaii.

Loan Participation. The 1-percentage point increase in loan rates required by the 1996 Farm Act for sugar beet and sugarcane processors who borrow from the Commodity Credit Corporation has had a significant effect on loan activity. Higher beet sugar prices may also have been a factor. At the end of January 1997, 688.323 million pounds of beet sugar are under loan, only 37 percent of the volume last year. Only 424.392 million pounds of cane sugar are under loan, 52 percent of last year's volume. Processors currently have more sugar in storage than last year at this time but are financing their inventories with private funds. Processors also appear to be keeping their loans for shorter periods than last year. Beet processors had repaid only 9 percent of their loans by the end of January 1996 compared with 30 percent this year.

Consumption. U.S. sugar consumption for fiscal 1997 is forecast at 9.8 million tons, up 2.6 percent or 246,000 tons from 1996. Sugar deliveries in August and September 1996 were curtailed by short beet sugar supplies, and the 1996/97 forecast assumes that part of the shortfalls were made up by higher deliveries in the October-December quarter. Even then, deliveries were weaker than anticipated and therefore USDA in early February reduced its forecast deliveries by 100,000 tons from the previous 9.9 million.

Trade, Stocks, and Prices. The USDA on September 13, 1996 announced a fiscal 1997 tariff-rate import quota (TRQ) for raw sugar of 2.300 million metric tons (2.535 million short tons), raw value. With the refined sugar TRQ, including specialty sugar, of 22,000 metric tons (24,250 short tons), the total TRQ was set at 2.322 million metric tons (2.560 million short tons).

The raw sugar TRQ was established under a new administrative plan, with an initial allocation of 1.874 million short tons. Three additions to the TRQ of 220,462 short tons each would be allocated in January, March, and May 1997, if the 1996/97 ending stocks-to-use forecast in USDA's *World Agricultural Supply and Demand Estimates* report for those months is less than or equal to 15.5 percent. Because the January stocks-to-use percentage was 15.6, the allocation of 220,462 tons (rounded to 221,000 in our table) was cancelled. Including an estimated shortfall in the fiscal 1997 TRQ of 70,000 short tons, the current estimate of sugar imports for consumption is 2.269 million tons.

Imports under the reexport program are estimated at 450,000 short tons in fiscal 1997, down from 530,000 last year. Exports are estimated at 250,000 tons, the lowest level since 1983. There is less incentive to export this year because of relatively high refined sugar prices in the U.S. market and because the refined premium on the world market is much lower than last year.

U.S. raw sugar prices (nearby futures, c.i.f., duty-paid, Contract No. 14, New York) averaged 22.21 cents a pound in the October-December quarter, easing to 21.88 cents in January. February prices through the 19th averaged 22.07 cents, reflecting cancellation of the TRQ allocation in January (though much of that had been fairly well anticipated). Futures prices for 1997 are relatively flat, with the further futures somewhat higher than the nearby futures. Over the 10 fiscal years through fiscal 1996 raw sugar prices averaged 22.16 cents a pound.

Refined beet sugar prices averaged 28.84 cents a pound in fiscal 1996, driven up from 25.26 cents the year before primarily by the downturn in beet sugar production from the record 1995 output. Prices have held at 29.00 cents since August 1996, though some spot market sales reportedly have been below 29 cents. Refined prices over the past 10 fiscal years averaged 26.30 cents a pound, ranging from 23.70 cents in 1987 to 30.16 cents in 1990.

CORN SWEETENERS

World high fructose corn syrup (HFCS) production exceeded 10 million metric tons, dry basis, for the first time in 1996. Thus world consumption of both sugar and HFCS together was about 125 million metric tons, with HFCS representing about 8 percent of the combined consumption. The United States still accounts for about three-fourths of world HFCS consumption. World HFCS consumption growth has averaged 4.5 percent annually for the last 10 years, compared with sugar's consumption growth rate of 1.5 percent annually. HFCS constitutes a significant share of sweetener consumption in Canada, Japan, South Korea, Taiwan, and Argentina, and is expected

to soon find a large market in Mexico.

HFCS represents about 47 percent of the combined sugar and HFCS consumption in the United States, rising from about 42 percent a decade ago. Consumption of HFCS in fiscal 1997 is forecast at 8.36 million tons,dry basis, up 4.7 percent. Domestic per capita HFCS use is forecast at 61.6 pounds, up from 59.4 pounds last year and 49.3 pounds in fiscal 1991.

HFCS production capacity in the United States has grown dramatically in recent years. Some of the increase was likely in anticipation of a larger Mexican market, but the Mexican peso devaluation since 1994 made U.S. products more expensive, while the recent economic contraction in Mexico disrupted trade. Thus HFCS capacity growth has outpaced domestic demand growth, and as a result prices are soft.

A new corn wet milling company started production in North Dakota in late 1996. With a daily grinding capacity of 85,000 bushels of corn, this factory represents an increase in U.S. production capacity of 4 to 5 percent. The company is a cooperative, with over 2,000 corn farmer members, some of whom also grow sugarbeets.

U.S. HFCS production in fiscal 1997 is forecast at 8.40 million tons, dry basis, up 3.7 percent from 8.11 million tons in 1996 and accounting for about 67 percent of expected total corn sweetener production for the coming year. Corn sweeteners (HFCS, glucose, and dextrose) are forecast to use a record 750 million bushels of corn, up 4.3 percent from fiscal 1996, and representing about 11.3 percent of the corn crop.

U.S. exports of HFCS to Mexico in fiscal 1996 rose to 78,000 metric tons, dry basis, from 50,000 tons the year before and only 9,000 tons in 1991, according to the U.S. Census Bureau. Prior to 1984, U.S. exports of HFCS to Canada exceeded those to Mexico, and Canada is still the largest destination for U.S. exports of glucose and dextrose.

The NAFTA-based Mexican import tariff on U.S. HFCS was scheduled to fall to 9 percent in 1997, and decrease by 1.5 percent each year to zero in 2003. However, the Mexican Government increased the duty on U.S. HFCS to 12.5 percent effective in late 1996, an anti-dumping reaction to a U.S. increase in duties on Mexican broomcorns. Separately, preparation of an anti-dumping petition by Mexican sugar producers against U.S. HFCS is being reported in the press, but no official anti-dumping investigation has begun.

Mexican demand for HFCS is growing as bottlers, especially close to the U.S. border, adopt new technology to handle liquid sweeteners. It appears that the major Mexican soft drink bottlers are adopting a "go-slow" approach to switching to HFCS, but smaller brands seem to be moving more quickly.

U.S. SUGAR: LONG-TERM PROJECTIONS TO FISCAL 2003

The USDA Baseline projections we are presenting to you this year are different from those last year partly because of a different program framework, the 1996 Farm Act which extends for 7 years to fiscal 2003.

Under the new farm act, the removal of production constraints through elimination of marketing allotments liberates sugar producers and is certainly expansionary. On the other hand, the freedom to farm in the new farm act is accompanied by a reduced effective level of price support and increased risk to the business of producing and processing sugar. In weighing these and other factors, we have had to rely on our best informed judgment, based on a constant process of visiting with and observing the industry, its plans for expansion and innovation, expenditures for plant and equipment, technological advances, and areas of concern. We looked at competitiveness, alternative crops, opportunity cost, and potentials of sweetener substitutes.

What we have come up with in this set of projections compared with last year is: continued growth of production but at a slower rate, consumption rising slightly faster, and imports for domestic consumption (TRQ) significantly larger. The raw sugar price (New York Contract #14) averaged 22.50 cents a pound in fiscal 1996, and is projected to average 22.00 cents through the remainder of the Baseline. Grower prices for sugar beets and sugarcane derive from the raw sugar price, which is based on a cane sugar loan rate of 18 cents a pound, raw value.

Production. U.S. sugar production is projected at 7.87 million tons in fiscal 2003, up 8 percent from 1997 but 680,000 tons (beet 500,000 tons) less than projected last year. We have a more conservative estimate of beet sugar production growth as a result of our reassessment of the potential for increased acreage; recent closure of 4 beet sugar factories in California, Nebraska, and Ohio; and the loss of the Canadian market because of anti-dumping duties. We have also moderated our estimate of cane sugar output because of a sharper drop in Hawaii production and a cutback in Florida output (from funds earmarked for Everglades restoration in the Farm Act).

Sugar beet area harvested is down 6.5 percent in 1996/97 because of poor weather, higher prices for alternative crops and low returns to sugar beets last year. Acreage is projected to rebound by 1998/99 to 1.42 million acres, and rise 15,000 acres a year afterwards, reaching 1.475 million acres in 2002/03. That is not much higher than the record 1.443 million acres in 1994/95 and is 55,000 below last year's projected figure.

A new beet sugar processing facility is scheduled to open in the State of Washington in 1998 (the first new factory in the United States since 1975) but the gradual shift of acreage from higher-cost areas to lower-cost non-irrigated areas will continue. Thirty years ago California was harvesting 300,000 acres of beets, only half of that by 1992, and less than 100,000 this year because of competitive crops, plant diseases, and water problems. In Ohio, a factory suspended operations last year and appears unlikely to resume, as many farmers are now shifting to other crops such as

beans, and selling their specialized beet equipment. Yields in Ohio have been declining in recent years and Ohio's beet acreage has trended down from about 21,000 acres in 1992/93 to 4,000. Beets from the residual area (where yields are better) have been transported to Michigan factories for processing. Michigan's beet area which had stabilized at nearly 190,000 acres is down to 13,000 acres in 1996/97. Michigan's sugar beet processing company has contracted with Canadian growers for about 3,000 acres of beets. Reportedly, one of the 4 factories in Michigan may close.

Beet sugar production in the period 1981-1996 increased on trend at 95,000 tons a year. Our current projection has production rising 60,000-70,000 tons a year after fiscal 1998, reaching 4.55 million in fiscal 2003. That level compares with last year's projection of 5.05 million tons, and is only slightly above the 4.493-million-ton record of fiscal 1995. The combination of a rising beet sugar recovery rate (on trend) and stagnant sugar beet yields per acre (also on trend) results in a slowly rising yield of beet sugar per acre. We have assumed that desugaring of molasses--which raises beet sugar yield per ton of beets by about 10 percent--adds a net of 290,000 tons by 1998, increasing thereafter at 10,000 tons a year.

Sugarcane acreage over the next several years will reflect a balance between a projected decline followed by stability in Hawaii and Florida, and continued growth in Louisiana. Total area in sugarcane is projected to drop from 893,000 acres in fiscal 1996 to 849,000 in 1999, then rise slowly to 878,000 in 2003, which would make it 30,000 acres below last year's projection. As acreage has declined in Hawaii, national average yields have fallen, because Hawaii's yields are much higher than those in other States. After 2000, national average yields stabilize, as research and development create better varieties and Hawaii's acreage stabilizes. The cane sugar recovery rates rise on trend.

In Florida, some land is assumed to be taken out of cane for Everglades restoration purposes. From current levels of about 420,000 acres, area harvested for sugar declines to 390,000 by the year 2000 and then stabilizes. Louisiana's sugarcane area increases from fiscal 1997's freeze-reduced 335,000 acres to 410,000 acres in 2003. Some of this additional area is expected to come from pasture and rice lands in Western Louisiana.

Cane sugar production in 1981-1996 increased on trend at 35,000 tons a year. Our projection has production declining to 3.170 million tons by fiscal 1999, stabilizing, and rising slowly 40,000-60,000 tons a year and reaching 3.32 million in 2003. That level compares with last year's projected 3.500 million tons, and the 3.565-million-ton record of 1994. Florida's production declines from 1.76 million tons in 1997 to 1.67 million in 2000, then rises slowly to 1.72 million in 2003 as yields and recovery rates rise on trend. Louisiana's production rises to 1.16 million tons by 2003, from about 1 million tons in fiscal years 1995 to 1997. Production in Texas is relatively stable and projected at 150,000 tons. The Puerto Rican sugar industry continues to decline.

Domestic disappearance is projected to rise about 150,000 tons a year from 1996 to 2003. Per capita sugar disappearance rises from 66.5 pounds, refined basis, in 1996 to 69 pounds in 2003.

The rapid substitution of corn sweeteners (HFCS) for sugar ended about 1986, and since then consumption has grown at about 2 percent a year, compared with about 4 percent for HFCS. The projected growth rate of sugar consumption is 1.4 percent a year from 1996 to 2003, lower than the recent trend, in part because of continued substitution of other sweeteners, including low-calorie sweeteners, and the near-saturation of the sweeteners market. HFCS consumption will continue to grow more rapidly than sugar, and will likely overtake sugar consumption in about 8 years.

Sugar imports for consumption (TRQ and very small amounts of high-duty sugar) are projected to reach 2.62 million tons by fiscal 2003. This is about 980,000 tons above last year's projected figure, reflecting the slower growth in production and slightly higher consumption. While imports are shown to remain above the level of 1.5 million tons necessary to assure price support, normal variations of production will likely result in high variation in actual import needs over the projection period. Therefore, one cannot rule out the possibility of a TRQ below 1.5 million tons in some years, with the sugar loan program being recourse.

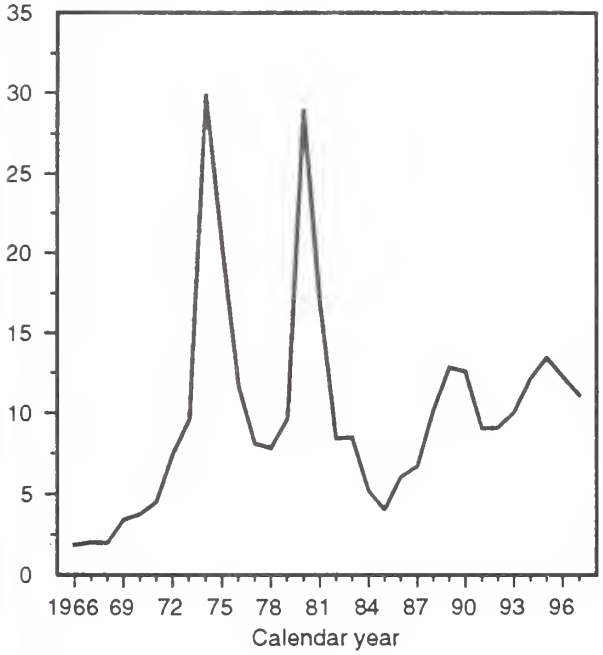
CONCLUSION

Seven years ago at USDA's 1990 Outlook, one of our speakers was Bill Shanley, President of Amstar (now Domino) Sugar Corporation. Mr. Shanley declared that the segments of the industry, "cane and beet processors, cane sugar refiners and corn sweetener producers" were now "healthy, stable, and well balanced", as if to say it's now time to live-and-let-live. That line of thinking led to marketing allotments in the 1990 Farm Act. It didn't work. Personalities, ambitions, and competition have a way of emerging out of market-sharing arrangements.
In place of controls, the 1996 Farm Act, the NAFTA, and the WTO are all expressing a different direction, toward a more free market.

Figure 1

World Raw Sugar Price

Cents per pound



1997 January only.

Figure 2

U.S. Sugar Consumption, Production, and Quota Imports

Million short tons, raw value

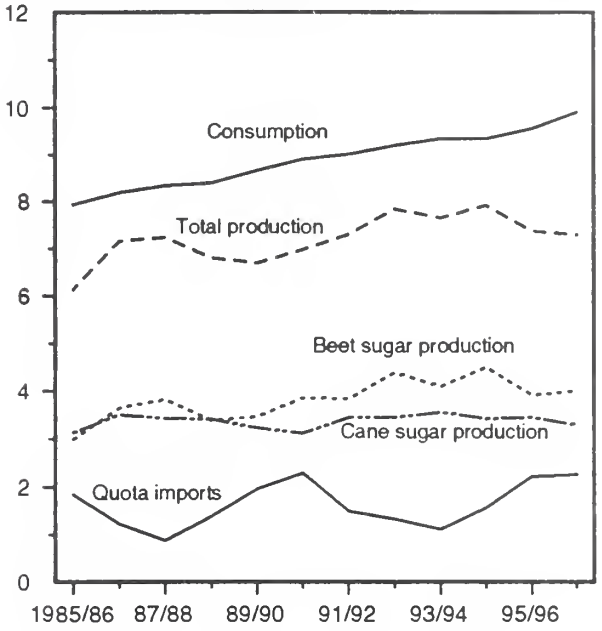
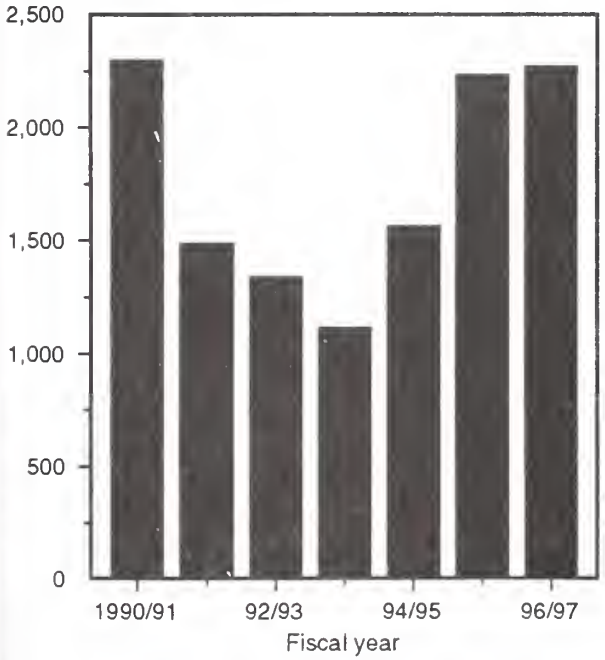


Figure 3

U.S. Tariff-Rate Quota Imports*

1,000 short tons, raw value



*Corresponds to imports for consumption.

Figure 4

U.S. Raw Sugar Prices

Cents per pound

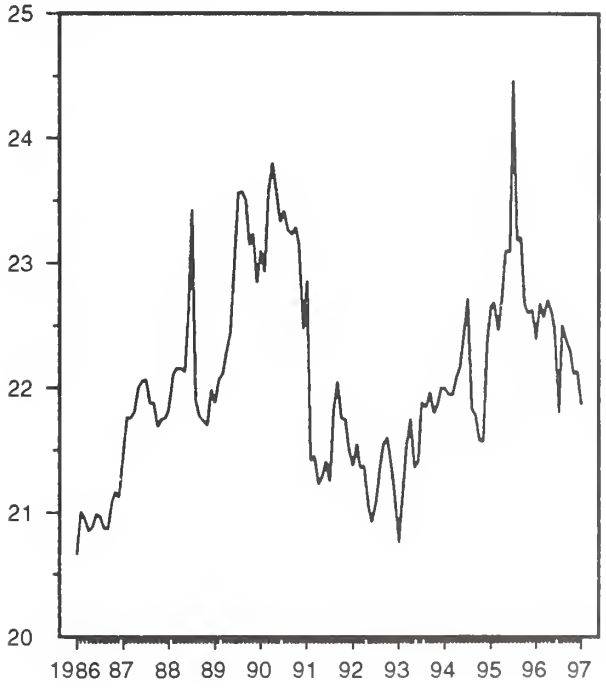


Figure 5

U.S. Wholesale Refined Beet Sugar Prices

Cents per pound

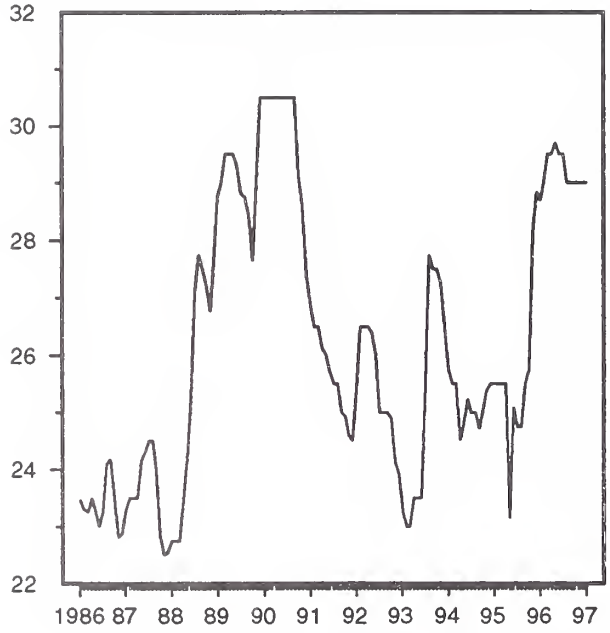
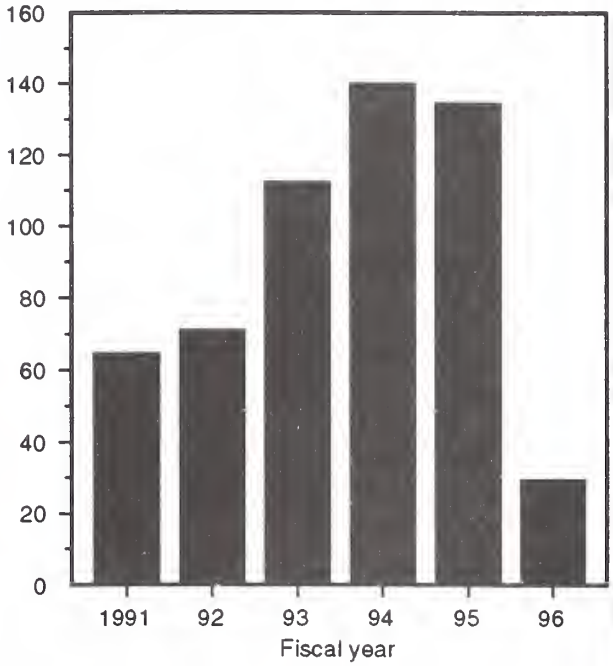


Figure 6

U.S. Sugar Exports to Canada

1,000 metric tons

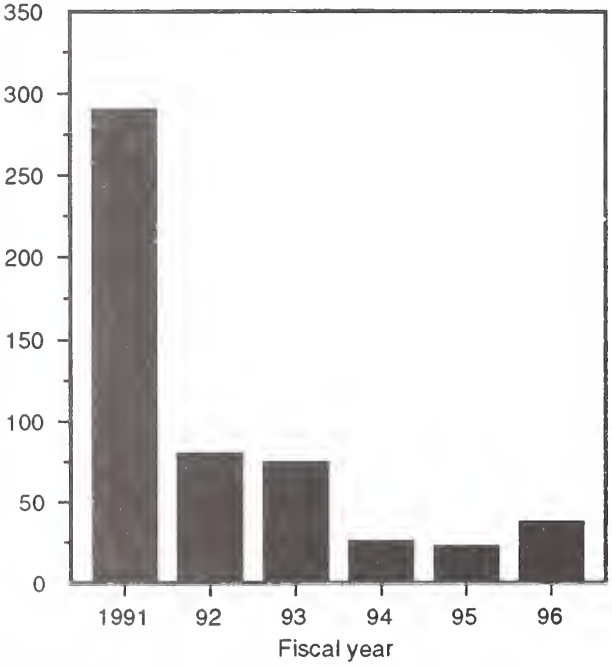


Source: U.S. Census.

Figure 7

U.S. Sugar Exports to Mexico

1,000 metric tons



Source: U S. Census.

Figure 8

U.S. Sugar Consumption

1,000 short tons, raw value

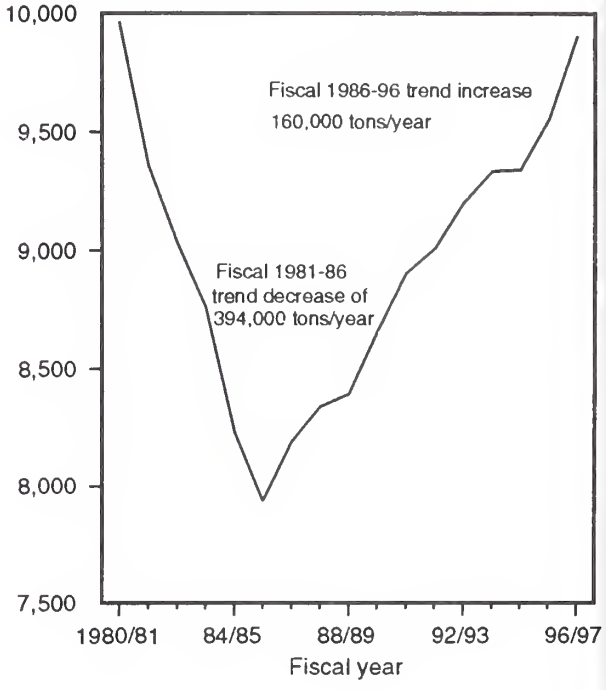
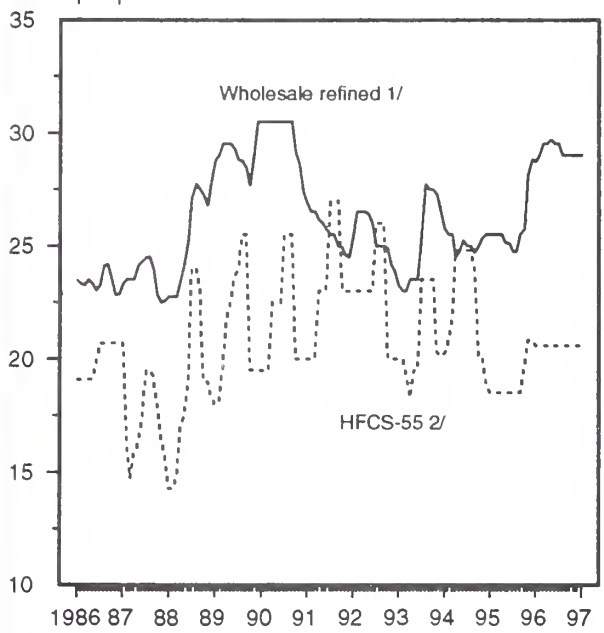


Figure 9

U.S. Sugar and HFCS Prices*

Cents per pound

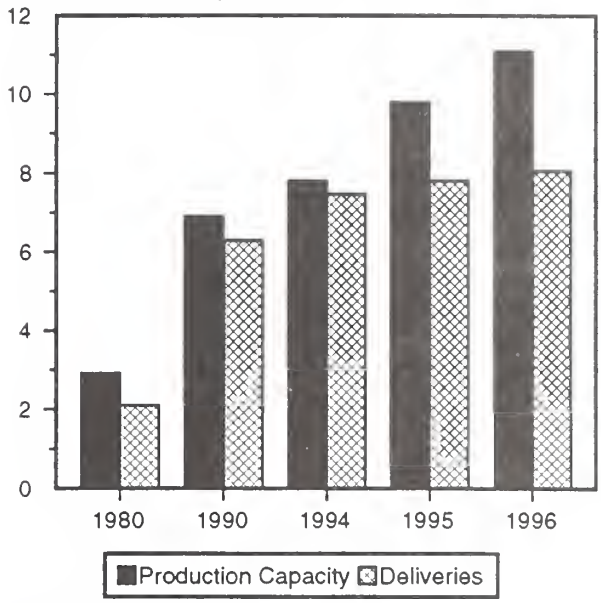


1/ Midwest beet sugar, f.o.b. factory.
2/ Dry basis.

Figure 10

U.S. HFCS Deliveries, and Production Capacity

Million short tons, dry basis

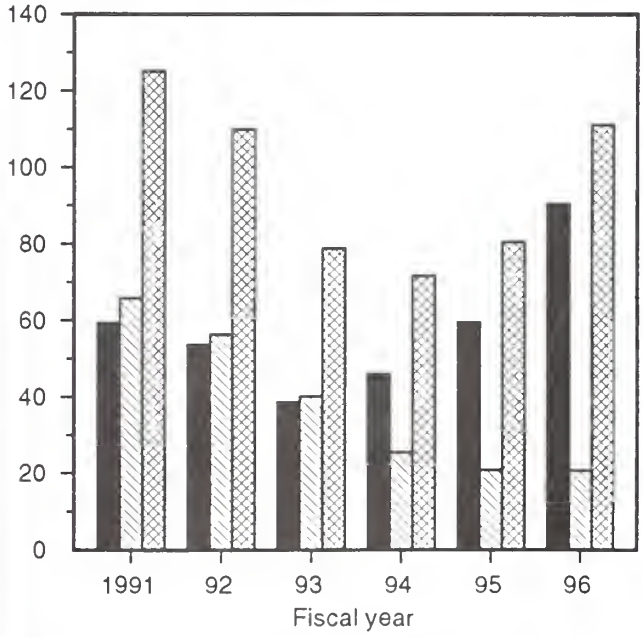


Source: USDA/ERS

Figure 11

U.S. Corn Sweetener Exports to Canada

1,000 metric tons, dry basis



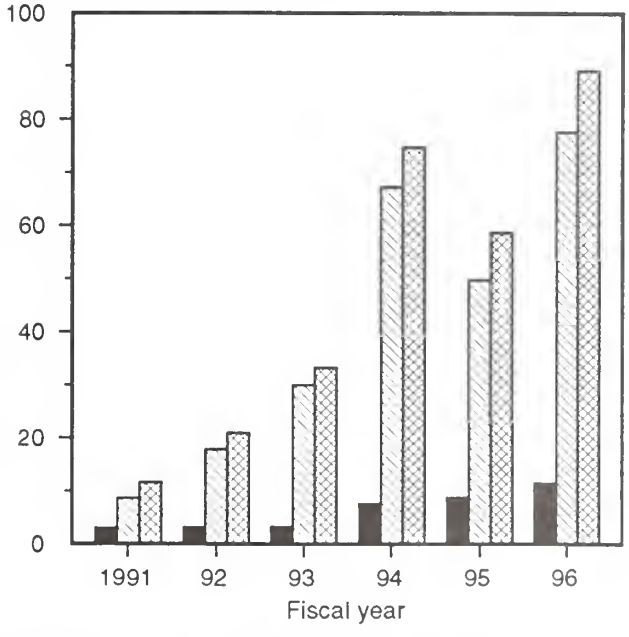
Dextrose & Glucose HFCS & Crystalline Fructose
Total

Source: U.S. Census.

Figure 12

U.S. Corn Sweetener Exports to Mexico

1,000 metric tons, dry basis



Dextrose & Glucose HFCS & Crystalline Fructose
Total

Source: U.S. Census.

Figure 13

U.S. Sugar Production, Consumption, and Quota Imports Projections

1,000 short tons, raw value

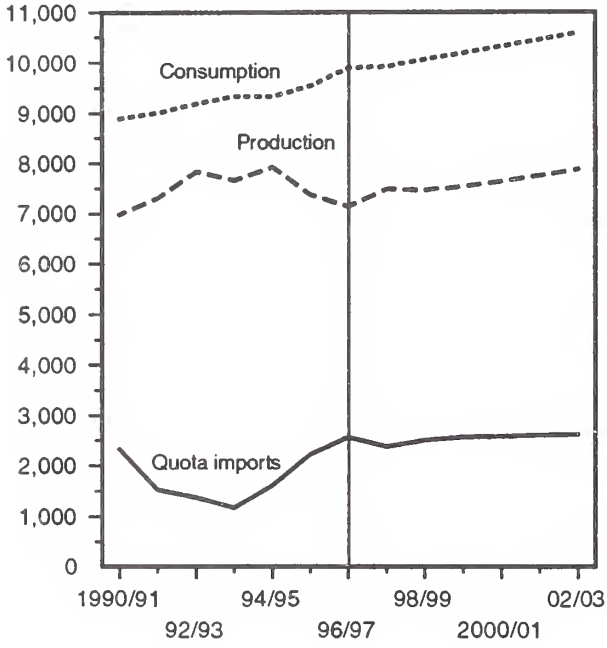
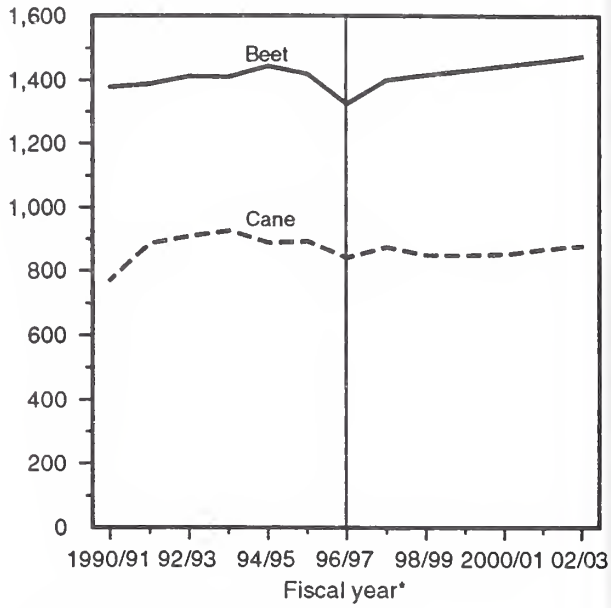


Figure 14

U.S. Sugar Beet and Sugarcane Acreage

1,000 acres



*Corresponds generally to previous crop year.

Figure 15

U.S. Beet Sugar Production

1,000 short tons, raw value

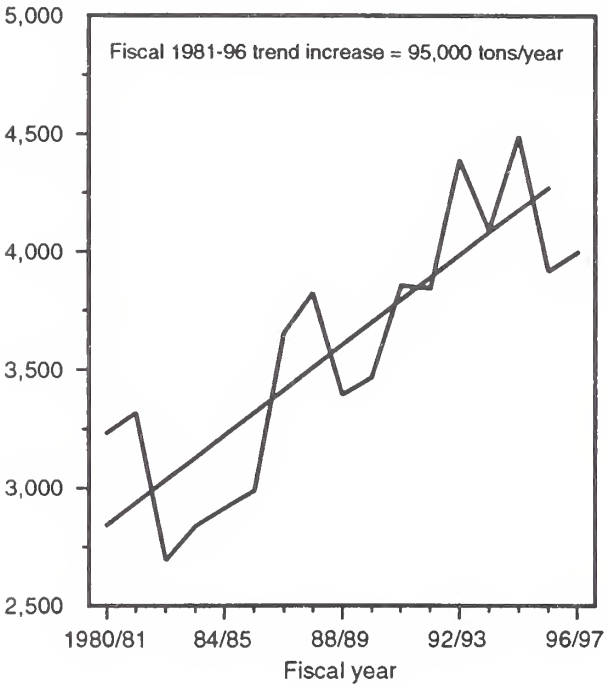


Figure 16

U.S. Beet Sugar Production Projection

1,000 short tons, raw value

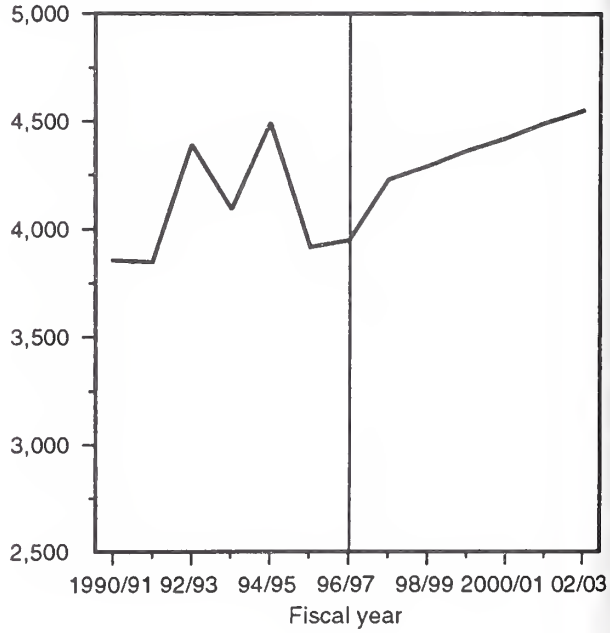
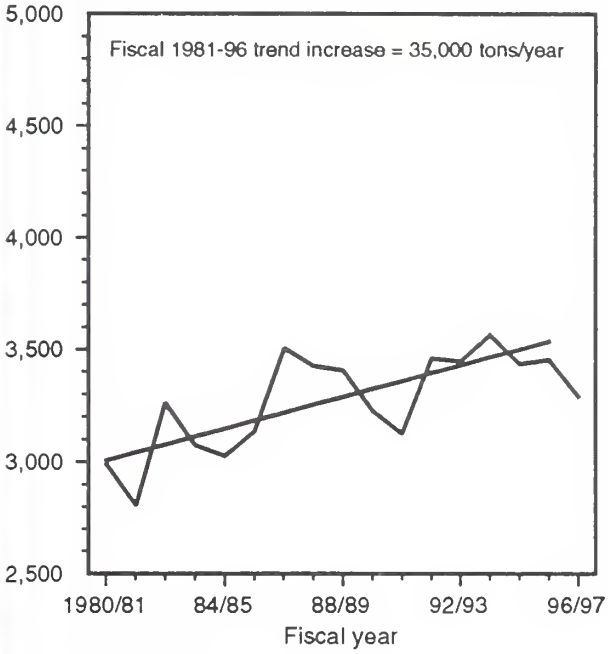


Figure 17

U.S. Cane Sugar Production*

1,000 short tons, raw value

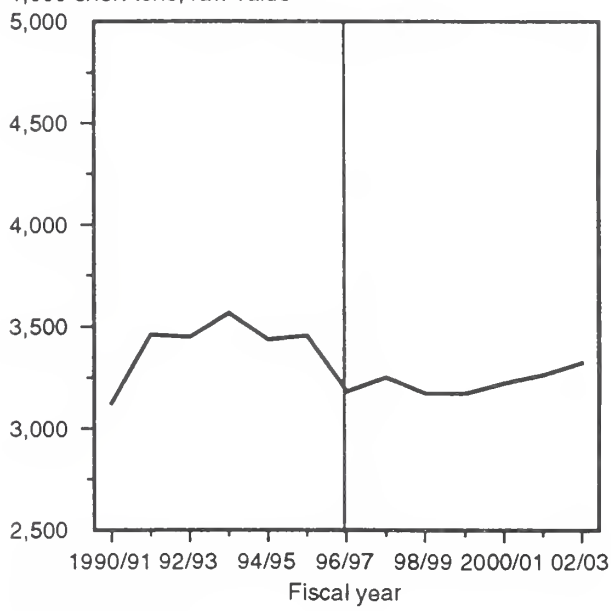


*Includes Puerto Rico.

Figure 18

U.S. Cane Sugar Production Projection*

1,000 short tons, raw value



*Includes Puerto Rico.

Figure 19

Florida and Louisiana Cane Sugar Production Projections

1,000 short tons, raw value

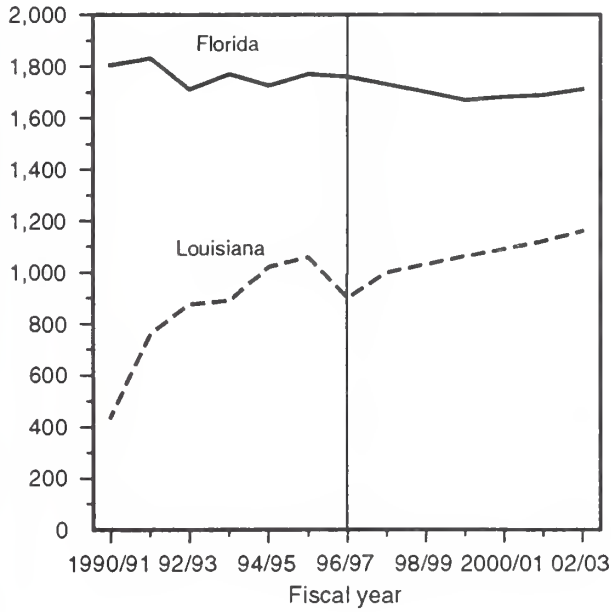


Figure 20

Hawaii and Texas Cane Sugar Production Projections

1,000 short tons, raw value

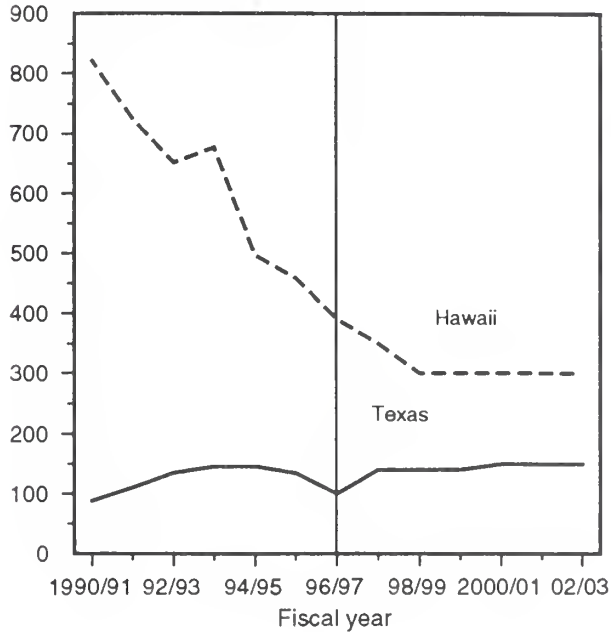
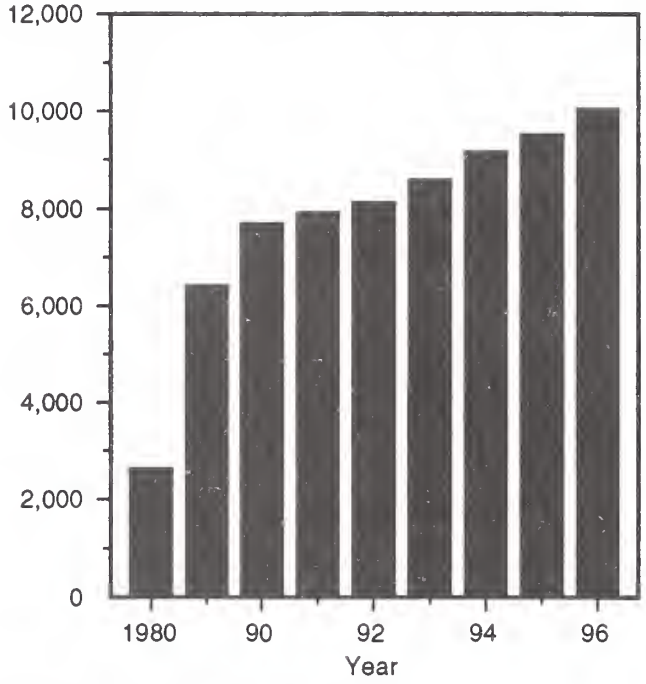


Figure 21

World HFCS Production

1,000 Metric tons, dry basis



Source: LMC International and USDA.

Table 1--World Sugar Supply, Use, and Prices 1/

	1991/ 1992	1992/ 1993	1993/ 1994	1994/ 1995	1995/ 1996	1996/ 1997 2/
	Million metric tons, raw value					
Supply						
Beginning stocks	20.93	23.51	21.57	18.61	20.83	24.74
Production	116.51	112.09	109.79	115.84	122.51	125.14
Imports	30.80	28.98	29.86	30.53	35.07	35.46
Use						
Exports	30.80	28.98	29.86	30.53	35.07	35.46
Domestic consumption	113.93	114.03	112.75	113.62	118.61	123.07
Ending stocks	23.51	21.57	18.61	20.83	24.74	26.80
Stocks/Consumption (%)	20.64	18.92	16.51	18.34	20.86	21.77
World raw sugar price 3/	9.23	9.56	10.99	13.85	12.48	10.11

1/ Marketing varies by country. 2/ Forecast includes WASDE update for the U.S., February 12, 1997. 3/ Contract No. 11, f.o.b. stowed Caribbean, Sept.-Aug. average. 1995/1996 Sept.-Nov. average.

Source: USDA.

Table 2--World Sugar Production and Consumption Balance, by Region

Region/Country	Production Average		Consumption Average		Surplus/Deficit Average	
	1984/85-1986/87	1994/95-1996/97	1984/85-1986/87	1994/95-1996/97	1984/85-1986/87	1994/95-1996/97
	Million metric tons, raw value					
Asia	23.0	39.1	27.7	40.4	-4.7	-1.3
China	5.3	6.6	6.6	8.3	-1.3	-1.7
India	8.2	17.2	9.4	15.1	-1.2	2.1
Thailand	2.9	6.1	0.8	1.6	2.1	4.5
Oceania	3.9	5.8	1.0	1.1	2.9	4.7
Latin America	28.4	32.3	17.0	20.9	11.4	11.4
Brazil	8.7	13.6	6.4	8.2	2.3	5.4
Cuba	7.5	4.1	0.8	0.6	6.7	3.5
Mexico	3.8	4.6	3.5	4.3	0.3	0.3
North Africa/ Middle East	4.0	4.9	9.2	11.1	-5.2	-6.2
Sub-Saharan Africa	5.9	5.6	4.6	4.2	1.3	0.4
EU-15	15.5	16.9	12.7	14.0	2.8	2.9
Former Soviet Union (FSU)	8.5	5.8	13.7	9.6	-5.2	-3.8
Central Europe	5.7	3.5	5.9	4.0	-0.2	-0.5
United States	5.7	6.8	7.2	8.7	-1.5	-1.9
Other	0.3	0.5	1.8	3.4	-1.5	-2.9
World Total	100.9	121.2	100.8	118.4	0.1	2.8

Source: USDA.

Table 3--Percent Distribution of World Sugar Production and Consumption, by Region

	Average Production		Average Consumption	
	1984/85-1986/87	1994/95-1996/97	1984/85-1986/87	1994/95-1996/97
	Million metric tons, raw value			
Asia	22.8	32.3	27.5	34.1
China	5.3	5.4	6.5	7.0
India	8.1	14.2	9.3	12.8
Thailand	2.9	5.0	0.8	1.4
Oceania	3.9	4.8	1.0	0.9
Latin America	28.1	26.7	16.9	17.7
Brazil	8.6	11.2	6.3	6.9
Cuba	7.4	3.4	0.8	0.5
Mexico	3.8	3.8	3.5	3.6
North Africa/Middle East	4.0	4.0	9.1	9.4
Sub-Sahara Africa	5.8	4.6	4.6	4.4
EU-15	15.4	13.9	12.6	11.8
Former Soviet Union (FSU)	8.4	4.8	13.6	8.1
Central Europe	5.6	2.9	5.9	3.4
United States	5.6	5.6	7.1	7.3
Other	0.3	0.4	1.8	2.9
World Total	100.0	100.0	100.0	100.0

Source: USDA.

Table 4--U.S. Sugar Relative to Leading Countries, 1996/97

Production		Consumption		Imports	
Million metric tons, raw value					
EU	17.24	India	16.00	Russia	3.20
India	17.00	EU	14.06	China	2.50
Brazil	14.50	U.S.	8.89	U.S.	2.48
China	7.00	China	8.60	EU	2.19
U.S.	6.61	Brazil	8.40	Japan	1.64
World	125.14	World	123.07	World	35.46

Source: USDA.

Table 5--World production of HFCS for selected countries

Year	United States	Canada	Mexico	Argentina	EU	Japan	South Korea	Taiwan	Others	World total
					1,000 metric tons, dry basis					
1985	4,775	210	0	156	287	680	144	NA	168	6,420
1986	4,841	234	0	159	267	682	153	15	119	6,470
1987	5,145	202	0	169	265	724	182	15	78	6,780
1988	5,381	222	0	164	271	710	219	19	104	7,090
1989	5,370	239	0	146	276	744	244	51	130	7,200
1990	5,677	245	0	156	280	784	270	67	211	7,690
1991	5,852	252	0	175	284	778	276	110	193	7,920
1992	6,041	250	0	180	286	761	263	125	224	8,130
1993	6,459	255	0	190	288	745	282	150	221	8,590
1994	6,814	255	0	210	290	742	285	170	394	9,160
1995	7,171	255	0	220	303	730	250	180	401	9,510
1996	7,425	255	80	195	305	709	260	195	606	10,030

NA=Not available.

Sources: Economic Research Service, USDA for the United States. USDA Agricultural Attache reporting and LMC International for other countries.

Table 6--Location of Sugarbeet Production

	Average		Average	
	1984/85-1986/87	1994/95-1996/97	1984/85-1986/87	1994/95-1996/97
	1,000 Short tons, raw value		Percent of total	
California	4,863	3,186	21	11
Idaho	3,640	4,960	16	17
Minnesota	4,874	7,957	21	28
North Dakota	2,555	4,138	11	14
Great Plains	4,470	4,844	19	17
Michigan	2,243	2,654	10	9
Others 2/	630	1,089	3	4
Total U.S.	23,275	28,829	100	100

1/ Colorado, Montana, Nebraska, Texas, and Wyoming.
2/ New Mexico, Ohio, Oregon, Washington, Kansas, and Nevada.

Source: USDA.

Table 7--Location of Sugarcane Production

	Average 1984/85-1986/87	Average 1994/95-1996/97	Average 1984/85-1986/87	Average 1994/95-1996/97
	1,000 Short tons, raw value		Percent of total	
Florida	12,539	15,066	46	50
Hawaii	8,250	4,263	30	14
Louisiana	5,570	9,834	21	32
Texas	915	1,213	3	4
Total	27,274	30,376	100	100

1/ Sugarcane for sugar and seed, in net tons.

Source: USDA.

Table 8--U.S. Sugar Beet Processing (Slicing) Capacity

	1982	1997
Number of Companies	11	9 1/
Number of Factories	42	30
Average Factory Slicing Capacity (Short tons/day)	4,074	6,054
Total U.S. (Short tons/day) 1/	171,100	181,610

1/ Excludes Great Lakes Sugar Co., which has suspended operations.

Source: USDA.

Table 9--U.S. Sugarcane Processing Capacity

	1982	1997
Number of Companies		
Florida	6	6
Hawaii	12	5
Louisiana	24	19
Texas	1	1
U.S.	43	31
Number of Factories		
Florida	7	7
Hawaii	14	6
Louisiana	24	20
Texas	1	1
U.S.	46	34
Average Grinding Capacity (Short tons/day)		
Florida	13,971	17,000
Hawaii	4,329	4,383
Louisiana	4,956	7,250
Texas	9,500	10,000
U.S.	6,236	8,832
Total Capacity (Short tons/day)		
Florida	97,800	119,000
Hawaii	60,600	26,300
Louisiana	118,950	145,000
Texas	9,500	10,000
U.S.	286,850	300,300

Source: USDA.

Table 10--U.S. Cane Sugar Refining Capacity

	1982	1997
Number of Companies	14	6
Number of Factories	21	11
Average Melting Capacity (Short tons/day)	1,465	2,054
Total Capacity (Short tons/day)	30,760	22,590
Plus:		
Spreckels (Beet Processor With Cane Ref. Cap.)	---	410
Snow White (Puerto Rico)	---	885

Source: USDA.

Table 11--Net Production and Processing Costs

	Average 1982-1984	Average 1992-1995
	Cents a pound	
Raw Cane Sugar		
Florida	19.8	19.8
Hawaii	23.8	26.2
Louisiana	21.4	19.9
Texas	27.2	19.9
Refined Beet Sugar		
Eastern 1/	21.8	20.1
Western 2/	24.4	23.5

1/ Largely Non-irrigated. Includes Michigan, Ohio, Minnesota, and Eastern North Dakota. 2/ Irrigated. Includes Colorado, Nebraska, Wyoming, Texas, Montana, Western North Dakota, Idaho, Oregon, and California.

Table 12--U.S. sugar (including Puerto Rico) supply and use, fiscal year 1/

Items	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97		
							Sept.	Jan.	Feb.
				1,000 short tons, raw value					
Beginning stocks 2/	1,224	1,524	1,477	1,704	1,337	1,241	1,391	1,492	1,492
Total production 3/ 4/	6,978	7,306	7,838	7,655	7,927	7,370	7,050	7,290	7,290
Beet sugar	3,854	3,845	4,392	4,090	4,493	3,916	3,900	4,000	4,000
Cane sugar	3,124	3,461	3,446	3,565	3,434	3,454	3,150	3,290	3,290
Florida	1,802	1,832	1,710	1,771	1,725	1,771	1,760	1,760	1,760
Louisiana	480	763	876	893	1,019	1,057	870	1,045	1,045
Texas	88	109	138	146	144	134	100	85	85
Hawaii	722	689	658	705	499	458	390	370	370
Puerto Rico	74	68	65	50	46	34	30	30	30
Total imports	2,825	2,194	2,039	1,772	1,853	2,772	3,021	2,955	2,734
Tariff-rate Quota imports 5/	2,298	1,486	1,335	1,113	1,564	2,231	2,560	2,490	2,269
Oct.-Dec.	407	162	171	193	242	211	NA	360	300
Jan.-Sept.	1,891	1,324	1,164	920	1,322	2,020	NA	2,130	1,969
Canada and high duty imports	32	39	40	56	50	1	1	5	5
Quota-exempt imports for reexport	599	667	601	641	230	530	450	450	450
Quota-exempt imports for polyhydric alcohol	8	10	10	16	10	10	10	10	10
Statistical adjustments 3/	-112	-8	53	-53	-1	0	0	0	0
Total Supply	11,027	11,024	11,354	11,131	11,117	11,383	11,462	11,737	11,516
Total exports 3/	627	554	405	454	502	385	200	250	250
Quota-exempt for reexport	706	562	397	432	444	377	200	250	250
Other exports	0	0	10	30	58	8	0	0	0
CCC disposal, for export	0	0	0	0	0	0	0	0	0
Statistical difference 6/	-79	-8	-2	-8	0	0	0	0	0
Miscellaneous	-25	-13	48	7	37	-48	0	0	0
CCC disposal, for domestic non-food use	0	0	0	0	0	0	0	0	0
Refining loss adjustment	61	0	0	0	0	0	0	0	0
Statistical adjustment 7/	-86	-13	48	7	37	-48	0	0	0
Total deliveries	8,901	9,006	9,197	9,333	9,337	9,554	9,825	9,900	9,800
Transfer to sugar-cont. products for exports under reexport program	59	88	148	143	88	100	120	120	120
Transfer to polyhydric alcohol	8	11	15	15	10	13	10	10	10
Deliveries for domestic food and beverage use	8,834	8,907	9,034	9,175	9,239	9,441	9,695	9,770	9,670
Total Use	9,503	9,547	9,650	9,794	9,876	9,891	10,025	10,150	10,050
Ending stocks 3/	1,524	1,477	1,704	1,337	1,241	1,492	1,437	1,587	1,466
Privately owned	1,524	1,477	1,704	1,331	1,241	1,492	1,437	1,587	1,466
CCC	0	0	0	6	0	0	0	0	0
					Percent				
Stocks-to-use ratio	16.04	15.47	17.66	13.65	12.57	15.08	14.33	15.64	14.59
					Millions				
Population, including Puerto Rico, (April 1) 8/	255.68	258.53	261.39	263.80	266.34	268.72	271.12	271.12	271.12
					Pounds				
Per capita total deliveries, refined basis 9/	64.6	64.4	65.8	66.1	65.5	66.5	67.7	68.3	67.6

1/ Fiscal year beginning October 1. 2/ Stocks in hands of primary distributors and CCC. 3/ Historical data are from FSA (formerly ASCS), Sweetener Market Data, and NASS, Sugar Market Statistics prior to 1992.

4/ Production in 1996/97 is from Interagency Sugar Estimates Committee. 5/ Actual arrivals under the tariff rate quota (TRQ) with late entries and TRQ overfills assigned to the fiscal year in which they actually arrived. The 1996/97 TRQ assumes announced allocations will be added in January, March and May 1997. 6/ Receipts compiled by NASS and FSA differ from U.S. Customs data. 7/ Calculated as a residual. Largely consists of invisible stocks change.

8/ Population data obtained from the U.S. Census Bureau with data estimates developed by Economic Research Service. Population data include Puerto Rico. 9/ Includes all sugar deliveries. Refined basis is raw value divided by 1.07.

Table 13--U.S. (including Puerto Rico) Total Consumption of Caloric Sweeteners, Calendar Year 1/

Year	Sugar 2/		Corn sweeteners						
	Raw value	Refined basis	HFCS	Glucose syrup	Dextrose	Total	Pure honey	Edible syrups	Total caloric sweeteners 3/
	1,000 short tons, dry basis								
1985	8,176	7,641	5,386	1,919	418	7,723	128	50	15,543
1986	7,932	7,413	5,498	1,952	430	7,880	141	50	15,485
1987	8,311	7,767	5,792	1,988	441	8,221	160	50	16,199
1988	8,315	7,771	5,999	2,037	452	8,488	139	50	16,448
1989	8,431	7,879	5,961	2,100	464	8,525	146	50	16,600
1990	8,789	8,214	6,235	2,210	479	8,924	152	50	17,340
1991	8,835	8,257	6,408	2,332	489	9,229	152	50	17,688
1992	8,936	8,351	6,683	2,462	492	9,637	149	50	18,188
1993	9,064	8,471	7,129	2,566	500	10,195	152	50	18,868
1994	9,321	8,711	7,456	2,645	513	10,614	146	50	19,521
1995	9,451	8,833	7,796	2,704	528	11,028	146	50	20,057
1996 4/	9,643	9,012	8,057	2,750	538	11,345	146	50	20,553

1/ Totals may not add due to rounding. 2/ Based on total sugar deliveries, including for use in products for export. 3/ Total includes sugar, refined basis. 4/ Estimate.

Source: Economic Research Service, USDA.

Tab 14--U.S. Sugar Long-Term Projections

Item	FY 1995	FY 1996	FY 1997 1/	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
	1,000 Short tons, raw value								
Production	7,927	7,370	7,290	7,480	7,460	7,530	7,640	7,750	7,870
Beet Sugar	4,493	3,916	4,000	4,230	4,290	4,360	4,420	4,490	4,550
Cane Sugar	3,434	3,454	3,290	3,250	3,170	3,170	3,220	3,260	3,320
Consumption (Deliveries)	9,337	9,553	9,800	9,930	10,060	10,190	10,320	10,450	10,590
Quota Imports 2/	1,614	2,235	2,269	2,374	2,500	2,560	2,580	2,600	2,620

1/ Reflects change in February 1997 WASDE.
2/ Includes very small amounts of high-duty imports.

Source: USDA, Agricultural Baseline Projections to 2005, Reflecting the 1996 Farm Act, issued February 1997.

Table 14--U.S. Sugar: Long-Term Projections, Fiscal Years 1/

Item	Units	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
UNITED STATES BASELINE														
Beets-Planted	1000 Acres	1,437	1,438	1,476	1,445	1,424	1,425	1,440	1,455	1,470	1,485	1,500	1,515	1,530
Harvested	1000 Acres	1,412	1,409	1,443	1,417	1,324	1,400	1,415	1,430	1,445	1,460	1,475	1,490	1,505
Yield	Tons/Acre	20.6	18.6	22.1	19.8	20.2	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
Production	Mil. S. Tons	29.1	26.2	31.9	28.0	26.8	28.4	28.7	29.0	29.3	29.6	29.9	30.2	30.6
Cane-Harvested	1000 Acres	909	927	889	893	841	874	849	849	859	868	878	888	888
Yield	Tons/Acre	32.7	32.7	32.5	32.8	31.7	31.4	31.3	31.2	31.2	31.2	31.1	31.1	31.2
Production	Mil. S. Tons	29.7	30.0	28.9	29.3	26.6	27.4	26.6	26.5	26.8	27.1	27.3	27.6	27.7
Supply:														
Beginning Stocks	1000 S. Tons	1,477	1,704	1,337	1,241	1,495	1,496	1,540	1,560	1,580	1,600	1,620	1,640	1,660
Production	1000 S. Tons	7,838	7,655	7,927	7,370	7,130	7,480	7,460	7,530	7,640	7,750	7,870	7,970	8,040
Beet Sugar 2/	1000 S. Tons	4,392	4,090	4,493	3,916	3,950	4,230	4,290	4,360	4,420	4,490	4,550	4,610	4,670
Cane Sugar 3/	1000 S. Tons	3,446	3,565	3,434	3,454	3,180	3,250	3,170	3,170	3,220	3,260	3,320	3,360	3,370
Total imports	1000 S. Tons	2,039	1,772	1,853	2,775	3,021	2,824	2,950	3,010	3,030	3,050	3,070	3,110	3,180
For consumption 4/	1000 S. Tons	1,375	1,169	1,614	2,235	2,561	2,374	2,500	2,560	2,580	2,600	2,620	2,660	2,730
Other imports 5/	1000 S. Tons	664	656	239	540	460	450	450	450	450	450	450	450	450
Total supply	1000 S. Tons	11,354	11,131	11,117	11,386	11,646	11,800	11,950	12,100	12,250	12,400	12,560	12,720	12,880
Use:														
Domestic disappearance	1000 S. Tons	9,197	9,333	9,337	9,553	9,900	9,930	10,060	10,190	10,320	10,450	10,590	10,730	10,870
Exports	1000 S. Tons	405	454	502	385	250	330	330	330	330	330	330	330	330
Miscellaneous 6/	1000 S. Tons	48	7	37	-47	0	0	0	0	0	0	0	0	0
Total use	1000 S. Tons	9,650	9,794	9,876	9,891	10,150	10,260	10,390	10,520	10,650	10,780	10,920	11,060	11,200
Ending stocks	1000 S. Tons	1,704	1,337	1,241	1,495	1,496	1,540	1,560	1,580	1,600	1,620	1,640	1,660	1,680
Stocks/use ratio	Percent	17.7	13.7	12.6	15.1	14.7	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Raw sugar prices:														
World (No. 11)	Cents/lb.	9.58	11.25	13.86	12.40	10.50	11.10	11.70	11.80	12.10	12.50	12.80	13.20	13.50
N. Y.(No. 14) 7/	Cents/lb.	21.49	22.05	22.76	22.50	22.10	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00
Raw sugar loan rate	Cents/lb.	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
Beet sugar loan rate	Cents/lb.	23.33	23.62	23.43	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90	22.90
Grower prices: 8/														
Sugarbeets	Dol./ton	41.40	39.00	38.80	39.80	41.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Sugarcane	Dol./ton	28.10	28.50	29.20	29.40	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

NA = Not applicable

1/ Fiscal year is October 1 through September 30. The 1995 crop corresponds with fiscal 1996, etc. Historic data for area planted, harvested, yield, production, and prices of sugarbeets and sugarcane are on the NASS crop year basis; all other data are on a fiscal year basis. 2/ Beet sugar yield, raw value, per ton of beets (not including sugar from molasses) rises on trend, at 0.04 percentage points each year. Desugaring of molasses adds a net 275,000 tons in 1996, 260,000 tons in 1997, 290,000 tons in 1998, and then rises about 10,000 tons a year. 3/ Raw cane sugar yield per ton of cane rises 0.4 percent per year as new processing technology is adopted. 4/ Quota imports, both raw and refined, at the low rate of duty and very small amounts of high-duty imports. Projected imports do not necessarily reflect the determination by the Secretary which will be made pursuant to Additional U.S. Note 3 of Chap. 17 of the HTSUS. 5/ For re-export & for polyhydric alcohol. 6/ Includes CCC disposals, refining loss, and a statistical adjustment to account for invisible stock change.

7/ Through 1996, fiscal year average of the nearest futures, No. 14 contract, New York Coffee Sugar & Cocoa Exchange, for 1997 forwards, projected.

8/ For 1997 forwards, projected