

Refined sugar -- A sugar with most of the undesirable nonsucrose constituents (impurities) removed, and used primarily for human consumption.

Section 22 -- A section of the Agricultural Adjustment Act of 1933 (PL 73-10) that authorizes the President to restrict imports by imposing quotas or fees if the imports interfere with Federal price support programs or substantially reduce U.S. production of products processed from farm commodities. Fees may not exceed 50-percent ad valorem nor may quotas exceed 50 percent of the quantity imported during a representative period determined by the President.

Section 22 import quota -- Under the authority of Section 22 of the Agricultural Adjustment Act of 1933, the Secretary of Agriculture may recommend to the President the imposition of quotas on imports of an article or articles which the Secretary has reason to believe will or is likely to disrupt domestic program operations. The quotas can be imposed on an emergency basis at the discretion of the President but in no event can be less than 50 percent of the volume of trade during a representative period. Since enactment of the Agriculture and Food Act of 1981, section 22 import quotas have been imposed under Presidential Proclamation No. 5071 of June 28, 1983, and under Presidential Proclamation No. 5294 as amended by Presidential Proclamation No. 5340 of May 17, 1985.

Section 201 -- Part of the U.S. Trade Act of 1974 that allows the President to provide relief to industries hurt by competing imports. Growers or trade associations must petition the International Trade Commission to investigate complaints of trade practices.

Section 301 -- A provision of the U.S. Trade Act of 1974 that allows the President to take appropriate action to persuade a foreign government to remove any act, policy, or practice that violates an international agreement. The provision also applies to practices of a foreign government which are unjustified, unreasonable, or discriminatory, and which burden or restrict U.S. commerce.

Specialty sugar(s) -- Regulations governing "Certificates for the Importation of Specialty Sugars" (15 C.F.R. 2013.1-2013.7) indicate that specialty sugars are sugars provided for in items 155.20 and 155.30 of the Tariff Schedules of the United States and which: (1) are not currently commercially produced in the United States or reasonably available from domestic sources; (2) are the product of a country listed in Headnote 3(c)(ii) of Subpart A, Part 10 Schedule 1 of the Tariff Schedules of the United States and, (3) require no further refining, processing, or other preparation prior to consumption, other than incorporation as an ingredient in human food. If the certifying authority determines that a sugar meets the above criteria, then a certificate can be issued to authorize its importation as a specialty sugar. The total U.S. import quota for specialty sugars has been 2,000 short tons a year. The main types of

specialty sugars imported into the United States under the specialty sugar quota include brown slab sugar (an oriental sugar used for cooking) and pearl sugar used in baking.

Sucrose -- A sweet, crystallizable, colorless substance which constitutes the "sugar" of commerce. Refined cane and beet sugar is essentially 100-percent sucrose. Technically, sugar is a disaccharide of glucose and fructose having formula $C_{12}H_{22}O_{11}$, derived from either sugarcane or sugarbeets.

Sugar-containing products -- Products containing at least 10-percent embodied sugar. With limited exceptions, imported products which contain less than 10-percent sugar are not considered competitive with comparable domestic products.

Syrup -- Concentrated clarified cane juice before crystallization.

Tariff -- Taxes (duties or fees) imposed on commodity imports by a government. A tariff may be either a fixed charge per unit of product imported (specific tariff) or a fixed percentage of value (ad valorem tariff).

Tel quel -- Literally, "as such." In describing sugar, it means a polarization usually varying among mills and producing areas.

Appendix table 1--U.S. sugarcane processors: Company, factory location, and capacity, by area, 1988

| Area and company | Factory capacity | Grinding location |
|------------------------------------|------------------|---------------------------|
| | | <u>Short tons per day</u> |
| Florida: | | |
| Atlantic Sugar Association | Belle Glade | 12,000 |
| Okeelanta Sugar Corporation | South Bay | 20,000 |
| Osceola Farms Company | Canal Point | 10,000 |
| Sugarcane Growers Coop. of Florida | Belle Glade | 21,000 |
| United States Sugar Corporation | Clewiston | 20,000 |
| | Bryant | 16,000 |
| Talisman Sugar Corp. | South Bay | 10,000 |
| Total | | 109,000 |
| Texas: | | |
| Rio Grande Valley Sugar Coop. | Santa Rosa | 10,000 |
| Louisiana: | | |
| Alma Plantation, Ltd. | Lakeland | 3,800 |
| Breaux Bridge Sugar Coop., Inc. | Breaux Bridge | 3,000 |
| Caire & Graugnard | Edgard | 2,000 |
| Cajun Sugar Coop., Inc. | New Iberia | 6,000 |
| Caldwell Sugars, Coop., Inc. | Thibodaux | 6,000 |
| Cora-Texas Mfg., Co., Inc. | White Castle | 7,000 |
| Dugas & LeBlanc, Ltd. | Paincourtville | 5,000 |
| Evan Hall Sugar Coop., Inc. | McCall | 5,000 |
| Glenwood Coop., Inc. | Napoleonville | 4,200 |
| Harry L. Laws & Co., Inc. | Brusly | 4,200 |
| Iberia Sugar Coop., Inc. | New Iberia | 5,500 |
| Jeanerette Sugar Co., Inc. | Jeanerette | 5,000 |
| LaFourche Sugar Corp. | Thibodaux | 8,500 |
| M.A. Patout & Sons, Ltd. | Jeanerette | 9,000 |
| Teche Sugar Company | Franklin | 4,500 |
| St. Martin Sugar Coop., Inc. | St. Martinsville | 3,500 |
| St. James Sugar Coop., Inc. | St. James | 6,000 |
| St. Mary Sugar Coop., Inc. | Jeanerette | 5,000 |
| Savoie Industries, Inc. | Belle Rose | 5,500 |
| South Coast Sugars, Inc. | Raceland | 7,500 |
| Sterling Sugars, Inc. | Franklin | 7,500 |
| Total | | 113,700 |
| Hawaii: | | |
| Alexander & Baldwin, Inc.-- | | |
| Hawaiian Commercial & Sugar Co. | Puunene, Maui | 8,300 |
| | Paia, Maui | 4,700 |
| McBryde Sugar, Co., Ltd. | Kola, Kauai | 3,200 |
| Amfac, Inc.-- | | |
| Kekaha Sugar Co., Ltd. | Kekaha, Kauai | 3,000 |
| The Lihue Plantation Co., Ltd. | Lihue, Kauai | 4,700 |
| Oahu Sugar Co., Ltd. | Waipahu, Oahu | 6,000 |
| Pioneer Mill Co., Ltd. | Lahaina, Maui | 2,800 |
| C. Brewer and Co., Ltd.-- | | |
| Hilo Coast Processing Co. | Pepeekeo, Hawaii | 4,700 |
| Ka'u Sugar Co., Inc. | Pahala, Hawaii | 2,900 |
| Olokele Sugar Co., Ltd. | Kaunakani, Kauai | 2,800 |
| Castle and Cooke, Inc.-- | | |
| Waialua Sugar Co. | Waialua, Oahu | 5,000 |
| Hamakua Sugar So. | Haina, Hawaii | 8,000 |
| Total | | 56,100 |
| Total United States | | 288,800 |

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 2--U.S. cane sugar refiners: Company, plant location, and capacity, 1988

| Company | Plant location | Melting capacity |
|-------------------------------------|--------------------|--------------------------------------|
| | | <u>Short tons, raw sugar per day</u> |
| Amstar Corporation | Baltimore | 2,600 |
| | Brooklyn, NY | 2,100 |
| | Chalmette, LA | 3,250 |
| California and Hawaiian Sugar Co. | Crockett, CA | 3,000 |
| | Aiea, HI | 200 |
| Colonial Sugars, Inc. | Gramercy, LA | 1,750 |
| Imperial Holly Sugar Co. | Sugar Land, TX | 1,650 |
| Okeelanta Sugar Corp. | South Bay, FL | 500 |
| Refined Sugars, Inc. | Yonkers, NY | 1,800 |
| Savannah Foods and Industries, Inc. | Port Wentworth, GA | 3,000 |
| | Clewiston, FL | 750 |
| Supreme Sugar Co., Inc. | Supreme, LA | 700 |
| Total United States | | 21,300 |

Note: The 21,300 tons per day translates to an annual 5.5 million short tons, refined cane sugar, at an operating rate of 260 days a year.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 3--U.S. sugarbeet processors: Company, factory location, and capacity, by region, 1988

| Region and company | Factory location | Slicing capacity |
|---|----------------------|---------------------------|
| | | <u>Short tons per day</u> |
| Region I: | | |
| Michigan Sugar Co. | Caro, MI | 3,200 |
| | Carrollton, MI | 2,850 |
| | Croswell, MI | 3,000 |
| | Sebewaing, MI | 4,250 |
| Monitor Sugar Co. | Bay City, MI | 8,000 |
| Great Lakes Sugar Co. | Fremont, OH | 3,600 |
| Region II: | | |
| American Crystal Sugar Co. | Crookston, MN | 4,500 |
| | Drayton, ND | 5,400 |
| | East Grand Forks, MN | 6,700 |
| | Hillsboro, ND | 4,500 |
| | Moorhead, MN | 4,400 |
| | Wahpeton, ND | 5,500 |
| Minn-Dak Farmers Cooperative | Wahpeton, ND | 5,500 |
| Southern Minnesota Beet Sugar Coop. | Renville, MN | 7,200 |
| Region III: | | |
| Western Sugar Co. | Bayard, NE | 2,250 |
| | Ft. Morgan, CO | 3,800 |
| | Greeley, CO | 2,200 |
| | Mitchell, NE | 2,250 |
| | Scottsbluff, NE | 3,200 |
| Holly Sugar Corp. | Torrington, WY | 4,000 |
| Region IV: | | |
| Holly Sugar Corp. | Hereford, TX | 7,500 |
| Region V: | | |
| Western Sugar Co. | Billings, MT | 4,000 |
| | Lovell, WY | 2,500 |
| Holly Sugar Corp. | Sidney, MT | 5,000 |
| | Worland, WY | 3,400 |
| Region VI: | | |
| The Amalgamated Sugar Co. | Rupert, ID | 7,000 |
| | Twin Falls, ID | 5,000 |
| Region VII: | | |
| The Amalgamated Sugar Co. | Nampa, ID | 10,000 |
| | Nyssa, OR | 7,000 |
| Region VIII: | | |
| Delta Sugar Corp. | Clarksburg, CA | 3,000 |
| | Brawley, CA | 7,500 |
| Holly Sugar Corp. | Hamilton City, CA | 3,700 |
| | Tracy, CA | 4,800 |
| | Manteca, CA | 4,200 |
| Spreckels Sugar Co., Inc. | Mendota, CA | 4,200 |
| | Woodland, CA | 3,600 |
| | | |
| Holly Sugar Corp. (Union Sugar Division) | Betteravia, CA | 5,500 |
| Total United States | | 168,700 |

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 4--U.S. sugarcane: Grower returns for sugarcane produced for sugar,
1970/71-1987/88 ^{1/}

| Crop year | Florida | Hawaii | Louisiana | Texas ^{2/} | U.S. average |
|----------------------------|---------|--------|-----------|---------------------|--------------|
| <u>Dollars per net ton</u> | | | | | |
| 1970/71 | 12.97 | NA | 10.58 | --- | 11.67 |
| 1971/72 | 12.91 | NA | 11.70 | --- | 12.25 |
| 1972/73 | 14.22 | NA | 11.39 | --- | 12.64 |
| 1973/74 | 27.35 | NA | 16.15 | 14.05 | 21.97 |
| 1974/75 | 47.50 | 49.65 | 53.30 | 40.20 | 49.64 |
| 1975/76 | 19.80 | 25.00 | 19.30 | 19.80 | 21.50 |
| 1976/77 | 15.10 | 18.00 | 12.30 | 11.60 | 15.20 |
| 1977/78 | 19.60 | 16.00 | 17.70 | 15.30 | 17.70 |
| 1978/79 | 20.50 | 19.70 | 18.90 | 11.00 | 19.50 |
| 1979/80 | 30.30 | 22.60 | 24.20 | 25.20 | 26.00 |
| 1980/81 | 39.40 | 41.80 | 33.20 | 27.10 | 38.50 |
| 1981/82 | 28.60 | 23.50 | 22.90 | 15.90 | 24.90 |
| 1982/83 | 28.20 | 26.20 | 25.10 | 19.50 | 26.50 |
| 1983/84 | 28.60 | 29.90 | 25.30 | 15.20 | 27.80 |
| 1984/85 | 28.90 | 30.30 | 23.90 | 21.70 | 28.20 |
| 1985/86 | 28.20 | 28.10 | 22.20 | 20.70 | 26.70 |
| 1986/87 | 29.00 | 27.90 | 23.10 | 27.50 | 27.30 |
| 1987/88 | 30.90 | 27.20 | 28.70 | 30.10 | 29.30 |

NA = Not available. --- = Not applicable.

^{1/} Includes sugar act payments.

^{2/} Commenced production with the 1973 crop.

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

Appendix table 5--U.S. sugarbeets: Grower returns by region,
1970/71-1987/88 ^{1/}

| Crop year | Far West ^{2/} | Central ^{3/} | East ^{4/} | United States |
|----------------------------|------------------------|-----------------------|---------------------|---------------|
| <u>Dollars per net ton</u> | | | | |
| 1970/71 | 17.82 | 16.85 | 14.30 | 16.87 |
| 1971/72 | 17.70 | 17.63 | 15.41 | 17.45 |
| 1972/73 | 18.01 | 19.31 | 14.61 | 18.00 |
| 1973/74 | 29.51 | 34.25 | 32.69 | 31.68 |
| 1974/75 | 49.15 | 48.68 | 49.18 | 48.86 |
| 1975/76 | 28.21 | 27.54 | 24.68 | 27.60 |
| 1976/77 | 22.38 | 20.33 | 21.87 | 21.00 |
| 1977/78 | 25.38 | 23.43 | 20.12 | 24.20 |
| 1978/79 | 26.50 | 24.51 | 23.79 | 25.20 |
| 1979/80 | 33.11 | 33.83 | 38.01 | 33.90 |
| 1980/81 | 49.34 | 46.50 | 41.54 | 47.20 |
| 1981/82 | 32.15 | 27.05 | 26.79 | 29.20 |
| 1982/83 | 34.94 | 35.70 | 35.80 | 34.40 |
| 1983/84 | 40.36 | 34.10 | 35.55 | 37.00 |
| 1984/85 | 35.90 | ^{5/} 30.60 | ^{6/} 35.50 | 34.70 |
| 1985/86 | 34.60 | 31.00 | 34.20 | 33.80 |
| 1986/87 | 35.90 | 33.30 | 37.00 | 35.90 |
| 1987/88 | 35.70 | 37.70 | 40.60 | 38.20 |

^{1/} Includes sugar act payments.

^{2/} Includes Arizona, California, Idaho, Oregon, and Washington.

^{3/} Includes Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Texas, Utah, and Wyoming.

^{4/} Includes Maine, Michigan, New Jersey, New York, and Ohio.

^{5/} Includes bankruptcy compensation payments of \$3.50 per net ton.

^{6/} Includes bankruptcy compensation payments of \$0.20 per net ton.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 6--U.S. sugarcane: Cost of production and processing by cost item and area, 1987/88 crop

| Item | Florida | | Hawaii | | Louisiana | | Texas | | United States | |
|--|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Per short ton | Per pound | Per short ton | Per pound | Per short ton | Per pound | Per short ton | Per pound | Per short ton | Per pound |
| | Dollars | Cents | Dollars | Cents | Dollars | Cents | Dollars | Cents | Dollars | Cents |
| Production: | | | | | | | | | | |
| Variable | 19.09 | 8.322 | 19.66 | 8.045 | 13.21 | 5.502 | 15.38 | 7.735 | 17.86 | 7.607 |
| Fixed | 4.46 | 1.946 | 4.30 | 1.760 | 7.01 | 2.921 | 3.24 | 1.632 | 4.91 | 2.093 |
| Operating capital | .58 | .252 | .59 | .243 | .23 | .096 | .50 | .253 | .50 | .215 |
| Nonland capital | .73 | .319 | .82 | .335 | .88 | .368 | .15 | .075 | .77 | .327 |
| Land | 5.45 | 2.374 | 2.41 | .985 | 5.45 | 2.271 | 3.72 | 1.870 | 4.52 | 1.922 |
| Hauling allowance | NA | NA | NA | NA | -1.09 | -0.453 | NA | NA | -0.23 | -0.099 |
| Total production costs | 30.31 | 13.213 | 27.78 | 11.368 | 25.69 | 10.705 | 22.99 | 11.565 | 28.33 | 12.065 |
| Processing: | | | | | | | | | | |
| Variable | 10.79 | 4.704 | 20.26 | 8.290 | 12.92 | 5.384 | 11.88 | 5.975 | 13.99 | 5.960 |
| Fixed | 2.35 | 1.025 | 3.76 | 1.539 | 3.14 | 1.307 | 4.67 | 2.347 | 3.01 | 1.281 |
| General and administrative | 1.28 | .557 | 1.85 | .757 | 1.53 | .639 | 1.26 | .635 | 1.50 | .637 |
| Total processing costs | 14.42 | 6.286 | 25.87 | 10.586 | 17.59 | 7.330 | 17.81 | 8.957 | 18.50 | 7.878 |
| Total production and processing costs | 44.73 | 19.499 | 53.65 | 21.954 | 43.28 | 18.035 | 40.80 | 20.522 | 46.83 | 19.943 |
| Credits: | | | | | | | | | | |
| Molasses | 1.94 | .844 | 1.29 | .528 | 1.64 | .683 | 2.31 | 1.162 | 1.70 | .725 |
| Bagasse | .05 | .023 | .01 | .004 | NA | NA | NA | NA | .02 | .011 |
| Other | .14 | .062 | 2.33 | .953 | .20 | .082 | NA | NA | .78 | .330 |
| Total | 2.13 | .929 | 3.63 | 1.485 | 1.84 | .765 | 2.31 | 1.162 | 2.50 | 1.066 |
| Net production and processing costs | 42.60 | 18.570 | 50.02 | 20.469 | 41.44 | 17.270 | 38.49 | 19.360 | 44.33 | 18.877 |
| | <u>Dollars per acre</u> | | | | | | | | | |
| Total production costs | 978.95 | | 2,800.39 | | 583.20 | | 715.40 | | 1,019.73 | |
| | <u>Net tons of sugarcane per harvested acre</u> | | | | | | | | | |
| Yield | 33.6 | | 98.6 | | 27.6 | | 31.0 | | 39.6 | |
| | <u>Pounds of raw cane sugar per ton of cane</u> | | | | | | | | | |
| Recovery | 216.6 | | 223.2 | | 209.3 | | 177.4 | | 215.5 | |

NA = Not available.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 7--U.S. sugarbeets: Cost of production and processing, by cost item, 1987/88 crop

| Item | Per ton, sugarbeets | Per pound, refined sugar |
|---------------------------------------|---|--------------------------|
| | <u>Dollars</u> | <u>Cents</u> |
| Production: | | |
| Variable | 15.13 | 5.679 |
| Fixed | 6.31 | 2.369 |
| Operating capital | 0.31 | 0.117 |
| Nonland capital | 0.65 | 0.244 |
| Land | 5.42 | 2.034 |
| Total production costs | 27.82 | 10.443 |
| Processing: | | |
| Variable | 20.26 | 7.606 |
| Fixed | 3.09 | 1.160 |
| General and administrative | 1.66 | 0.621 |
| Pulp drying and marketing | 3.23 | 1.214 |
| Total processing costs | 28.24 | 10.601 |
| Total production and processing costs | 56.06 | 21.044 |
| Credits: | | |
| Dried pulp | 5.48 | 2.057 |
| Molasses | 1.69 | 0.634 |
| Other | 0.47 | 0.177 |
| Total | 7.64 | 2.868 |
| Net production and processing costs | 48.42 | 18.176 |
| | <u>Dollars per acre</u> | |
| Total production costs | 623.16 | |
| | <u>Net tons of sugarbeets per planted acre</u> | |
| Yield | 22.40 | |
| | <u>Pounds of refined sugar per net ton of beets</u> | |
| Recovery | 266.40 | |

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 8--U.S. value comparisons for sugar, 1970/71-88/89 1/

| Crop year | Loan value per acre 2/ | | | | Market value per acre 2/ | | | | Gross value of production | | | |
|------------|------------------------|-------------------|------------------------|-------------|--------------------------|-------------|---------------------------|-------------|---------------------------|-------------|------------------------|-------------|
| | Nominal | | Constant, 1982 dollars | | Nominal | | Constant, 1982 dollars | | Nominal | | Constant, 1982 dollars | |
| | Sugar-cane 3/ | Sugar-beets 4/ | Sugar-cane | Sugar-beets | Sugar-cane 5/ | Sugar-beets | Sugar-cane 5/ | Sugar-beets | Sugar-cane 5/ | Sugar-beets | Sugar-cane 5/ | Sugar-beets |
| | -----Dollars----- | | | | | | -----Million dollars----- | | | | | |
| 1970/71 | --- | --- | --- | --- | 442.26 | 264.01 | 1,053.05 | 628.60 | 243.0 | 377.8 | 578.6 | 899.5 |
| 1971/72 | --- | --- | --- | --- | 417.58 | 297.48 | 940.50 | 670.00 | 253.5 | 413.2 | 571.0 | 930.6 |
| 1972/73 | --- | --- | --- | --- | 485.44 | 323.17 | 1,043.96 | 694.99 | 322.2 | 460.2 | 692.9 | 989.7 |
| 1973/74 | --- | --- | --- | --- | 657.46 | 607.69 | 1,328.20 | 1,227.66 | 461.7 | 777.9 | 932.7 | 1,571.5 |
| 1974/75 | --- | --- | --- | --- | 1,691.28 | 827.49 | 3,132.00 | 1,532.39 | 1,166.8 | 1,035.6 | 2,160.7 | 1,917.8 |
| 1975/76 | --- | --- | --- | --- | 799.80 | 514.55 | 1,348.74 | 867.71 | 587.6 | 820.7 | 990.9 | 1,384.0 |
| 1976/77 | --- | --- | --- | --- | 580.64 | 404.35 | 920.19 | 640.81 | 408.8 | 616.8 | 647.9 | 977.5 |
| 1977/78 | 604.26 | 484.30 | 897.86 | 719.61 | 633.66 | 474.93 | 941.55 | 705.69 | 455.4 | 604.4 | 676.7 | 898.1 |
| 1978/79 | 659.32 | 534.63 | 913.19 | 740.48 | 692.25 | 497.78 | 958.80 | 689.45 | 484.0 | 649.8 | 670.4 | 900.0 |
| 1979/80 | 609.96 | 473.09 | 776.03 | 601.90 | 956.80 | 642.11 | 1,217.30 | 816.93 | 660.7 | 745.3 | 840.6 | 948.2 |
| 1980/81 | --- | --- | --- | --- | 1,439.90 | 900.67 | 1,680.16 | 1,050.96 | 1,035.7 | 1,109.0 | 1,208.5 | 1,294.0 |
| 1981/82 | --- | --- | --- | --- | 910.71 | 645.86 | 968.84 | 687.09 | 637.8 | 803.6 | 678.5 | 854.9 |
| 1982/83 7/ | 857.27 | 592.51 | 857.27 | 592.51 | 1,049.40 | 701.98 | 1,049.40 | 701.98 | 753.9 | 740.3 | 753.9 | 740.3 |
| 1982/83 | 870.37 | 606.72 | 870.37 | 606.72 | 1,049.40 | 701.98 | 1,049.40 | 701.98 | 753.9 | 740.3 | 753.9 | 740.3 |
| 1983/84 | 838.95 | 599.65 | 807.46 | 577.14 | 1,036.94 | 718.17 | 998.02 | 691.21 | 756.2 | 777.7 | 727.8 | 748.5 |
| 1984/85 | 914.09 | 624.39 | 848.74 | 579.75 | 1,051.86 | 6/ 666.67 | 976.66 | 619.01 | 733.4 | 750.2 | 681.0 | 696.6 |
| 1985/86 | 906.34 | 652.71 | 817.26 | 588.56 | 990.57 | 673.94 | 893.21 | 607.70 | 717.6 | 761.2 | 647.1 | 686.4 |
| 1986/87 | 903.64 | 648.65 | 793.36 | 569.49 | 1,053.78 | 730.93 | 925.18 | 641.73 | 790.0 | 902.2 | 693.6 | 792.1 |
| 1987/88 | 925.02 | 773.01 | 787.92 | 658.44 | 1,055.07 | 857.22 | 898.70 | 730.17 | 821.2 | 1,080.6 | 699.5 | 920.4 |
| 1988/89 | 912.07 | 644.27 | 751.91 | 531.14 | NA | NA | NA | NA | NA | NA | NA | NA |

NA = Not available.

--- = Not applicable.

1/ Data exclude Puerto Rico.

2/ Values are harvested acre for sugarcane; planted acre for sugarbeets.

3/ Based upon growers receiving 60 percent of the returns and processors 40 percent.

4/ Based upon growers receiving 65 percent of the returns and processors 35 percent.

5/ Excludes Hawaii in 1970-73.

6/ Excludes CCC's \$17.5 million bankruptcy compensation payments to growers.

7/ Purchase program.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 9--U.S. sugarcane and sugarbeets: Prices received by farmers, parity, and percentage of parity, 1960/61-1987/88

| Crop year | Sugarcane | | | Sugarbeets | | |
|-----------|---------------------------|--------------------|----------------------|----------------------|--------------------|----------------------|
| | Price received 1/ | Parity price 2/ | Percentage of parity | Price received 1/ | Parity price 2/ | Percentage of parity |
| | -----Dollars per ton----- | | Percent | ---Dollars per ton-- | | Percent |
| 1960/61 | 8.54 | 9.78 | 87.3 | 13.91 | 16.40 | 84.8 |
| 1961/62 | 8.90 | 10.30 | 86.4 | 13.46 | 16.90 | 79.6 |
| 1962/63 | 9.51 | 11.10 | 85.7 | 15.05 | 17.90 | 84.1 |
| 1963/64 | 11.35 | 11.40 | 99.6 | 14.42 | 18.00 | 80.1 |
| 1964/65 | 7.84 | 11.90 | 65.9 | 14.00 | 18.80 | 74.5 |
| 1965/66 | 8.94 | 12.30 | 72.7 | 14.08 | 19.30 | 73.0 |
| 1966/67 | 9.85 | 12.60 | 78.2 | 14.96 | 19.60 | 76.3 |
| 1967/68 | 10.54 | 13.00 | 81.1 | 15.67 | 20.30 | 77.2 |
| 1968/69 | 10.53 | 14.00 | 75.2 | 15.96 | 21.50 | 74.2 |
| 1969/70 | 11.15 | 14.70 | 75.9 | 14.72 | 22.30 | 66.0 |
| 1970/71 | 11.67 | 15.60 | 74.8 | 16.87 | 23.20 | 72.7 |
| 1971/72 | 12.25 | 16.60 | 73.8 | 17.45 | 24.60 | 70.9 |
| 1972/73 | 12.64 | 19.20 | 65.8 | 18.00 | 28.00 | 64.3 |
| 1973/74 | 21.97 | 22.10 | 99.4 | 31.68 | 32.00 | 99.0 |
| 1974/75 | 49.64 | 31.20 | 159.1 | 48.86 | 40.50 | 120.6 |
| 1975/76 | 21.50 | 33.10 | 65.0 | 27.60 | 43.20 | 63.9 |
| 1976/77 | 15.20 | 33.30 | 45.6 | 21.00 | 43.50 | 48.3 |
| 1977/78 | 17.70 | 35.90 | 49.3 | 24.20 | 47.10 | 51.4 |
| 1978/79 | 19.50 | 40.00 | 48.8 | 25.20 | 51.80 | 48.6 |
| 1979/80 | 26.00 | 44.00 | 59.1 | 33.90 | 57.00 | 59.5 |
| 1980/81 | 38.50 | 52.00 | 74.0 | 47.20 | 65.50 | 72.1 |
| 1981/82 | 24.90 | 52.70 | 47.2 | 29.20 | 66.20 | 44.1 |
| 1982/83 | 26.50 | 53.60 | 49.4 | 35.40 | 67.00 | 52.8 |
| 1983/84 | 27.80 | 55.20 | 50.4 | 37.00 | 68.20 | 54.3 |
| 1984/85 | 28.20 | 48.80 | 57.8 | 3/ 34.70 | 63.30 | 54.8 |
| 1985/86 | 26.70 | 47.90 | 55.7 | 33.80 | 61.40 | 55.0 |
| 1986/87 | 27.30 | 49.90 | 54.7 | 35.90 | 63.60 | 56.4 |
| 1987/88 | 29.30 | 53.20 | 55.1 | 38.20 | 67.70 | 56.4 |

1/ Includes Government payments.

2/ July parity (1910-14 = 100) for the following year.

3/ Includes bankruptcy compensation payments of \$0.80 per net ton of sugarbeets.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 10--U.S. farmer-related programs for sugar, 1970/71-1987/88

| Crop year | Direct or deficiency 1/ | | Diver-sion | Disaster | CCC operations | | | | | | |
|------------------------|-------------------------|-------------|------------|----------|----------------|------------|-----------|-------------|----------------|---------------|----------------|
| | Sugar-cane | Sugar-beets | | | Storage | Outlays | | Redemptions | | Net | |
| | | | | | | Cane sugar | Raw sugar | Beet sugar | Raw cane sugar | Beet sugar | Raw cane sugar |
| <u>Million dollars</u> | | | | | | | | | | | |
| 1970/71 | 29.6 | 54.2 | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1971/72 | 29.4 | 56.2 | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1972/73 | 31.4 | 57.9 | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1973/74 | 2/ 29.1 | 50.4 | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1974/75 | 29.2 | 47.4 | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1975/76 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1976/77 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1977/78 | 3/ 125.2 | 3/ 111.0 | --- | --- | 5.4 | 113.6 | 264.7 | 59.0 | 264.7 | 54.6 0 | |
| 1978/79 | --- | --- | --- | --- | 4.3 | 319.4 | 472.9 | 253.0 | 399.2 | 66.4 73.7 | |
| 1979/80 | --- | --- | --- | --- | --- | 171.0 | 333.4 | 171.0 | 333.4 | 0 0 | |
| 1980/81 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1981/82 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1982/83 4/ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |
| 1982/83 5/ | --- | --- | --- | --- | --- | 188.5 | 567.8 | 188.5 | 567.8 | 0 0 | |
| 1983/84 | --- | --- | --- | --- | --- | 125.3 | 487.5 | 125.3 | 487.5 | 0 0 | |
| 1984/85 | --- | 6/ 17.5 | --- | --- | 11.0 | 248.8 | 584.6 | 141.2 | 505.4 | 107.6 7/ 51.4 | |
| 1985/86 | --- | --- | --- | --- | --- | 385.0 | 601.6 | 385.0 | 601.6 | 0 0 | |
| 1986/87 | --- | --- | --- | --- | --- | 234.9 | 533.5 | 234.9 | 533.5 | 0 0 | |
| 1987/88 | --- | --- | --- | --- | --- | 282.6 | 704.1 | 282.6 | 704.1 | 0 0 | |

--- = Not applicable.

1/ Represents payments made under the Sugar Act of 1948, as amended, and includes abandonment and deficiency payments.

2/ Estimated.

3/ Represents payments made under the Food and Agriculture Act of 1977 and includes both grower and processor portions.

4/ Purchase agreements totaling \$412.7 million (\$306 million beet sugar and \$106.7 million cane sugar were filed. However, none of the agreements were executed.

5/ Loan program, 1982-87.

6/ Reflects bankruptcy compensation payments paid to growers.

7/ Excludes \$27.8 million transferred to CCC accounts receivable.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 11--U.S. per capita consumption of caloric and low-calorie sweeteners, 1975-89

| Calendar year | Refined sugar <u>1/</u> | Corn sweeteners <u>2/</u> | | | | Pure honey | Edible syrups | Total caloric sweeteners | Saccharin | Aspartame | Total of low-calorie sweeteners <u>3/</u> | Total of all sweeteners |
|-----------------------------|-------------------------|---------------------------|---------------|----------|-------|------------|---------------|--|-----------|-----------|---|-------------------------|
| | | HFCS | Glucose syrup | Dextrose | Total | | | | | | | |
| -----Pounds, dry basis----- | | | | | | | | --Pounds, sugar-sweetness-equivalent-- | | | Pounds dry basis | |
| 1975 | 89.2 | 4.9 | 17.5 | 5.0 | 27.4 | 1.0 | 0.4 | 118.0 | 6.1 | 0 | 6.1 | 124.1 |
| 1976 | 93.4 | 6.9 | 17.5 | 5.0 | 29.4 | .9 | .4 | 124.1 | 6.1 | 0 | 6.1 | 130.2 |
| 1977 | 94.2 | 9.1 | 17.6 | 4.1 | 30.8 | 1.0 | .4 | 126.4 | 6.6 | 0 | 6.6 | 133.0 |
| 1978 | 91.5 | 11.2 | 17.8 | 3.8 | 33.8 | 1.1 | .4 | 126.8 | 6.9 | 0 | 6.9 | 133.7 |
| 1979 | 89.3 | 14.4 | 17.9 | 3.6 | 35.9 | 1.0 | .4 | 126.6 | 7.3 | 0 | 7.3 | 133.9 |
| 1980 | 83.6 | 18.0 | 17.6 | 3.5 | 39.1 | .8 | .4 | 123.9 | 7.7 | 0 | 7.7 | 131.6 |
| 1981 | 79.4 | 22.2 | 17.8 | 3.5 | 43.5 | .8 | .4 | 124.1 | 8.0 | .2 | 8.2 | 132.3 |
| 1982 | 73.6 | 26.7 | 18.0 | 3.5 | 48.2 | .9 | .4 | 123.1 | 8.4 | 1.0 | 9.4 | 132.5 |
| 1983 | 71.0 | 31.1 | 18.0 | 3.5 | 52.6 | .9 | .4 | 124.9 | 9.5 | 3.5 | 13.0 | 137.9 |
| 1984 | 67.6 | 37.3 | 18.0 | 3.5 | 58.8 | 1.0 | .4 | 127.8 | 10.0 | 5.8 | 15.8 | 143.6 |
| 1985 | 63.4 | 44.1 | 18.0 | 3.5 | 65.6 | 1.0 | .4 | 130.4 | 6.0 | 12.0 | 18.0 | 148.4 |
| 1986 | 60.8 | 46.0 | 18.0 | 3.5 | 67.5 | 1.0 | .4 | 129.7 | 5.5 | 13.0 | 18.5 | 148.2 |
| 1987 | 62.4 | 47.1 | 18.0 | 3.5 | 68.6 | 1.0 | .4 | 132.4 | 5.5 | 13.5 | 19.0 | 151.4 |
| 1988 | 61.7 | 48.0 | 18.0 | 3.6 | 69.6 | 1.0 | .4 | 132.7 | 6.0 | 14.0 | 20.0 | 152.7 |
| 1989 <u>4/</u> | 61.4 | 47.7 | 18.0 | 3.6 | 69.3 | 1.0 | .4 | 132.1 | NA | NA | NA | NA |

NA = Not available.

1/ Sugar consumption is the total of U.S. sugar deliveries and sugar imported in blends and mixtures.

2/ Dry basis.

3/ Assumes saccharin is 300 times sweeter than sugar and aspartame is 200 times sweeter than sugar.

4/ Preliminary.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 12--U.S. total consumption of caloric sweeteners, calendar years, 1980-89

| Calendar year | Sugar ^{1/} | | Corn sweeteners | | | | Pure honey | Edible syrups | Total caloric sweeteners |
|--------------------------------------|---------------------|---------------|--------------------|---------------|----------|-------|------------|---------------|--------------------------|
| | Raw value | Refined basis | HFCS ^{2/} | Glucose syrup | Dextrose | Total | | | |
| <u>Million short tons, dry basis</u> | | | | | | | | | |
| 1980 | 10.189 | 9.522 | 2.050 | 2.004 | 0.399 | 4.453 | 0.091 | 0.046 | 14.112 |
| 1981 | 9.769 | 9.130 | 2.550 | 2.047 | .403 | 5.000 | .092 | .046 | 14.268 |
| 1982 | 9.160 | 8.561 | 3.100 | 2.091 | .407 | 5.598 | .105 | .046 | 14.310 |
| 1983 | 8.917 | 8.334 | 3.650 | 2.110 | .410 | 6.170 | .106 | .047 | 14.657 |
| 1984 | 8.569 | 8.008 | 4.425 | 2.130 | .414 | 6.969 | .118 | .047 | 15.142 |
| 1985 | 8.110 | 7.579 | 5.275 | 2.161 | .418 | 7.854 | .120 | .048 | 15.601 |
| 1986 | 7.861 | 7.347 | 5.550 | 2.171 | .425 | 8.146 | .121 | .048 | 15.662 |
| 1987 | 8.137 | 7.605 | 5.740 | 2.190 | .430 | 8.360 | .122 | .049 | 16.136 |
| 1988 | 8.133 | 7.601 | 5.914 | 2.215 | .440 | 8.569 | .123 | .049 | 16.342 |
| 1989 ^{3/} | 8.170 | 7.636 | 5.936 | 2.235 | .450 | 8.621 | .124 | .050 | 16.431 |

^{1/} Sugar consumption is the total of U.S. sugar deliveries and sugar imported in blends and mixtures.

^{2/} Includes U.S. imports of HFCS.

^{3/} Preliminary.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 13--U.S. sugar deliveries to industrial and nonindustrial users, 1980-88

| Type of user | Calendar year | | | | | | | | | January-June | | |
|---|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|-------|-------|
| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1987 | 1988 | 1989 |
| | 1,000 short tons, refined | | | | | | | | | | | |
| Industrial users | 6,004 | 5,665 | 5,199 | 4,992 | 4,684 | 4,218 | 4,026 | 4,252 | 4,179 | 2,105 | 2,053 | 2,142 |
| Food use | 3,843 | 3,813 | 3,616 | 3,744 | 3,776 | 3,878 | 3,760 | 4,040 | 3,942 | 1,993 | 1,919 | 2,024 |
| Bakery and cereal products | 1,337 | 1,306 | 1,296 | 1,387 | 1,404 | 1,494 | 1,432 | 1,513 | 1,541 | 748 | 760 | 764 |
| Confectionery products | 932 | 983 | 940 | 1,087 | 1,115 | 1,059 | 1,051 | 1,146 | 1,107 | 556 | 539 | 569 |
| Dairy products | 450 | 459 | 404 | 385 | 408 | 456 | 447 | 449 | 411 | 223 | 198 | 214 |
| Processed foods | 535 | 484 | 450 | 454 | 433 | 428 | 387 | 398 | 354 | 192 | 163 | 165 |
| Other | 589 | 581 | 526 | 431 | 416 | 441 | 443 | 534 | 529 | 274 | 259 | 312 |
| Beverage use | 2,161 | 1,852 | 1,583 | 1,248 | 908 | 340 | 266 | 212 | 237 | 112 | 134 | 118 |
| Nonindustrial users | 3,353 | 3,421 | 3,214 | 3,076 | 3,053 | 3,123 | 3,075 | 3,199 | 3,316 | 1,461 | 1,546 | 1,478 |
| Institutions | 303 | 259 | 177 | 195 | 209 | 204 | 142 | 163 | 175 | 79 | 86 | 91 |
| Eating and drinking | 96 | 90 | 85 | 94 | 108 | 85 | 84 | 91 | 89 | 50 | 41 | 51 |
| Other ^{1/} | 207 | 169 | 92 | 101 | 101 | 119 | 58 | 72 | 86 | 29 | 45 | 40 |
| Wholesalers and retailers | 3,050 | 3,162 | 3,037 | 2,881 | 2,844 | 2,919 | 2,933 | 3,036 | 3,141 | 1,382 | 1,460 | 1,387 |
| Wholesalers, jobbers, and sugar dealers | 1,881 | 2,001 | 1,951 | 1,713 | 1,744 | 1,874 | 1,867 | 2,040 | 2,200 | 916 | 1,040 | 945 |
| Retail grocers, chain stores and supermarkets | 1,169 | 1,161 | 1,086 | 1,168 | 1,100 | 1,045 | 1,066 | 996 | 941 | 466 | 420 | 442 |
| Total food and beverage use | 9,357 | 9,086 | 8,413 | 8,068 | 7,737 | 7,341 | 7,101 | 7,451 | 7,495 | 3,566 | 3,599 | 3,620 |
| Total other use ^{2/} | 120 | 126 | 106 | 131 | 127 | 131 | 138 | 149 | 121 | 70 | 59 | 61 |
| All uses, continental | | | | | | | | | | | | |
| United States | 9,477 | 9,212 | 8,519 | 8,199 | 7,864 | 7,472 | 7,239 | 7,600 | 7,616 | 3,636 | 3,658 | 3,681 |
| Hawaii and minor adjustments | 45 | -81 | 35 | 37 | 37 | 37 | 38 | 33 | 36 | 18 | 19 | 18 |
| Total refined, including Hawaii | 9,522 | 9,131 | 8,554 | 8,236 | 7,901 | 7,509 | 7,277 | 7,633 | 7,652 | 3,654 | 3,677 | 3,699 |
| Total, raw value basis | 10,189 | 9,770 | 9,153 | 8,812 | 8,454 | 8,035 | 7,786 | 8,167 | 8,188 | 3,910 | 3,934 | 3,958 |
| Consumer-size packages ^{3/} | 2,347 | 2,425 | 2,310 | 2,314 | 2,274 | 2,185 | 2,298 | 2,144 | 2,084 | 990 | 952 | 1,190 |
| Redistributed to industrial and other users ^{4/} | 703 | 737 | 727 | 567 | 570 | 734 | 635 | 892 | 1,057 | 392 | 508 | 197 |
| Total wholesalers and retailers ^{5/} | 3,050 | 3,162 | 3,037 | 2,881 | 2,844 | 2,919 | 2,933 | 3,036 | 3,141 | 1,382 | 1,460 | 1,387 |

^{1/} Includes deliveries to Government agencies and the military.

^{2/} Used largely for pharmaceuticals and some tobacco.

^{3/} Less than 50 pounds. Excludes Hawaii.

^{4/} Includes some deliveries to institutions. Excludes Hawaii.

^{5/} Continental United States only.

Source: U.S. Dept. Agr., National Agricultural Statistics Service.

Appendix table 14--U.S. sugar imports under quotas, by country, 1984-89

| Country | 1984/85 ^{1/} | | 1985/86 ^{2/} | | 1987 ^{3/} | | 1988 ^{4/} | | 1989/90 | |
|-----------------------|-----------------------|----------------|-----------------------|----------------|--------------------|----------------|--------------------|----------------|--------------------------------|------------------------------|
| | Quota allocation | Actual imports | Quota allocation | Actual imports | Quota allocation | Actual imports | Quota allocation | Actual imports | Quota allocation ^{5/} | Actual imports ^{6/} |
| | Short tons, raw value | | | | | | | | | |
| Argentina | 109,220 | 109,219 | 73,788 | 72,917 | 39,130 | 38,720 | 43,175 | 43,175 | 101,776 | 53,022 |
| Australia | 210,820 | 210,820 | 142,428 | 142,428 | 75,530 | 75,530 | 83,335 | 83,438 | 196,453 | 97,350 |
| Barbados | 17,780 | 17,800 | 12,500 | 11,678 | 7,500 | 7,500 | 8,205 | 8,205 | 16,569 | 8,236 |
| Belize | 27,940 | 28,104 | 18,876 | 18,876 | 10,010 | 10,010 | 16,692 | 16,692 | 26,036 | 13,060 |
| Bolivia | 20,320 | 21,544 | 13,728 | 13,728 | 7,500 | 7,500 | 8,230 | 8,230 | 18,935 | 8,494 |
| Brazil | 368,300 | 368,300 | 248,820 | 248,820 | 131,950 | 131,950 | 145,590 | 145,462 | 343,201 | 63,014 |
| Canada | 27,940 | 27,918 | 18,876 | 18,902 | 10,010 | 9,749 | 11,045 | 10,375 | 26,036 | 5,438 |
| Colombia | 60,960 | 57,175 | 41,184 | 41,184 | 21,840 | 21,840 | 24,100 | 24,102 | 56,806 | 42,286 |
| Congo | 12,500 | 12,499 | 12,500 | 12,500 | 7,500 | 7,500 | 8,000 | 8,000 | 15,669 | 776 |
| Costa Rica | 52,302 | 52,302 | 34,713 | 34,713 | 17,583 | 17,583 | 19,577 | 19,547 | 48,391 | 23,428 |
| Cote D'Ivoire | 12,500 | 12,500 | 12,500 | 12,151 | 7,500 | 7,500 | 8,000 | 8,000 | 15,669 | 8,068 |
| Dominican Republic | 447,040 | 447,040 | 302,016 | 302,016 | 160,160 | 159,319 | 176,710 | 169,190 | 416,576 | 242,944 |
| Ecuador | 27,940 | 28,033 | 18,876 | 18,876 | 10,010 | 10,010 | 11,045 | 7,903 | 26,036 | 13,200 |
| El Salvador | 74,561 | 74,561 | 50,000 | 48,133 | 26,020 | 25,893 | 28,815 | 28,815 | 69,271 | 25,511 |
| Fiji | 17,780 | 17,955 | 12,500 | 12,500 | 25,190 | 25,190 | 9,035 | 9,200 | 21,231 | 10,672 |
| Gabon | 12,500 | 3,461 | 12,500 | 12,322 | 7,500 | 7,500 | 8,000 | 8,000 | 15,669 | 858 |
| Guatemala | 121,920 | 122,439 | 82,368 | 82,368 | 43,680 | 43,347 | 48,185 | 48,962 | 113,612 | 52,159 |
| Guyana | 30,480 | 30,362 | 20,592 | 20,592 | 10,920 | 10,920 | 374 | 374 | 28,403 | 7,912 |
| Haiti | 12,500 | 12,112 | 12,500 | 12,500 | 7,500 | 7,500 | 8,000 | 7,600 | 15,669 | 8,420 |
| Honduras | 50,017 | 50,014 | 32,713 | 32,713 | 15,917 | 15,917 | 17,877 | 17,896 | 46,006 | 22,596 |
| India | 20,320 | 20,320 | 13,728 | 13,728 | 7,500 | 7,500 | 8,230 | 6,026 | 18,935 | 9,165 |
| Jamaica | 27,940 | 28,686 | 18,876 | 18,876 | 10,010 | 10,010 | 16,692 | 16,426 | 26,036 | 12,999 |
| Madagascar | 12,500 | 12,593 | 12,500 | 12,462 | 7,500 | 7,500 | 8,000 | 7,934 | 15,669 | 7,978 |
| Malawi | 35,400 | 36,317 | 17,160 | 17,142 | 9,100 | 9,100 | 10,045 | 10,045 | 23,563 | 11,736 |
| Mauritius | 27,940 | 27,970 | 30,592 | 30,592 | 10,920 | 10,920 | 12,050 | 12,050 | 28,368 | 23,235 |
| Mexico | 12,500 | 13,361 | 12,500 | 12,500 | 7,500 | 7,500 | 8,000 | 8,000 | 15,669 | 13,720 |
| Mozambique | 33,020 | 31,545 | 22,308 | 22,290 | 11,830 | 11,830 | 13,055 | 13,055 | 30,770 | 15,089 |
| Nicaragua | 6,000 | 6,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Panama ^{7/} | 73,660 | 73,814 | 49,764 | 49,625 | 26,390 | 26,390 | --- | 210 | 33,949 | 0 |
| Papua New Guinea | 12,500 | 12,118 | 12,500 | 12,500 | 7,500 | 7,416 | 8,000 | 8,000 | 15,669 | 8,077 |
| Paraguay | 12,500 | 12,781 | 12,500 | 12,190 | 7,500 | 5,787 | 8,000 | 8,017 | 15,669 | 8,567 |
| Peru | 104,140 | 104,108 | 70,356 | 68,686 | 37,310 | 36,883 | 41,165 | 28,580 | 97,043 | 37,117 |
| Philippines | 342,900 | 325,129 | 246,999 | 243,880 | 143,780 | 143,780 | 158,640 | 158,640 | 373,972 | 182,881 |
| St. Christopher-Nevis | 12,500 | 12,519 | 12,500 | 12,500 | 7,500 | 7,500 | 8,000 | 8,086 | 15,669 | 8,040 |
| South Africa | 58,420 | 58,321 | 24,129 | 24,129 | 0 | 0 | 0 | 0 | 0 | 0 |
| Swaziland | 40,640 | 40,604 | 27,456 | 27,456 | 14,560 | 14,560 | 16,065 | 16,065 | 37,871 | 18,484 |
| Taiwan | 30,480 | 30,338 | 20,592 | 19,976 | 10,920 | 10,920 | 12,050 | 12,050 | 28,403 | 14,161 |
| Thailand | 35,560 | 35,524 | 24,024 | 23,993 | 12,740 | 12,637 | 14,055 | 9,806 | 33,136 | 16,186 |
| Trinidad-Tobago | 17,780 | 17,683 | 12,500 | 12,500 | 7,500 | 7,500 | 8,588 | 8,588 | 16,569 | 8,159 |
| Uruguay | 12,500 | 12,347 | 12,500 | 12,500 | 7,500 | 7,500 | 8,000 | 8,000 | 15,669 | 205 |
| Zimbabwe | 30,480 | 30,481 | 20,592 | 20,592 | 10,920 | 10,920 | 12,050 | 12,050 | 28,403 | 25,030 |
| Subtotal | 2,675,000 | 2,646,717 | 1,848,054 | 1,845,352 | 1,001,430 | 997,131 | 1,054,675 | 1,024,791 | 2,489,070 | 1,122,121 |
| Specialty sugars | 1,840 | 280 | 1,840 | 306 | 2,000 | NA | 2,000 | NA | 2,000 | NA |
| Grand total | 2,676,840 | 2,646,997 | 1,849,894 | 1,845,658 | 1,003,430 | 997,131 | 1,056,675 | 1,024,791 | 2,491,070 | 1,122,121 |

--- = Not applicable.

NA = Not available.

Note: Imports are reported on an actual weight basis adjusted by Customs upward by a factor of 1.035. When final polarization results are received or when adjustments are made to raw value on final vessels, cumulative import data are adjusted accordingly. A country's excess of cumulative entries and adjustments over its quota allocation is carried over to and against the country's allocation for the next quota period. To convert to metric tons, divide by 1.10231125.

^{1/} Oct. 1, 1984 - Nov. 30, 1985.^{2/} Dec. 1, 1985 - Dec. 31, 1986.^{3/} Quota period Jan. 1, 1987, to Dec. 31, 1987.^{4/} Quota period Jan. 1, 1988, to Dec. 31, 1988.^{5/} Quota period Jan. 1, 1989, to Sept. 30, 1990. Quota was increased Sept. 12 and again on Nov. 24.^{6/} Imports as of Sept. 30, 1989.^{7/} Panama's 1989 quota allocation of 33,949 short tons is suspended and is not allowed to be shipped at this time. Panama's initial allocation of 33,661 short tons, raw value, was suspended pursuant to section 565 of H.R. 4637 and subsequently reallocated on Sept. 12, 1989.

Source: U.S. Dept. Agr., Foreign Agricultural Service.

Appendix table 15--U.S. sugar production and deliveries for use by region, 1980-88

| Region 1/ | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <u>1,000 short tons, raw value</u> | | | | | | | | | |
| New England: | | | | | | | | | |
| Production | 325 | 310 | 295 | 290 | 195 | 180 | 180 | 180 | 40 |
| Use 2/ | 344 | 336 | 309 | 295 | 280 | 249 | 248 | 257 | 253 |
| Balance | -19 | -26 | -14 | -5 | -85 | -69 | -68 | -77 | -213 |
| Middle Atlantic: | | | | | | | | | |
| Production | 1,599 | 1,575 | 1,050 | 1,050 | 950 | 850 | 840 | 835 | 875 |
| Use 2/ | 1,628 | 1,622 | 1,506 | 1,456 | 1,435 | 1,388 | 1,317 | 1,364 | 1,349 |
| Balance | -29 | -47 | -456 | -406 | -485 | -538 | -477 | -529 | -474 |
| North Central: | | | | | | | | | |
| Production | 1,626 | 1,637 | 1,522 | 1,567 | 1,289 | 1,385 | 1,503 | 1,563 | 1,855 |
| Use 2/ | 3,449 | 3,429 | 3,160 | 2,954 | 2,810 | 2,832 | 2,722 | 2,927 | 2,984 |
| Balance | -1,823 | -1,792 | -1,638 | -1,387 | -1,521 | -1,447 | -1,219 | -1,364 | -1,129 |
| South: | | | | | | | | | |
| Production | 4,099 | 3,497 | 3,357 | 3,654 | 3,626 | 3,298 | 3,207 | 3,084 | 2,783 |
| Use 2/ | 2,949 | 2,595 | 2,734 | 2,675 | 2,586 | 2,325 | 2,306 | 2,349 | 2,301 |
| Balance | 1,150 | 902 | 623 | 979 | 1,040 | 973 | 901 | 735 | 482 |
| West: | | | | | | | | | |
| Production | 2,531 | 2,751 | 2,929 | 2,251 | 2,394 | 2,322 | 2,056 | 2,505 | 2,635 |
| Use 2/ | 1,810 | 1,788 | 1,444 | 1,432 | 1,343 | 1,241 | 1,193 | 1,270 | 1,301 |
| Balance | 721 | 963 | 1,485 | 819 | 1,051 | 1,081 | 863 | 1,235 | 1,334 |
| U.S. Total: | | | | | | | | | |
| Production | 10,180 | 9,770 | 9,153 | 8,812 | 8,454 | 8,035 | 7,786 | 8,167 | 8,188 |
| Use 2/ | 10,180 | 9,770 | 9,153 | 8,812 | 8,454 | 8,035 | 7,786 | 8,167 | 8,188 |
| Balance | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Notes: 1979/80 production is combined with 1980 deliveries, 1980/81 output with 1981 deliveries, and so on for subsequent years. "Production" is regional output plus raw cane imports for refining.

1/ States are grouped into regions as follows:

New England--Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

Mid-Atlantic--New Jersey, New York, and Pennsylvania.

North Central--Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

South--Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

West--Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

2/ Consists of deliveries for food and beverage use, polyhydric (nonfood) use, and the sugar re-export program.

Source: Commodity Information, Inc., and U.S. Dept. Agr., National Agricultural Statistics Service.

Appendix table 16--HFCS supply and use, 1975-89

| Calendar year | Supply | | | | | | Utilization | | | | | | | | | | |
|---------------|--------------------|---------------|-------|---------|---------|----------------------|-------------|----------------------|----------------|-------|--------------|-------------------------------------|-------|-------|------------|------|------|
| | Domestic shipments | | | Imports | Total | Net change in stocks | Total use | Exports | | | Non-food use | Domestic disappearance for food use | | | | | |
| | HFCS-42 | HFCS-55 1/ | Total | | | | | To foreign countries | To Puerto Rico | Total | | Total | | | Per Capita | | |
| | | | | HFCS-42 | HFCS-55 | Total | HFCS-42 | | | | HFCS-55 | Total | | | | | |
| 1975 | 532 | --- | 532 | --- | 532 | 4 | 528 | --- | --- | --- | 3 | 525 | --- | 525 | 4.9 | --- | 4.9 |
| 1976 | 787 | --- | 787 | --- | 787 | 33 | 754 | --- | --- | --- | 4 | 750 | --- | 750 | 6.9 | --- | 6.9 |
| 1977 | 1,011 | 53 | 1,064 | --- | 1,064 | 58 | 1,006 | 1 | --- | 1 | 5 | 950 | 50 | 1,000 | 8.6 | 0.5 | 9.1 |
| 1978 | 1,087 | 121 | 1,208 | --- | 1,208 | -50 | 1,258 | 2 | --- | 2 | 6 | 1,150 | 100 | 1,250 | 10.3 | .9 | 11.2 |
| 1979 | 1,339 | 335 | 1,674 | --- | 1,674 | 35 | 1,639 | 3 | 1 | 4 | 10 | 1,300 | 325 | 1,625 | 11.5 | 2.9 | 14.4 |
| 1980 | 1,530 | 650 | 2,180 | --- | 2,180 | 106 | 2,074 | 7 | 2 | 9 | 15 | 1,400 | 650 | 2,050 | 12.3 | 5.7 | 18.0 |
| 1981 | 1,603 | 1,069 | 2,672 | --- | 2,672 | 69 | 2,603 | 8 | 3 | 11 | 42 | 1,500 | 1,050 | 2,550 | 13.1 | 9.1 | 22.2 |
| 1982 | 1,554 | 1,554 | 3,108 | --- | 3,108 | -44 | 3,152 | 1 | 4 | 5 | 47 | 1,600 | 1,500 | 3,100 | 13.8 | 12.9 | 26.7 |
| 1983 | 1,622 | 1,982 | 3,604 | 28 | 3,632 | -81 | 3,713 | 1 | 10 | 11 | 52 | 1,650 | 2,000 | 3,650 | 14.1 | 17.0 | 31.1 |
| 1984 | 1,610 | 2,684 | 4,294 | 124 | 4,418 | -70 | 4,488 | 1 | 16 | 17 | 46 | 1,725 | 2,700 | 4,425 | 14.5 | 22.8 | 37.3 |
| 1985 | 1,825 | 3,388 | 5,213 | 185 | 5,398 | 62 | 5,336 | 1 | 19 | 20 | 41 | 1,825 | 3,450 | 5,275 | 15.3 | 28.8 | 44.1 |
| 1986 | 1,872 | 3,485 | 5,357 | 224 | 5,581 | -32 | 5,613 | 1 | 17 | 18 | 45 | 1,950 | 3,600 | 5,550 | 16.2 | 29.8 | 46.0 |
| 1987 | 2,027 | 3,595 | 5,622 | 203 | 5,825 | 11 | 5,814 | 1 | 22 | 23 | 51 | 2,075 | 3,665 | 5,740 | 17.0 | 30.0 | 47.1 |
| 1988 | 2,342 | 3,531 | 5,873 | 184 | 6,057 | 27 | 6,030 | 4 | 25 | 29 | 87 | 2,258 | 3,656 | 5,914 | 18.3 | 29.7 | 48.0 |
| 1989 2/ | 2,424 | 3,487 | 5,911 | 178 | 6,089 | 29 | 6,060 | 18 | 26 | 44 | 80 | 2,394 | 3,542 | 5,936 | 19.2 | 28.5 | 47.7 |

--- = Zero or negligible.

1/ HFCS (55-percent fructose content) was not commercially produced prior to 1977.

2/ Forecast.

Source: Estimates for domestic HFCS production and nonfood use are based on confidential trade sources. Imports, exports, and shipments to Puerto Rico are from Bureau of the Census. Estimates of net change in stocks and domestic disappearance for food are from U.S. Dept. Agr., Economic Research Service.

Appendix table 17--U.S. production capacity for HFCS, by company, 1980-90

| Company | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990E |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <u>1,000 short tons, dry basis</u> | | | | | | | | | | | |
| HFCS-42 | | | | | | | | | | | |
| ADM | 650 | 650 | 638 | 690 | 675 | 675 | 675 | 675 | 675 | 675 | 675 |
| American Fructose <u>1/</u> | 68 | 68 | 63 | 65 | 73 | 123 | 150 | 128 | 128 | 230 | 230 |
| Amstar <u>2/</u> | 150 | 150 | 151 | 68 | 80 | NA | NA | NA | NA | NA | NA |
| Cargill <u>3/</u> | 132 | 107 | 206 | 180 | 250 | 360 | 355 | 355 | 425 | 425 | 425 |
| CPC <u>4/</u> | 178 | 268 | 360 | 345 | 413 | 320 | 213 | 213 | 245 | 285 | 285 |
| Coors | NA | NA | NA | NA | NA | 18 | 18 | 18 | 22 | 22 | 22 |
| Heinz(Hubinger) | 125 | 125 | 126 | 160 | 115 | 115 | 120 | 120 | 130 | 130 | 130 |
| Holly Sugar <u>5/</u> | 50 | 50 | 51 | NA | NA | NA | NA | NA | NA | NA | NA |
| Nabisco Brands <u>6/</u> | 335 | 248 | 81 | NA | NA | NA | NA | NA | NA | NA | NA |
| Staley | 425 | 213 | 216 | 408 | 418 | 355 | 355 | 355 | 355 | 355 | 355 |
| Total | 2,112 | 1,877 | 1,892 | 1,915 | 2,023 | 1,965 | 1,885 | 1,863 | 1,979 | 2,122 | 2,122 |
| HFCS-55 | | | | | | | | | | | |
| ADM | 275 | 625 | 680 | 875 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| American Fructose <u>1/</u> | NA | 125 | 125 | 123 | 160 | 250 | 315 | 348 | 348 | 268 | 268 |
| Amstar <u>2/</u> | NA | NA | NA | 65 | 65 | NA | NA | NA | NA | NA | NA |
| Cargill <u>3/</u> | NA | 134 | 268 | 290 | 290 | 475 | 540 | 540 | 655 | 655 | 655 |
| CPC <u>4/</u> | NA | NA | 50 | 45 | 113 | 225 | 348 | 348 | 348 | 365 | 365 |
| Coors | NA | NA | NA | NA | NA | 38 | 38 | 38 | 50 | 54 | 54 |
| Heinz(Hubinger) | 75 | 75 | 75 | 110 | 128 | 133 | 130 | 130 | 138 | 138 | 138 |
| Nabisco Brands <u>6/</u> | 150 | 230 | 130 | NA | NA | NA | NA | NA | NA | NA | NA |
| Staley | 308 | 809 | 809 | 750 | 875 | 1,155 | 1,250 | 1,250 | 1,250 | 1,250 | 1,250 |
| Total | 808 | 1,998 | 2,137 | 2,258 | 2,830 | 3,475 | 3,820 | 3,853 | 3,988 | 3,929 | 3,929 |
| Grand Total | 2,920 | 3,875 | 4,028 | 4,173 | 4,853 | 5,440 | 5,705 | 5,715 | 5,967 | 6,051 | 6,051 |

E = Estimate.

NA = Not available.

1/ Amalgamated joint venture bought out by American Maize, now called American Fructose.2/ Amstar HFCS sold American-Maize in 1985.3/ Cargill data include added capacity of Eddyville, IA, plant as of first quarter 1985.4/ CPC data do not include Canadian plant potential of 300 million pounds. However, data include Argo, IL, capacity for 1986.5/ Holly Sugar closed its facilities in January 1982.6/ As of June 14, 1982, Nabisco Brands was leased to ADM.

Source: Wheat First Securities.

Appendix table 18--U.S. corn wet milling: Prices of corn and byproducts and net cost of corn starch, 1980-88

| Calendar year | Corn byproducts | | | | Byproduct credits | | | | Net corn cost | Net starch cost |
|---------------|-----------------|---------------|-----------------------|------------------|----------------------------|------------------|------------------|-----------------|-----------------|-----------------|
| | Corn | Corn oil | Corn gluten feed | Corn gluten meal | Corn oil | Corn gluten feed | Corn gluten meal | Total byproduct | | |
| | Dollars per bu. | Cents per lb. | Dollars per short ton | | -----Cents per bushel----- | | | | Dollars per bu. | Cents per lb. |
| 1980 | 3.01 | 26.34 | 124.74 | 255.48 | 42.14 | 77.97 | 31.94 | 152.05 | 1.49 | 4.69 |
| 1981 | 3.16 | 23.76 | 115.06 | 257.03 | 38.02 | 71.91 | 32.13 | 142.06 | 1.74 | 5.53 |
| 1982 | 2.48 | 23.82 | 113.53 | 235.31 | 38.11 | 70.96 | 29.42 | 138.48 | 1.10 | 3.49 |
| 1983 | 3.12 | 24.69 | 123.83 | 267.15 | 39.50 | 77.39 | 33.39 | 150.28 | 1.62 | 5.13 |
| 1984 | 3.11 | 29.81 | 94.05 | 243.12 | 47.69 | 58.78 | 30.39 | 136.86 | 1.74 | 5.53 |
| 1985 | 2.52 | 26.28 | 75.63 | 200.40 | 42.05 | 47.27 | 25.05 | 114.37 | 1.37 | 4.35 |
| 1986 | 1.95 | 18.49 | 94.78 | 213.92 | 29.58 | 59.24 | 26.74 | 115.56 | .79 | 2.51 |
| 1987 | 1.59 | 21.54 | 98.28 | 251.62 | 34.47 | 61.42 | 31.45 | 127.34 | .32 | .99 |
| 1988 | 2.36 | 23.56 | 122.01 | 306.14 | 37.70 | 76.26 | 38.27 | 152.23 | .84 | 2.65 |

Note: Calculation of byproduct credits assumes 1 bushel of corn weighs 56 pounds and produces 1.6 lbs. of crude corn oil, 12.5 lbs. of corn gluten feed, 2.5 lbs. of corn gluten meal, and 31.5 lbs. of corn starch, dry basis.

Source: No. 2 yellow corn. Central, IL., No. 15 elevators. Crude corn oil, wholesale price, Decatur, IL., National Provisioner. Corn gluten feed, Chicago, IL., 21 percent minimum protein, Feed Market News. Corn gluten meal, Chicago, IL., 60 percent minimum protein, Feed Market News.

Appendix table 19--U.S. corn sweeteners: Corn grind and share of corn crop and area, 1980-89 calendar years

| Item | Unit | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 ^{1/} |
|--|--------------------|------|-------|-------|------|-------|-------|-------|-------|------|--------------------|
| HFCS production | Million short tons | 2.2 | 2.7 | 3.1 | 3.6 | 4.3 | 5.2 | 5.4 | 5.6 | 5.9 | 5.9 |
| Equivalent corn grind | Million bushels | 131 | 160 | 186 | 216 | 258 | 313 | 321 | 337 | 352 | 355 |
| Share of corn crop | Percent | 2.0 | 2.0 | 2.3 | 5.2 | 3.4 | 3.5 | 3.9 | 4.8 | 7.2 | 4.7 |
| Average yield | Bushels per acre | 91.0 | 108.9 | 113.2 | 81.2 | 106.7 | 118.0 | 119.3 | 119.4 | 84.6 | 116.6 |
| Area needed for HFCS output | Million acres | 1.44 | 1.47 | 1.64 | 2.66 | 2.42 | 2.65 | 2.69 | 2.82 | 4.16 | 3.04 |
| Total corn sweeteners production ^{2/} | Million short tons | 4.6 | 5.1 | 5.6 | 6.1 | 6.8 | 7.8 | 8.0 | 8.2 | 8.5 | 8.6 |
| Equivalent corn grind | Million bushels | 276 | 306 | 336 | 366 | 408 | 468 | 480 | 492 | 510 | 514 |
| Share of corn crop | Percent | 4.2 | 3.8 | 4.1 | 8.8 | 5.3 | 5.3 | 5.8 | 7.0 | 10.4 | 6.8 |
| Area needed for corn sweeteners output | Million acres | 3.03 | 2.81 | 2.97 | 4.51 | 3.82 | 3.97 | 4.02 | 4.12 | 6.03 | 4.41 |

^{1/} Preliminary.

^{2/} HFCS, glucose corn syrup, and dextrose.

Source: U.S. Dept. Agr., Economic Research Service.

Appendix table 20--Sugar production, area, and yield, for world and selected countries

| Item | Beet Sugar | | | | | | Cane Sugar | | | | | | | |
|--|------------|-------|-------|----------------|-------|---------------|------------|-------|--------|------|-------|-----------|----------|---------------|
| | World | EC | USSR | Eastern Europe | China | United States | World | India | Brazil | Cuba | China | Australia | Thailand | United States |
| <u>Million metric tons</u> | | | | | | | | | | | | | | |
| Production: | | | | | | | | | | | | | | |
| 1978/79-80/81 average | 34.16 | 13.93 | 8.15 | 5.15 | 0.46 | 2.82 | 54.15 | 6.26 | 7.76 | 7.46 | 2.23 | 3.06 | 1.54 | 2.45 |
| 1988/89 | 37.15 | 14.78 | 8.90 | 4.82 | 1.00 | 3.18 | 68.43 | 10.15 | 8.58 | 8.10 | 4.10 | 3.68 | 4.02 | 3.04 |
| Percent change | 8.8 | 6.1 | 9.2 | -6.4 | 117.4 | 12.8 | 26.4 | 62.1 | 10.6 | 8.6 | 83.9 | 20.3 | 161.0 | 24.1 |
| <u>Million hectares</u> | | | | | | | | | | | | | | |
| Area: | | | | | | | | | | | | | | |
| 1978/79-80/81 average | 8.85 | 2.00 | 3.74 | 1.52 | .37 | .48 | 9.71 | 1.66 | 1.50 | 1.30 | .51 | .27 | .47 | .28 |
| 1988/89 | 8.61 | 1.84 | 3.36 | 1.36 | .71 | .53 | 13.19 | 3.35 | 1.95 | 1.35 | .98 | .33 | .66 | .32 |
| Percent change | -2.7 | -.8 | -10.2 | -10.5 | 91.9 | 10.4 | 35.8 | 101.8 | 30.0 | 3.8 | 92.2 | 22.2 | 40.4 | 14.3 |
| <u>Tons per harvested hectare, raw value</u> | | | | | | | | | | | | | | |
| Yield: | | | | | | | | | | | | | | |
| 1978/79-80/81 average | 3.85 | 6.96 | 2.18 | 3.40 | 1.23 | 5.84 | 5.57 | 3.77 | 5.17 | 5.74 | 4.37 | 11.33 | 3.28 | 8.75 |
| 1988/89 | 4.32 | 8.04 | 2.65 | 3.54 | 1.41 | 6.04 | 5.19 | 3.03 | 4.40 | 6.00 | 4.50 | 11.25 | 6.10 | 9.50 |
| Percent change | 12.2 | 15.5 | 21.6 | 4.1 | 14.6 | 3.4 | -.7 | -19.6 | -14.9 | 4.5 | 3.0 | -.1 | 86.0 | 8.6 |

Source: U.S. Dept., Agr., Foreign Agricultural Service.