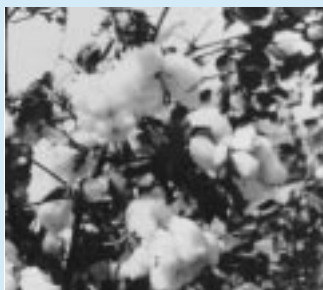


# AGRICULTURAL OUTLOOK



## 2 Commodity Briefs

*Field Crops:* Early Outlook Points to Smaller Cotton Crop • Cotton Marketing Loan Program Shifts Away from Imports

*Livestock, Dairy & Poultry:* U.S. Meat Trade Picture Mixed

*Specialty Crops:* Sugar Beet Crop to Outpace 1996/97 Despite Flooding



## 9 Commodity Spotlight

"Green" Industry Grower Receipts to Exceed \$11 Billion  
*Doyle Johnson*

## 11 World Agriculture & Trade

U.S. Processed Food Trade Continues to Expand  
*Fred J. Ruppel, Charles R. Handy, & Margaret A. Malanoski*

## 14 Food & Marketing

The Influence of Income on Global Food Spending  
*Birgit Meade & Stacey Rosen*



## 18 Special Article

WTO Accession for China & Taiwan: Potential Trade Impacts  
*Michael Lopez & Zhi Wang*

**Economics Editor**  
Randy Schnepf (202) 219-1281  
rschnepf@econ.ag.gov

**Associate Editors**  
Anne B. W. Effland (202) 501-8448  
Joel Greene (202) 219-0649

**Managing Editor**  
Mary Reardon (202) 219-0566

**Commodity Coordinators**  
Field Crops: Mark Simone  
Livestock: Leland Southard  
Specialty Crops: Charles Plummer

**Art Director**  
Victor Phillips, Jr.

**Statistical Coordinator**  
David Johnson (202) 219-0663

**Design Assistance & Layout**  
Cynthia Ray

**Chart Production**  
Wynnice Napper

**Tabular Composition**  
Ciliola Peterson

## Statistical Indicators

Statistical Indicators can be found in the printed version of the July 1997 issue of Agricultural Outlook. For more information, please contact Randy Schnepf at (202) 219-1281.

**Published monthly** (except February) by the Economic Research Service, U.S. Department of Agriculture. Materials may be reprinted without permission.

**Contents** have been approved by the World Agricultural Outlook Board and the summary released June 20, 1997. Price and quantity forecasts for crops are based on the June 12 *World Agricultural Supply and Demand Estimates*.

**To renew**—Call 1-800-999-6779. Subscription expires in month and year indicated on top line of address label.

**Subscription:** \$42 per year (\$52.50 for foreign addresses, including Canada); single issue \$9. Order from ERS-NASS, 341 Victory Drive, Herndon, VA 20170. Or call 1-800-999-6779 (U.S. and Canada). All other areas, call (703) 834-0125. Checks payable to ERS-NASS.

**The next issue** (AO-243) is scheduled for mailing on August 6, 1997. If not delivered by August 26, call (202) 219-0566 (please have mailing label handy). The full text will also be distributed electronically; call (202) 219-0515 for further information. The text of current and back issues is available on the ERS Home Page on the Internet at <http://www.econ.ag.gov/>

**Cover photo:** Frederick Crook

## China, Taiwan, & the WTO...Income & Global Food Spending ... Processed Food Trade... & the "Green" Industry

### China, Taiwan & WTO Accession: Potential Benefits

*Integration of China and Taiwan* into the World Trade Organization's (WTO's) global trading system would significantly expand world trade and GDP, according to analysis by USDA's Economic Research Service. Both China and Taiwan as well as the U.S. would benefit, mainly because the three countries' resource endowments are complementary in the trade arena.

Because of China's comparative abundance of labor, induction into the WTO would permit it to further expand production of labor-intensive manufactured goods, notably textiles and apparel. China's net agricultural imports would increase significantly as rising incomes stimulate demand for more varied and higher quality foods, as labor and other resources shift out of farming to labor-intensive manufacturing, and as textile production expands. The U.S., with abundant arable land, would expand its food and agricultural exports, particularly to China. Nongrain crops (notably cotton) and processed foods would gain the most.

### U.S. Processed Food Trade Advances

*U.S. processed food and beverage* trade rose to a record \$58 billion in 1996 and is expected to record further gains in 1997. Exports in 1996 surpassed \$30 billion, up 3 percent, even as global food safety concerns slowed exports of beef in the latter half of the year. But pork and poultry exports continued their strong advances. A healthy U.S. economy and strong demand for a variety of food items drove imports to nearly \$28 billion in 1996, an 11-percent gain over 1995.

### Income Levels Affect Global Food Spending

*Knowledge of the forces* that help determine food spending patterns can improve predictions of future demand for agricultural commodities and of subsequent shifts in international trade flows and price levels. ERS studied 51 countries,



home to 2.5 billion of the world's 5.8 billion people, to compare spending and consumption patterns and their relationship to income. Comparisons confirmed that, as incomes rise, a smaller share of expenditures is devoted to food. The study data also confirmed the association of rising incomes with more diverse diets, increase in caloric intake to a point of satiation, and consumption of higher value foods such as meats.

Over the next decade and beyond, economic growth, coupled with high rates of population growth and urbanization, is expected to fuel demand for food and stimulate diet diversification in low- and middle-income countries, creating potential opportunities for increased agricultural exports to these countries.

### Cotton Exports Up in 1997/98, But Stocks Building

*U.S. cotton exports* are projected up slightly at 7.3 million bales, despite a smaller U.S. crop, as reduced foreign supplies afford the U.S. additional export opportunities. Production is expected at 18.5 million 480-pound bales, compared with 18.9 million in 1996. Cotton stocks, projected at 4 million bales at the end of

the 1996/97 season, are the highest in 4 years and are expected to increase again by the end of 1997/98 despite higher expected domestic mill use and exports.

At the beginning of May, USDA suspended import quotas permitted under Step 3 of the U.S. marketing loan program, ending 80 consecutive weeks of Step 3 quotas. During March-December 1996, cotton imports totaled more than 700,000 bales, compared with 1,000 to 20,000 bales per year during the preceding decade. This was the result of an unusually high price premium for U.S. cotton combined with additional import quotas under Step 3. The 2-year jump in U.S. cotton imports is expected to cease in 1997/98.

### "Green" Industry Grower Receipts To Surpass \$11 Billion

*The U.S. leads the world* in production and marketing of flowers, cut foliage, potted plants, bedding plants and other nursery crops, and turfgrass—known collectively as the "green" industry. U.S. growers' cash receipts for these products are projected to reach \$11.3 billion in 1997, an increase of 6 percent over last year. For floral and potted plants, the value of domestic production has grown only modestly over the past decade compared with the value of imports, which have risen sharply over the same period. Since 1994, the value of imports of these products at port of entry has increased about \$100 million every year, driven primarily by cut flowers.

The U.S. ranks 12th in the world for per capita expenditures on indoor flowers/plants. However, Americans spend a far greater amount on outdoor landscaping plants (environmental horticulture) than do their counterparts in Europe or Asia. Industry analysts believe U.S. consumers are spending 2-3 times more on outdoor plants/flowers than consumers in other developed countries. And U.S. consumers spend over twice as much on landscaping products as on floriculture items at retail outlets (\$37 billion vs. \$16 billion projected for 1997).

## Commodity Briefs



Jack Harrison

## Field Crops

## Early Outlook Points to Smaller Cotton Crop

For the 1997/98 marketing year (August-July), cotton producers again focused on market signals to determine how much acreage they would devote to cotton. With farm program planting flexibility in its second year under the 1996 Farm Act, the price outlook this season for alternative crops was an important consideration in farmers' planting decisions. As a result, prospects are for reduced U.S. cotton acreage, as early-1997 price expectations for competing crops like corn and soybeans encouraged some cotton producers to switch acreage to an alternative crop.

The March 31 *Prospective Plantings* report indicated that farmers intended to plant nearly 14.5 million acres of cotton, compared with more than 14.6 million in 1996. Although intentions suggest cotton area would be only slightly less than last year's planted area, changes were noticeable on a regional basis. For upland cotton, which accounted for 98 percent of 1996 acreage, both the West and the Delta regions show 6-percent declines in cotton area for 1997. Nearly offsetting these declines, however, were higher expected

plantings in the Southeast and the Southwest. Extra long staple (ELS) acreage was also expected to be lower in 1997. A revised estimate for both upland and ELS cotton area is provided in USDA's *Acreage* report, released June 30.

Despite cool, wet weather which delayed cotton plantings in many areas across the Cotton Belt this spring, U.S. plantings were essentially complete by the end of June, in line with the 5-year average. Meanwhile, the condition of the overall crop is slightly better this year than in 1996. As of the end of June, 56 percent of the 1997 area was rated "good" or "excellent," compared with 59 percent a year ago. At the same time, only 13 percent was "poor" or "very poor" so far this year, compared with 17 percent in 1996. However, the very cool spring in the Southeast and Delta regions is causing

concern about plant development and potential yield problems.

Although a portion of the 1997 U.S. cotton crop remains to be planted and most has just started to develop, USDA's current production projection is for a slightly smaller crop than in 1996. In estimating projected harvested area, 1992-96 average acreage abandonment by state is considered as well as the *Prospective Plantings* report, and projected yield is based on 1967-96 state trends, weighted by area. With 1997/98 harvested acreage estimated at about 13.3 million acres, and a national average yield of 670 pounds, U.S. cotton production in 1997 would reach 18.5 million 480-pound bales. Final 1996 production was more than 18.9 million bales. The first survey-based production projection for 1997 will be released by USDA on August 12.

## U.S. Field Crops—Market Outlook

	Area		Yield	Output	Total supply	Domestic use	Exports	Ending stocks	Farm price
	Planted	Harvested							
	— Mil acres —		Bu/acre	— Mil. bu —					\$/bu
Wheat									
1996/97	75.6	62.9	36.3	2,282	2,748	1,298	985	465	4.35
1997/98	69.2	61.0	37.8	2,304	2,854	1,250	1,025	579	3.45-4.05
Corn									
1996/97	79.5	73.1	127.1	9,293	9,729	6,995	1,825	909	2.70-2.75
1997/98	81.4	75.1	131.0	9,840	10,759	7,360	2,050	1,349	2.25-2.65
Sorghum									
1996/97	13.2	11.9	67.5	803	821	550	215	56	2.30-2.35
1997/98	10.9	9.8	67.6	665	721	424	200	97	2.00-2.40
Barley									
1996/97	7.2	6.8	58.5	397	531	407	35	89	2.75
1997/98	7.0	6.6	59.7	395	524	417	35	72	2.10-2.50
Oats									
1996/97	4.7	2.7	57.8	155	322	245	3	74	1.95
1997/98	5.3	3.2	58.0	187	361	280	3	78	1.40-1.80
Soybeans									
1996/97	64.2	63.4	37.6	2,382	2,586	1,561	895	130	7.35
1997/98	68.8	67.5	38.5	2,600	2,735	1,585	910	240	5.60-7.00
Rice			Lbs./acre		— Mil. cwt(rough equiv.) —				\$/cwt
1996/97	2.82	2.80	6,121	171.3	207.4	106.2	77.0	24.2	9.85
1997/98	2.88	2.82	5,762	162.5	199.7	107.1	71.0	21.6	9.75-10.75
Cotton			Lbs./acre		— Mil. bales —				c/lb.
1996/97	14.6	12.9	707	18.9	22.0	10.9	7.1	4.0	69.4
1997/98	14.5	13.3	670	18.5	22.5	11.0	7.3	4.2	*

Based on June 12, 1997 *World Agricultural Supply and Demand Estimates*.

\*USDA is prohibited from publishing cotton price projections.

See table 17 for complete definition of terms and data for prior years.

Economic Research Service, USDA



## Commodity Briefs

Meanwhile, cotton stocks are projected at about 4 million bales by the start of the 1997/98 marketing year (August 1), the most plentiful in 4 years. Imports of raw cotton into the U.S. during the 1997/98 season are expected to be relatively small, particularly in comparison to 1995/96 and 1996/97 when more than 400,000 bales were imported each year.

The large imports in those years were attributable to extremely low U.S. stocks and to increased quotas that allowed more cotton to enter the U.S. Based on current USDA projections, total U.S. cotton supplies in the 1997/98 season are expected to be the highest since 1994/95, reaching nearly 22.5 million bales.

Total demand for U.S. cotton is also expected to rise in 1997/98, with both domestic mill use and exports projected to expand. Domestic mill use is anticipated to increase slightly to 11 million bales from 10.9 million, as continued competition from manmade fibers, particularly polyester, will likely prevent cotton consumption from expanding at the rates experienced during the first half of the 1990's.

In contrast, U.S. cotton exports are expected to rise 3 percent to 7.3 million bales, accounting for an above-average share of world cotton trade of nearly 27 percent. U.S. stocks have risen faster in the 1996/97 season than foreign supplies, and U.S. cotton supplies will be readily available for export early in the 1997/98 season. In contrast, during the first 2 months of 1996/97, stocks and exports were extremely low. An expected decline in foreign supplies in 1997/98 will provide the U.S. with additional export opportunities.

Yet because demand for U.S. cotton is not expected to exceed production, stocks will likely build further in 1997/98. U.S. cotton stocks in 1997/98 would increase 5 percent, with ending stocks on July 31, 1998 projected at nearly 4.2 million bales, a stocks-to-use ratio of nearly 23 percent.

Preseason supply-and-demand projections are based on current conditions and indications, and with the U.S. cotton harvest still several months away, the crop remains vulnerable to weather and insects.

## Cotton Planting Area Shifts Regional Distribution

	1996	1997 <sup>1</sup>	1997/96
	—————1,000 acres—————		Percent change
Upland cotton			
Southeast <sup>2</sup>	3,067	3,150	3
Delta <sup>3</sup>	3,940	3,700	-6
Southwest <sup>4</sup>	5,995	6,093	2
West <sup>5</sup>	1,374	1,297	-6
Total upland	14,376	14,240	-1
Extra long staple	258	245	-5
All cotton	14,634	14,485	-1

<sup>1</sup>Estimated, based on March 31 *Prospective Plantings* report. <sup>2</sup>Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia. <sup>3</sup>Arkansas, Louisiana, Mississippi, Missouri, and Tennessee. <sup>4</sup>Kansas, Oklahoma, and Texas. <sup>5</sup>Arizona, California, and New Mexico.

Economic Research Service, USDA

As crop conditions unfold and worldwide demand for cotton consumption becomes clearer, the 1997/98 U.S. and world cotton supply-and-demand picture will be in sharper focus.

Leslie Meyer (202) 501-8528

lmeyer@econ.ag.gov

## Field Crops

## Cotton Marketing Loan Program Shifts Away from Imports

On May 8, 1997, USDA announced suspension of special import quotas under Step 3 of the U.S. marketing loan program for upland cotton for the first time in over a year, closing the chapter on an unusual period for U.S. and world cotton markets. Assisted by 80 consecutive weeks of Step 3 quotas, U.S. cotton imports reached amounts unmatched in more than 70 years. During March-December 1996, spanning the 1995/96 and 1996/97 marketing years, imports totaled more than 700,000 bales, compared with 1,000 to 20,000 bales per year during the preceding decade.

Step 3 alone was not sufficient to encourage significant import purchases—which remained far below the millions of bales permitted under the quotas. Rather, import purchases were activated as the U.S. cotton price briefly achieved an abnormally

large premium of 7.5-15 cents per pound over the world price. However, long after the possibility of significant imports had faded with shrinkage of the price premium, Step 3 quotas continued to open, precluding the operation of other portions of the cotton marketing loan program.

The marketing loan program for cotton has had a three-step procedure since 1990 to keep U.S. cotton competitive in domestic and foreign markets. Step 1 allows USDA to reduce effective commodity loan repayment rates below the adjusted world cotton price during periods of low prices. This step has seldom been implemented.

Step 2 requires USDA to make payments to exporters and domestic users of cotton if the least expensive U.S. cotton available in Northern Europe exceeds the price of the five least expensive cotton quotes on the world market by more than 1.25 cents/lb. for 4 consecutive weeks. Regardless of the relationship between U.S. and world prices, no Step 2 payments are authorized when the adjusted world price of cotton (excluding shipping costs from the U.S.) exceeds the basic U.S. loan rate by more than 30 percent. However, a critical and more constraining program feature is that no Step 2 payments can occur when conditions also permit opening Step 3 quotas.

Step 3 increases cotton import quotas when U.S. and world prices are high, by effectively raising quotas for imports at low tariff rates. Tariffs for in-quota cotton

## Commodity Briefs

range from 1.5 cents/kg to 4.4 cents/kg, versus 15.4-36.9 cents/kg for imports outside of quota. Whenever the U.S. price exceeds the world price by more than 1.25 cents/lb., plus the value of any Step 2 payments, for 10 consecutive weeks, USDA issues a special import quota under Step 3 equal to 1 week's cotton consumption by U.S. mills. These conditions held for 80 consecutive weeks, ending in May 1997.

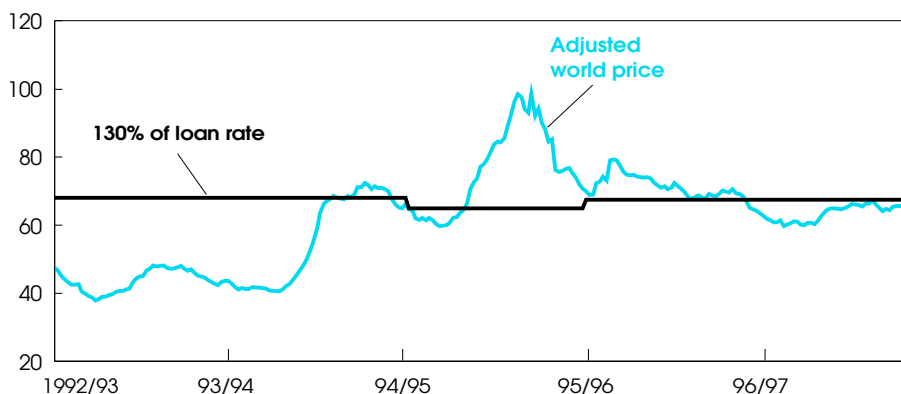
Imports help lower cotton prices and assure the U.S. textile industry access to competitively priced cotton when U.S.

supplies are unusually tight. Imports minimize price spikes and permit some U.S. mills to switch to foreign cotton, releasing U.S. cotton for purchases by foreign mills that have come to depend on U.S. cotton's fiber characteristics.

The use of Step 3 during 1995-97 was in marked contrast to 1991-94, which saw Step 2 of the marketing loan program implemented during 131 weeks, making U.S. cotton more competitive by authorizing payments to exporters and domestic consumers rather than raising imports.

### Adjusted World Price for Cotton Rose Significantly in Mid-1990's, Preventing Step 2 Payments

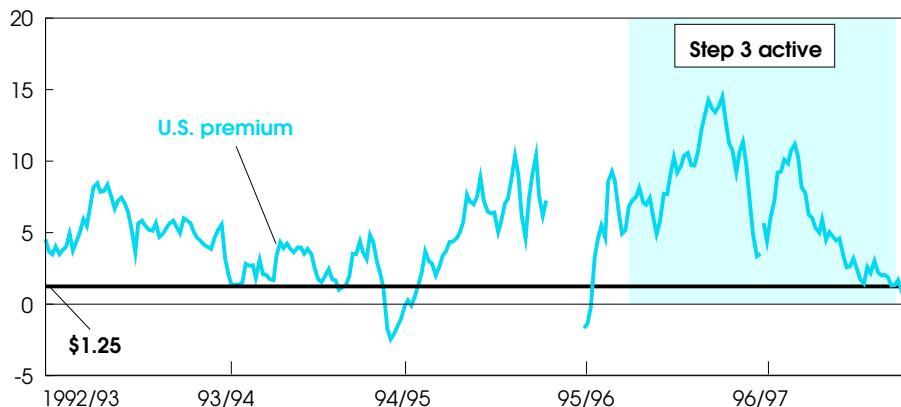
Cents/lb.



August-July marketing year. Weekly average price quotes.

### U.S. Cotton Premium Over World Price Peaked in Spring 1996

Cents/lb.



August-July marketing year. Weekly average price quotes; gaps indicate no quote available.

Economic Research Service, USDA

Large Step 2 payments were often made during the early 1990's as low-priced Central Asian cotton poured into world markets when the Russian textile industry collapsed and production and exports soared in Pakistan and China. Within a few years, disease and pest problems in Pakistan and China led to record world prices, halting the use of Step 2. While prices were high, foreign importers drew on U.S. stocks, facilitated by U.S. infrastructure which permits the rapid movement of quality cotton, and U.S. stocks fell from 4.7 million bales to 2.6 million.

By 1996, foreign production had rebounded, and the world price of cotton no longer exceeded the loan rate by more than 30 percent. However, the combination of tight U.S. supplies and ample foreign supplies kept the U.S. price higher than the world price by more than 1.25 cents/lb., continuing Step 3 quotas and ensuring that no Step 2 payments could be authorized.

During much of 1997, high U.S. prices, which resulted in Step 2 payments during the early 1990's, have maintained unused import quotas instead. The quality, reliability, and production costs of U.S. cotton ensure that a premium of 1.25 cent/lb. to its cheapest competitors is common, and the prospect of using continued import quotas rather than payments to exporters to attempt to close that gap has dismayed some segments of the U.S. cotton industry.

Following the recent break in the period of high U.S. price premiums that had triggered Step 3 quotas for 80 weeks, Step 2 payments during the 1997/98 marketing year have now become a possibility. This assumes the adjusted world price remains within 30 percent of the base loan rate. It is also possible that Step 3 will be reactivated early next marketing year, since the difference between the U.S. and world price currently exceeds 1.25 cents/lb. for the new crop.

If Step 2 is implemented, recent regulatory changes aimed at reducing the "bunching" of export sales during periods of peak Step 2 payments will reduce the certainty of Step 2 payment levels for exporters. This will probably increase the proportion of Step 2 payments going to

## Commodity Briefs

## World Commodity Market Outlook

	Year	Production <sup>1</sup>	Exports <sup>2</sup>	Consumption <sup>1,3</sup>	Carryover <sup>1</sup>
<i>Million tons</i>					
Wheat	1996/97	583.0	113.2	577.6	110.1
1997/98	578.8	111.5	573.5	115.5	
Corn	1996/97	589.4	68.0	570.8	84.6
1997/98	598.7	71.7	591.5	91.8	
Barley	1996/97	153.7	15.2	149.6	23.1
1997/98	147.9	15.5	150.9	20.1	
Rice	1996/97	381.2	18.5	376.7	54.9
1997/98	377.3	18.5	377.5	54.7	
Oilseeds <sup>4</sup>	1996/97	258.0	45.8	216.8	17.4
1997/98	273.0	NA	NA	NA	NA
Soybeans <sup>4</sup>	1996/97	132.2	35.4	115.0	13.8
1997/98	NA	NA	NA	NA	NA
Soybean meal <sup>4</sup>	1996/97	91.0	33.5	91.2	3.8
1997/98	NA	NA	NA	NA	NA
Soybean oil <sup>4</sup>	1996/97	20.4	5.8	20.4	2.3
1997/98	NA	NA	NA	NA	NA
<i>Million bales</i>					
Cotton	1996/97	88.3	26.7	86.7	36.3
1997/98	87.5	27.2	88.5	35.3	

NA = Not available.

1. Aggregate of local marketing years. 2. Wheat, July-June; coarse grains, October-September; cotton, August-July. Rice trade is for the second calendar year. All trade includes trade among countries of the former Soviet Union. All grain trade excludes intra-EU trade; oilseed and cotton trade include intra-EU trade. 3. Crush only for soybeans and oilseeds. 4. Brazil and Argentina adjusted to October-September.

Economic Research Service, USDA

domestic mills and could change the program's impact on U.S. and world prices. Furthermore, the U.S. cotton industry is proposing additional changes to these provisions, to address concerns raised by recent events.

Stephen MacDonald (202) 219-1179  
stephenm@econ.ag.gov

**For further information, contact:**

Dennis Shields and James Barnes, domestic wheat; Ed Allen, world wheat and feed grains; Allen Baker and Pete Riley, domestic feed grains; Nathan Childs, rice; Scott Sanford and Mark Ash, oilseeds; Stephen MacDonald, world cotton; Les Meyer, domestic cotton. All are at (202) 219-0840. **AO**

**Livestock, Dairy & Poultry****U.S. Meat Trade Picture Mixed**

U.S. beef exports were weak during January-April as sales to Japan and Canada fell. Despite strong increases in sales to Mexico and Korea, total exports remained below the same period in 1996. However, if Japanese consumers regain confidence in the safety of beef, increasing demand for beef in the second half of the year, total U.S. exports could rise over second-half 1996. Weakness in the first half will limit exports to 1.9 billion pounds for the year, about 2 percent above 1996. A return to more stable consumption patterns by consumers in Japan and Mexico could significantly boost U.S. exports in 1998, although high U.S. cattle prices might temper U.S. sales.

Large inventories and high production in Canada have limited opportunities to market U.S. beef there. Canada's beef cycle peaked in 1996, and as Canada enters its liquidation phase, imports from the U.S. likely will be limited by large domestic supplies.

Mexico and Korea have provided important alternate export outlets amid the gloom of declining sales to two major U.S. beef export markets. In Mexico, continued economic growth and moderate U.S. beef prices in the first quarter stimulated imports. Mexican cattle herds remain at low levels following 3 years of drought (1994-96), and opportunities for domestic production to supply growing needs remain limited in the short term.

The late-April request by the Mexican Association of Cattle Feeders for an anti-dumping investigation against U.S. beef will add uncertainty in the Mexican market over the next several years. The Mexican Secretariat of Commerce and Industry (SECOFI) will issue a determination on whether to proceed with the investigation. Under Mexican law, if SECOFI proceeds, it will first determine the degree to which dumping has occurred and can, if it chooses, apply a provisional duty while determining if actual injury occurred. Based on previous anti-dumping investigations, however, it could be a year between the beginning of the investigation and the announcement of any duties.

U.S. exports to Korea increased as demand recovered from dramatically reduced levels in 1996 that had resulted from economic sluggishness and food safety concerns. Mandated increases in the Korean beef import quota and the Simultaneous-Buy-Share (SBS) portion of the quota—the part allocated to non-governmental entities—should help boost market opportunities provided by the increased consumption expected in 1997.

Two factors constrain trade with Korea, however. Any negative news concerning food safety could again reduce consumer demand, and the falling value of Korea's currency in relation to the U.S. dollar will make U.S. beef more expensive compared with domestic product. The won fell 5 percent against the dollar between

## Commodity Briefs

## U.S. Livestock and Poultry Products—Market Outlook

		Beginning stocks	Production	Imports	Total supply	Exports	Ending stocks	Consumption		Primary market price
								Total	Per capita	
		<i>—Million lbs.—</i>							<i>Lbs.</i>	<i>\$/cwt</i>
Beef	1997	377	25,293	2,341	28,011	1,915	375	25,721	66.7	66-69
	1998	375	24,906	2,400	27,681	2,140	350	25,191	64.7	70-76
Pork	1997	366	17,126	593	18,085	1,250	400	16,435	47.6	55-57
	1998	400	18,357	605	19,362	1,465	380	17,517	50.3	51-55
		<i>—c/lb.—</i>								
Broilers*	1997	641	27,210	4	27,855	4,840	700	22,315	72.4	59-61
	1998	700	28,953	3	29,656	5,025	750	23,881	76.7	57-62
Turkeys	1997	328	5,370	1	5,699	502	350	4,847	18.1	66-69
	1998	350	5,656	1	6,007	505	325	5,176	19.1	62-67
		<i>—Million doz.—</i>							<i>No.</i>	<i>c/doz.</i>
Eggs**	1997	8.5	6,516.8	4.9	6,530.2	264.7	12.0	5,353.2	239.7	79-82
	1998	12.0	6,705.0	4.0	6,721.0	266.0	10.0	5,505.0	244.3	72-78

Based on June 12, 1997 *World Agricultural Supply and Demand Estimates*.

\*Cold storage stocks previously classified as "other chicken" are now included with broiler stocks. \*\*Total consumption does not include eggs used for hatching. See tables 10 and 11 for complete definition of terms.

Economic Research Service, USDA

January and April and has averaged 9 percent below its 1996 level.

U.S. *beef imports*, although well below levels of the early 1990's, were somewhat higher in the first 3 months of 1997 than in first-quarter 1996, as U.S. cow slaughter declined with the beginning of a rebuilding of the U.S. cattle herd. Imports for 1997 are likely to reach 2.3 billion pounds, about 13 percent above 1996 when U.S. cow slaughter was large.

Large supplies of Canadian beef and a weakening of the Canadian dollar encouraged a dramatic increase in beef imports

from Canada. In the last half of 1996, Canada displaced Australia as the largest source of imported beef in the U.S. and is expected to continue to outpace Australia through 1997. As U.S. domestic cow beef prices climb during the remaining two quarters of this year, however, increasing quantities of beef will likely be imported from Australia and New Zealand.

Imports for 1998, which will continue increasing as U.S. cow slaughter declines, could reach 2.4 billion pounds. The rebuilding of the U.S. cattle herd will encourage producers to retain cows and will likely push cow beef prices higher through the year. Large supplies of beef in Canada, as its cycle turns, will encourage Canadian shipments, and if demand in Japan remains weak through next year, the U.S. will provide a very attractive market for Australian and New Zealand beef.

*Pork exports* are projected to increase in 1998, possibly exceeding 1.5 billion pounds, 17 percent more than the current 1997 forecast of 1.25 billion pounds. Export forecasts are based largely on assumptions of growing foreign incomes and populations, stable-to-declining foreign production, and continued WTO-mandated import market liberalization. Increased U.S. pork supplies and the

absence of Taiwan in the world market as a result of its recent foot-and-mouth outbreak, also support expectations for higher 1998 exports.

U.S. *pork imports* could rise slightly in 1998, largely on the basis of ample availability of rib cuts from Denmark. Despite a sharp increase in production in 1998, the U.S. is expected to remain a relatively attractive market for pork because of continued high relative prices.

All of the main categories of U.S. *poultry exports* (broilers, other chicken, turkeys, eggs, and egg products) are expected to increase in 1997 and again in 1998, although the rate of expansion is likely to be lower than in the last several years. Broiler exports in 1997 are forecast to reach 4.8 billion pounds, an increase of nearly 10 percent. Most of the growth is expected to come from increased shipments to Russia and other countries of the former Soviet Union. Mexico is also expected to remain a growing market for broiler products. In 1998, broiler exports are forecast at 5 billion pounds, as shipments to Russia, the largest U.S. market, begin to level off.

Turkey exports in 1997 are expected to be around 502 million pounds, about

## Omission

Sophia Huang was a major contributor to the article on Taiwan's foot-and-mouth outbreak that appeared in the June issue of *Agricultural Outlook*. Acknowledgment of her contribution was mistakenly omitted from the article. Sophia Huang is the principal contact at the Economic Research Service for information regarding Taiwan, and may be reached at (202) 219-0679 or by e-mail at [sshuang@econ.ag.gov](mailto:sshuang@econ.ag.gov).



## Commodity Briefs

15 percent above 1996. Expanding shipments of turkey products to Mexico and Canada and a rapidly growing market in Hong Kong are expected to offset anticipated lower exports to Russia and Korea. Export growth is forecast to slow in 1998, with fractional expansion to 505 million pounds, as sales to Mexico grow less rapidly.

**For further information, contact:**

Leland Southard, coordinator; Ron Gustafson, cattle; Shayle Shagam, beef trade; Leland Southard, hogs; Mildred Haley, pork trade; Jim Miller, domestic dairy; Richard Stillman, world dairy; Milton Madison, domestic poultry and eggs; David Harvey, poultry and egg trade, aquaculture. All are at (202) 219-0713. [AO](#)

### Specialty Crops

## Sugar Beet Crop To Outpace 96/97 Despite Flooding

The Red River Valley of Minnesota and North Dakota is the largest sugarbeet producing area in the U.S., and the disastrous early-spring 1997 floods at one time threatened the region's not-yet-planted 1997/98 sugar beet crop. Two sugar beet factories had to close for a few weeks as well, delaying the processing of remaining piles of beets until the water receded.

By the end of April, however, the southern end of the Red River Valley was drying out, and by mid-May, drying had progressed far enough downstream (to the north) that virtually all cropland was ready for planting. By late May, while some water problems remained, state-wide-average sugarbeet plantings in Minnesota and North Dakota had moved ahead of last year's rate as well as the 5-year average.

Total U.S. processed sugar production for 1997/98 (October-September) is projected at 7.5 million short tons, raw value, up over 3 percent from 1996/97. Beet sugar production is projected at 4.3 million

tons, up 6 percent from this year, while cane sugar production is projected at 3.2 million tons, unchanged from 1996/97.

Planting intentions released in March indicated 1997/98 U.S. sugar beet planted acreage would be 1.45 million acres, up over 6 percent from the current year. Acreage increases were indicated all across the country, with the biggest increase in Michigan. Last year many Michigan growers had turned to alternative crops such as corn and beans when prices were high; in 1997, sugarbeet prices look relatively strong, and both Michigan processing companies have agreed to provide a higher share of returns to farmers. In 1996/97, Ontario growers for the first time produced a small amount of sugar beets for processing in Michigan, and they plan to plant more than 3,000 acres in 1997/98, adding slightly to expected U.S. processed sugar production.

Over the last few decades there has been a gradual decline in the share of national sugar beet acreage located in the irrigated, western growing areas. Most western beet acreage is in warmer climates (e.g., California), where the lack of cold winters increases plant pests and shortens the beet processing season. Sugar beets deteriorate rapidly after harvesting unless they can be frozen, restricting the processing season except in areas where early freezing temperatures allow for inexpensive storage at processing plants.

The share of national acreage in the non-irrigated, eastern growing region—Minnesota, North Dakota, Michigan, and Ohio—was less than 25 percent in the early 1970's, reached 30 percent in 1975 and 50 percent by 1986, and is now approaching 60 percent. A consequence of this shift will be greater variability in U.S. beet sugar production, since nonirrigated agriculture is more sensitive to weather variability.

Among cane sugar producers, Florida is forecast to produce 1.75 million tons of sugar, 55 percent of U.S. cane sugar output. After expanding in the 1980's, Florida's sugar acreage and production has been fairly steady for the past 7 years, and acreage is projected to remain about the same next year.

So far, Everglades restoration efforts have had little impact on sugarcane acreage. The South Florida Water Management District is currently purchasing land in the East Coast Water Preserve Area and the Everglades Agricultural Area as part of the restoration efforts. Some of the funding for land acquisition is provided by the 1996 Farm Act, some by state government, and some from farmers in the Everglades Agricultural Area. Under provisions of Florida's 1994 Everglades Forever Act, these producers have been paying about \$25 per acre per year.

Louisiana sugar production in 1997/98 is forecast at 975,000 tons, down 7 percent from the near-record 1996/97 crop. While Louisiana cane acreage will be up in 1997, yields are expected to drop to normal from last year's exceptional levels. A new growing area of about 6,000 acres in western Louisiana will be harvested this fall for seed cane to expand plantings; the new plantings will be harvested in fall of 1998. This new area may expand to 30,000 or more acres within a few years. Nineteen mills will be processing in Louisiana this fall, after which one mill is scheduled to close.

Sugar production in Hawaii has declined from over 1 million tons in the mid-1980's to a projected 340,000 tons in 1997/98. Three mills closed in 1996, and sugar production has now ceased entirely on the islands of Hawaii and Oahu. Three mills remain on Maui and three on Kauai. Prospects are for a return to better yields in 1997, after soil problems caused a poor showing in 1996. There are some indications that the processing industry in Hawaii may shrink further, although most of the current acreage will likely remain in sugarcane for many years.

Texas, after a poor crop in 1996/97, due in part to a 4-year drought in the Rio Grande watershed, is projected to produce 110,000 tons of cane sugar in 1997/98. Rains have helped replenish the reservoirs that provide water for irrigation, although water supplies are still not likely to reach optimal levels. Puerto Rico is projected to reduce 25,000 tons of cane sugar, unchanged from 1996/97.



## Commodity Briefs

U.S. sugar deliveries for 1997/98 are projected to rise 1 percent to 9.75 million tons, raw value, about in line with the trend over the last decade. The estimate for 1996/97 deliveries has been trimmed to 9.65 million tons, down from the January estimate of 9.9 million tons. Continued strong prices for refined sugar, increased imports of products containing sugar, and heightened competition from corn-based sweeteners are the main reasons for slower growth.

The U.S. *raw* sugar price averaged 21.8 cents a pound for the first 4 months of 1997, down from 22.21 cents for October-December 1996 and 22.63 cents for October-December 1995. Beginning in October 1995, when the prospect of another poor beet crop became apparent, the *wholesale* refined beet sugar price rose from about 25 cents a pound to 29 cents, where it remained for most of 1996 before falling to 28 cents a pound in late spring 1997. Cane refiners' margin (the difference between raw and refined price), low in 1995, was quite high in 1996 and early 1997.

During the last 2 years, refiners have periodically operated close to capacity. There are signs, however, that refined sugar prices are softening, as the market anticipates the possibility of a 1997/98 beet crop higher than the previous 2 years.

The price of high-fructose corn syrup (HFCS) is reported at record lows. U.S. HFCS capacity increased more than 20 percent over the last 2 years, and with U.S. demand growing only about 5 percent a year, the industry has been operating well below capacity. HFCS-55 (55 percent fructose, slightly sweeter than liquid sugar and used primarily in soft

drinks) is being contracted for the coming year at prices below 13 cents a pound (dry basis, Midwest delivery). HFCS-42 (42 percent fructose, slightly less sweet than sugar and used most often in confections and other processed foods) is priced below 11 cents a pound. With refined sugar priced at 28 cents a pound, plus shipping costs (HFCS prices include delivery), the temptation to use HFCS is very strong when the switch is technically feasible.

At one time it appeared that HFCS exports to Mexico might absorb a great deal of the increased capacity, but export prospects are now clouded by an anti-dumping investigation launched by the Mexican government. A preliminary determination on the merits of the case should be made by the Mexican government in early July, followed by a hearing by a Mexican government panel in late August, which will likely make a final determination in October.

In the meantime, U.S. exports of HFCS to Mexico are rising. HFCS-55 exports to Mexico in January-March 1997 were 25,000 tons, dry basis, compared with 12,000 tons in the same period last year. Exports for all of 1996 were 97,000 tons, compared with 29,000 tons in 1995.  
*Ron Lord (202) 219-0888*  
*rlord@econ.ag.gov*

### For further information, contact:

Linda Calvin, Susan Pollack, and Agnes Perez, fruit; Gary Lucier, vegetables; Ron Lord, sweeteners; Doyle Johnson, tree nuts and greenhouse/nursery; Tom Capehart, tobacco; Lewrene Glaser, industrial crops. All are at (202) 219-0840. **AO**

### July Releases--USDA's Agricultural Statistics Board

The following reports are issued electronically at 3 p.m. (ET) unless another time is indicated.

#### July

- 2 *Broiler Hatchery*
- Dairy Products*
- Poultry Slaughter*
- 3 *Egg Products*
- Noncitrus Fruits & Nuts, Annual*
- 7 *Crop Progress (after 4 pm)*
- 9 *Broiler Hatchery*
- 10 *Vegetables*
- 11 *Crop Production (8:30 am)*
- 14 *Crop Progress (after 4 pm)*
- 15 *Milk Production*
- Turkey Hatchery*
- 16 *Broiler Hatchery*
- 17 *Agricultural Chemical Usage,*  
*Vegetables*
- Farm Production Expenditures*
- 18 *Cattle*
- Cattle on Feed*
- Cold Storage*
- Sheep*
- 21 *Crop Progress (after 4 pm)*
- 22 *Chickens & Eggs*
- Mink*
- 23 *Agricultural Prices, Annual*
- Broiler Hatchery*
- 24 *Catfish Processing*
- 25 *Livestock Slaughter*
- 28 *Crop Progress (after 4 pm)*
- 29 *Peanut Stocks & Processing*
- 30 *Broiler Hatchery*
- Catfish Production*
- Farms & Land in Farms*
- 31 *Agricultural Prices*

## Commodity Spotlight



Jack Harrison

### "Green" Industry Grower Receipts To Exceed \$11 Billion

The U.S. leads the world in the production and marketing of flowers, cut foliage, potted plants, bedding plants and other nursery crops, and turfgrass—known collectively as the "green" industry. U.S. growers' cash receipts for these products are projected to reach \$11.3 billion in 1997, an increase of more than 8 percent over last year. U.S. consumers, businesses, and institutions are expected to spend an estimated \$53 billion for these products, including the value of closely associated accessories and services, in 1997.

The *floriculture sector* of the industry includes crops such as cut flowers, cut cultivated greens, potted flowering plants, potted foliage plants, and bedding and garden plants. Preliminary estimates for grower cash receipts in the floriculture production sector in 1996 is \$4 billion, up 3 percent over 1995. The 1997 outlook is for an additional increase of 2 percent.

With the exception of bedding and garden plants, which are used by consumers and businesses to beautify outdoor environ-

ments such as landscapes, gardens, and patios, floriculture crops are generally for indoor use. They are grown mostly in glass or plastic greenhouses or in semi-protected environments such as shade houses, although they may also be grown outdoors—in the South and West where climates are temperate, and in more northern climates in periods of warm weather.

The *environmental horticulture sector* includes crops generally grown outdoors and used primarily for landscaping purposes. This sector includes a broad category of nursery crops such as trees, shrubs, ground covers, turfgrass or sod, bulbs, and planting stock (trees or plants used by commercial fruit and vegetable growers, as well as seedlings grown for conservation or commercial purposes, including Christmas trees). Grower receipts for 1996 in the environmental horticulture production sector are estimated at \$6.9 billion, a 6-percent increase over the previous year, with expectations of a further increase of 7 percent in 1997.

#### *Cut Flowers Drive Import Growth*

The U.S. is a net importer of green products. While retail expenditures for green products are climbing moderately higher every year, growth in domestic grower receipts, especially in the floriculture sector, has slowed in recent years, in part because of increasing imports.

The value of domestic production for floral and potted plants has grown only modestly over the past decade, compared with the value of imports, which have risen sharply over the same period. Since 1994, the value of imports at port of entry has increased about \$100 million every year, driven primarily by cut flowers. Imports of floral and potted plant products reached \$700 million in 1996. Other imported greenhouse and nursery products added about \$250 million in value in 1996. For 1997, the total import value of all floriculture and environmental horticulture products is expected easily to exceed \$1 billion.

Exports this year will likely reach \$250 million, only one-fourth of the expected value of imports. Although U.S. exports have been steadily increasing, especially

to Canada, Europe, and Asia, they are not expected to climb rapidly, nor will they approach the value of imports in the near future.

The U.S. imports potted flowering plants (mostly from Canada), foliage plants (Canada, Mexico, Puerto Rico, Jamaica, and other Caribbean and Latin American countries), cut greens (Mexico, Guatemala), and nursery crops (bulbs from Holland, cuttings and young plants from Israel, Europe, and Western Hemisphere sources). However, imports are predominantly cut flowers. Over 3 billion stems of cut flowers are imported annually from 45 countries, though most are from Latin America (primarily Colombia, Ecuador, Mexico, and Costa Rica) and from Europe (primarily the Netherlands, which resells from a number of countries). After a decline in 1995, U.S. cut flower imports increased again in 1996 and are continuing to trend upward in 1997.

About 78 percent of the cut flowers for the U.S. market pass through Miami, most from Colombia. Colombia ships nearly all its cut flower production through Miami International Airport (MIA). Most of the product remains in the U.S., but some is transshipped to Canadian and European markets. MIA is currently the world's second busiest cargo airport, and the largest single product it handles is cut flowers. On an average day, 30,000 boxes of flowers arrive at Miami's airport.

The quantity of cut flower imports decreased in 1995, due primarily to a U.S. anti-dumping action against Colombia. Although that action was rescinded in early 1996, growth in Colombian imports has slowed considerably in the wake of decertification of Colombia's trade preference status (a result of the Andean Nations Trade Agreement), as well as a freeze imposed on flight frequency and cargo capacity out of Colombia into the U.S. in early 1996.

The growth slowdown caused a rise in U.S. domestic grower prices for some major varieties of cut flowers in 1996. However, U.S. growers did not anticipate the market, and overall they cut production area and sold fewer flowers last year based on expectations of continued

## Commodity Spotlight

growth in import competition similar to previous years.

Generally, U.S. growers' intentions for 1997 indicate a further decline in production area devoted to cut flowers. Other countries are filling part of the gap left by Colombia for some varieties, especially Ecuador with shipments of roses.

### ***Landscape Product Sales Top Floriculture Spending***

Last year consumers spent about \$8.2 billion on cut flowers and cut greens (\$31 per capita), a 9-percent increase over 1995. Cut flower and cut greens expenditures this year are anticipated to rise 6 percent. Expenditures for potted plants (flowering and foliage) in 1996, on the other hand, were up only 2 percent from the prior year, to \$7 billion (\$26 per capita). Consumers purchased more foliage plants last year, but flowering plant sales, also up slightly, remained ahead of foliage plants.

Slower overall growth in potted plant sales stems from competition with cut flowers for the consumer dollar. Typically, strong flower sales tend to moderate the amount consumers spend on potted plants. Moreover, the slight increase expected in potted plant expenditures from last year—2 percent for flowering plants and 1 percent for foliage—reflects grower reluctance to increase production in the face of stagnant or declining prices last year and a market which is already large and adequately supplied.

The rose is still the best selling individual flower, with more than 1.1 billion stems sold last year, about 4 stems per capita. Retail florists report that roses accounted for 17 percent of floral item sales in 1996. Imports supplied 800 million stems, 73 percent of the total. According to the National Promoflor Council, floral arrangements lead in annual sales of fresh cut flowers, with 55 percent, followed by bouquets/bunches (23 percent), single stems (16 percent), loose boxed (3 percent), and corsages, boutonnieres, and unspecified (3 percent).

U.S. consumers will spend almost \$16 billion on floriculture products in 1997, or \$59 per capita, which ranks the U.S. as 12th highest in the world in per capita

expenditures on indoor flowers/plants. Although per capita consumption is less than in other nations, the total U.S. floral market still ranks well ahead, with 1997 sales in Japan, the next-largest market, expected to be about \$9 billion.

On a per capita basis, U.S. consumption of cut flowers/greens and potted plants is well below many other developed countries. Japan, and many European countries, including Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, Norway, Sweden, and Switzerland, have higher per capita consumption rates for floral and potted crops than the U.S.

But Americans spend a far greater amount on outdoor landscaping plants than do their counterparts in Europe or Asia. While global per capita expenditure estimates for environmental horticulture are not available, industry analysts believe U.S. consumers are spending 2-3 times more on outdoor plants/flowers than consumers in other developed countries. The U.S. is the world's largest producer and market for outdoor landscaping flowers and plants, trees, shrubs, ground covers, turfgrass, and bedding and garden plants. In 1997, U.S. consumers will spend \$37 billion on environmental horticulture products, or about \$138 per capita.

In 1994, when growth in floriculture sales was robust, environmental horticulture sales were lackluster. Higher interest rates slowed housing and business construction and other economic activity that directly impacts the nursery, turfgrass, and landscaping industries.


When economic conditions improved in 1995 and 1996, housing and other construction began to increase again, but sales of environmental horticulture products were slow to recover. Most landscaping is not done until construction is completed, creating a 6-12-month lag in sales of landscaping plants behind construction startups. Negotiation periods for landscaping contracts may also make recovery slower than for floriculture products. By the same token, when the general economy slows significantly, decline in sales of environmental horticulture products will be delayed for at least 3-6 months as landscaping contracts are fulfilled and construction activity winds down.

Sales and shipments of environmental horticulture products may also be affected by weather. Unlike floriculture products, environmental horticulture products are often field-grown, and producers must wait until field/soil conditions are right for removal. In order to react more quickly to market conditions and improve products and operation efficiencies, many nursery crop growers have shifted to producing containerized plant materials that can be relocated to greenhouses and other winter-protected sites and marketed readily at later and more economically beneficial times.

Despite wetter- and/or colder-than-normal production and marketing conditions for the past several years in many areas of the country, the environmental horticulture sector has experienced growth in sales on a par with the general economy. Last year, the sector recorded about 4 percent more in grower sales than in 1995, and 1997 sales are projected to be slightly better. This strong activity in the environmental sector may continue well into 1998.

Opportunities in both the floriculture and environmental horticulture sectors appear excellent in both domestic and international markets for the next several years. The total market in floral and potted plants alone in 23 key countries is predicted to grow from \$46.5 billion in 1995 to \$60.5 billion in the year 2000. Export opportunities appear most promising in countries like Germany, France, the Netherlands, Italy, and Canada. Although the potential is huge in Asia, these markets have not been developed by U.S. green industry exporters.

Product categories with strong export potential include fruit and nut trees; ornamental trees and shrubs including rose plants, azaleas, and rhododendrons; cut flowers; cut greens; flowering potted plants and indoor foliage plants; bulbs; cuttings for propagation; and perennials such as hostas and cacti. Given the strong competition from other countries, U.S. growers must continue to adopt new technologies, produce a wider variety of new crops, and aggressively market their crops through individual and industry promotion efforts in order to continue gains in sales and profits.

Doyle Johnson (202) 501-7159  
djohnson@econ.ag.gov 



## World Agriculture & Trade



International American Supermarkets Corp.

### U.S. Processed Food Trade Continues To Expand

**T**otal U.S. trade in processed foods and beverages continued to expand in calendar year 1996 to a record \$58 billion. Exports reached \$30.1 billion, about 3 percent higher than in 1995, while imports rose 11 percent to \$27.8 billion. As a result, the 1996 trade surplus, while well below 1995's record \$4.4 billion, was still the third largest on record.

#### Export Growth Has Slowed

Relatively slow export growth for processed foods—3 percent compared with a 9-percent annual average for the previous 3 years—coincided with a slowdown in global meat consumption, relatively high U.S. prices for agricultural commodities, and a higher dollar value against many of the world's major currencies.

The value of U.S. processed food exports grew only \$726 million during 1996, well below the \$2.1-billion annual average increase for the previous 5 years. Of the 10 major processed food groups, meat product exports (including poultry) remain the largest, accounting for nearly

30 percent of total U.S. export value of processed foods. Grain products and fats and oils are the next-largest industry groups, together accounting for over a quarter of the export total. Sugar and confections and miscellaneous commodities (including coffee, pasta, and food preparations) had the largest percentage increases in 1996, while exports declined for dairy products, fats and oils, beverages, and fish.

Of the 49 separate industries that make up the 10 processed food groups, poultry slaughter and processing has been among the fastest growing in recent years. Poultry exports have averaged 31-percent annual growth for the past 3 years, and in 1996 jumped 23 percent to a record \$2.6 billion. More than 60 percent of the 1996 increase was due to soaring exports to Russia. Russian purchases of U.S. poultry rose from \$84 million in 1993 to \$914 million in 1996 (AO January-February 1997).

Other growth industries in 1996 were salted and roasted nuts, rising 25 percent to \$1.2 billion, and miscellaneous food preparations (e.g., tea, spices, yeasts), which rose 23 percent, also reaching \$1.2 billion. Some smaller export industries increased exports considerably in 1996. Wine and brandy exports rose 34 percent to \$330 million, and prepared flour mixes and dough by 28 percent to \$139 million.

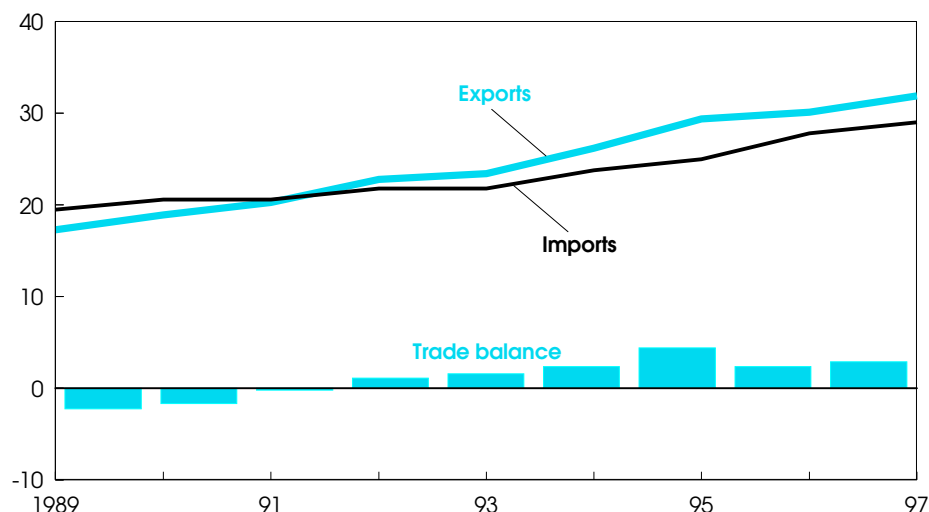
The slowdown in overall export growth can be attributed largely to reduced exports of meat, and fish and seafood. Meat packing (primarily beef, pork, and by-products, including hides) is by far the largest U.S. processed food export industry. Meat packing exports jumped 21 percent to \$6.1 billion in 1995, but fell \$100 million last year. The 1996 decline can be traced to a stronger dollar, lower U.S. meat prices that offset volume gains, and a number of food safety fears that reduced global demand for beef, especially the outbreak of BSE (bovine spongiform encephalopathy) in Europe and *E. coli* problems in the Japanese food system. Meat packing product exports to Japan, the largest U.S. market, fell 3 percent to \$2.9 billion.

Sales to South Korea fell 17 percent to \$860 million, due primarily to economic sluggishness in South Korea and the strength of the dollar against the South Korean won. Mexico was a bright spot for U.S. meat packing product exports, as exports jumped more than 50 percent to \$470 million in 1996, after plunging 50 percent in 1995 after peso devaluation.

The drop in U.S. exports of fresh/frozen fish and seafood—\$230 million, dropping to \$2.5 billion—was even more sizeable than for meat packing products. A decrease in the value of Japanese imports

#### Processed Food Trade Continues to Expand

\$ billion



1997 projected.

Economic Research Service, USDA

## World Agriculture & Trade

### Food Industry Classification System to Change

Starting in January 1998, the U.S. will collect data on industry establishments according to a new system of industry definitions. USDA's Economic Research Service (ERS) currently uses the U.S. Standard Industrial Classification (SIC) system to analyze U.S. exports and imports of processed foods. The SIC assigns each U.S. establishment or plant to an industry category based on its principal activity.

Processed foods, beverages, and related products are currently assigned to SIC-20. The industries within SIC-20 can be further disaggregated into three- and four-digit SIC codes. At the three-digit level are 9 major processed food groups, but ERS has removed fish from the miscellaneous group, creating 10 major groups for its analysis. Comprising the 10 groups of the SIC-20 are 49 individual food processing industries. For example, SIC-2011 identifies the meat packing industry. The first two digits place the industry within SIC-20, while the third digit indicates the industry group—meat products—and the fourth specifies the industry—meat packing.

In January 1997, the U.S. adopted a new industry classification system—the North American Industry Classification System (NAICS)—to replace the SIC, with implementation planned for 1998. NAICS is a production-oriented system developed in cooperation with Statistics Canada and

Mexico's Instituto Nacional de Estadística Geografía e Informática. It provides common industry definitions for Canada, Mexico, and the U.S., facilitating economic analysis.

The structure of NAICS is similar to the SIC, but changes in the definition of industry groups and of industries precludes complete correspondence between SIC and NAICS. Industries previously classified as SIC-20 processed foods will be separated into two major groups. The majority of food processing industries will be assigned to Food Manufacturing (NAICS-311). However, SIC-20 beverages other than dairy or fruit beverages will be assigned to Beverage and Tobacco Manufacturing (NAICS-312).

NAICS contains 47 food manufacturing industries and 6 beverage manufacturing industries. While this is an increase from the 49 industries in SIC-20, only 33 of the 49 SIC-20 industries correspond to NAICS industries. The remaining SIC-20 industries have been reclassified or combined into U.S. national industries that do not correspond closely to an individual SIC-20 industry. The U.S. plans to publish data on national industries which are equivalent to four-digit SIC industries in most cases, and this should allow for continued evaluation of trade in processed food and beverages equivalent to the level of detail currently available.

of U.S. fish accounted for most of the decline, as both the price and quantity of salmon exports contracted. Fish and seafood exports dropped below poultry exports in 1996 for the first time. Exports of animal and marine fats and oils fell to \$889 million in 1996 after surpassing \$1 billion the previous year. Industries with the largest percentage declines were manufactured ice, creamery butter, bottled and canned soft drinks, and cottonseed oil, but these four industries are relatively small, accounting for just over 1 percent of U.S. processed food exports.

On the import side, the 11-percent growth in U.S. processed food purchases in 1996 was the strongest in recent years. A 2-percent increase in U.S. real per capita disposable income, following 1995's 2.6-percent rise, boosted consumer spending. In addition, the value of the dollar, weighted by countries' share of U.S. exports, rose approximately 7 percent during 1996, effectively reducing prices of foreign goods for U.S. consumers. Most of the 10 processed food groups registered double-digit import growth, led by sugar

and confections at 30 percent, grain mill products at 23 percent, and fats and oils at 21 percent. Only meat products and fish lost ground, and each only slightly.

At the industry level, double-digit increases were common, with 33 of the 49 industries increasing imports by 10 percent or more. Many of these industries, however, rose from a fairly small 1995 level. Among the larger industries, cane sugar imports surged 58 percent to nearly \$1.2 billion, becoming a "billion-dollar" import industry for the first time as U.S. sugar production fell significantly from 1995. Imports of a number of consumer items such as beer, canned fruit and vegetables, chocolate and cocoa, and wine and brandy, also saw strong gains in 1996.

#### ***Major Markets & Sources For U.S. Processed Foods***

U.S. exports of processed foods are highly concentrated in a few major markets. The top 10 single-country markets accounted for 70 percent of total 1996 U.S. processed food exports, and Japan, Canada,

and Mexico are leading markets in every major food group.

At \$7.2 billion, Japan is by far the largest export market for U.S. processed foods, accounting for 24 percent of the total in 1996. More than 60 percent (\$4.5 billion) of exports to Japan was meat and fish. NAFTA partners Canada and Mexico were second and third at \$4.5 billion and \$2 billion, a combined 22 percent of total U.S. processed food trade. Others in the top 10 included three Asia Pacific Rim nations (South Korea, Hong Kong, and Taiwan), three western European nations (Netherlands, United Kingdom, and Germany), and Russia. Russia recorded the largest export growth rate of any major market, as exports reached \$1.3 billion, a 32-percent increase over 1995.

The mix of single-country import sources is more varied than export destinations. Canada dominates as a source for U.S. processed foods imports. Its \$5.7 billion in 1996 exports to the U.S. captured more than one-fifth of the market. Canada exported more than three times as much to

## World Agriculture &amp; Trade

the U.S. as Mexico, the second leading source country at \$1.8 billion. The U.S. imported \$2 billion worth of meat and fish and seafood from Canada in 1996, nearly a third of food imports from Canada. Other leading imports from Canada were vegetable oils, distilled spirits, and chocolate products. Fish, malt beverages, and frozen fruits and vegetables were the principal imports from Mexico.

The U.S. also imported more than \$1 billion in processed food commodities from Thailand, France, and Italy. The United Kingdom, Netherlands, Brazil, New Zealand, and Australia rounded out the top 10. The leading imports were fish and seafood from Thailand, wine from France and Italy, distilled spirits from the United Kingdom, and beer from the Netherlands. The main import from Australia and New Zealand was meat packing products. These 10 countries supplied 57 percent of U.S. imports of processed foods.

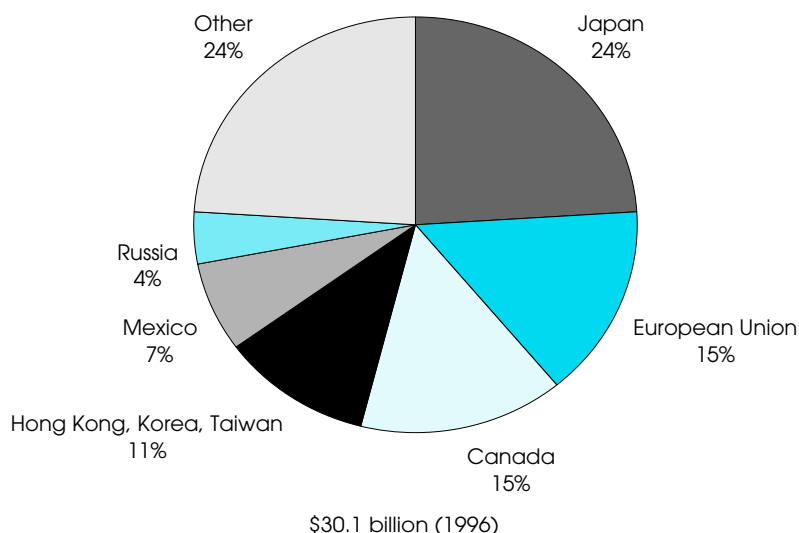
Among the top 10 countries, Brazil and Italy were the fastest growing import sources, with increases of 23 and 22 percent over 1995. Orange juice and cane sugar imports from Brazil, and wine and olive oil from Italy, contributed to the rise. Only two countries in the top 10, Thailand and Australia, decreased their shipments to the U.S. in 1996.

### What's Ahead for 1997?

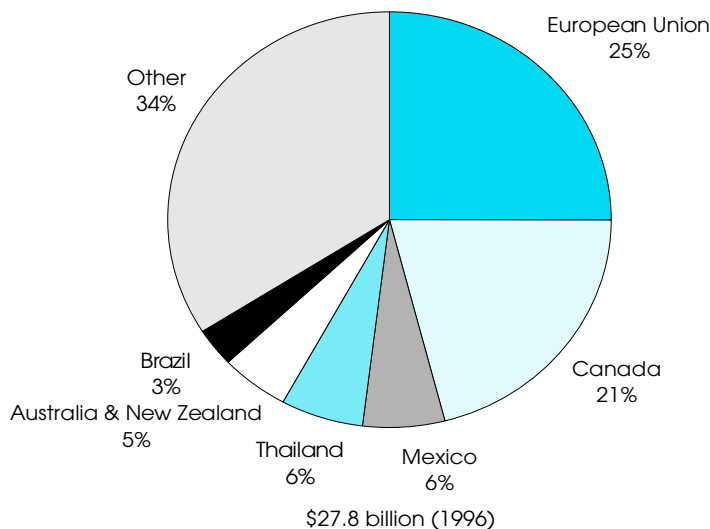
The combination of slow U.S. export growth and higher-than-average import growth in 1996 was probably an exception rather than the start of a trend. Exports from meat packing plants had grown 13 percent in 1994 and 20 percent in 1995 before falling sharply in the latter part of 1996. Food safety concerns about beef in Japan appear to be abating, and with lower Japanese beef tariffs, exports are expected to pick up moderately in 1997.

In addition, U.S. pork exports could surpass their strong 1996 performance, as they are expected to fill some of the void created by Taiwan's suspension of pork exports in March 1997 following an outbreak of foot-and-mouth disease (AO June 1997). Similarly, declines in exports of soybean oil and meal, animal and marine fats and oils, and vegetable oils in 1996, following exceptionally large export

### The EU and Canada Are Key U.S. Markets for Processed Food Exports . . .



### . . . and Both Are Also Major Import Sources



Economic Research Service, USDA

gains in 1994 and 1995, likely reflect temporary supply-and-demand conditions, especially high commodity prices in 1996.

Increases in U.S. imports in 1996 were the result of a healthy U.S. economy combined with continued strong demand for a variety of food items. Sustained growth in the U.S. economy during the early months of 1997 suggests that import demand for processed foods will remain

strong. Global demand for U.S. products is expected to increase as well, raising total processed food trade above \$60 billion in 1997 and increasing the trade surplus to \$3 billion or more.

*Fred J. Ruppel (202) 219-0883, Charles R. Handy (202) 219-0859, and Margaret A. Malanoski (202) 219-0041*  
[fruppel@econ.ag.gov](mailto:fruppel@econ.ag.gov)  
[chandy@econ.ag.gov](mailto:chandy@econ.ag.gov)  
[malanosk@econ.ag.gov](mailto:malanosk@econ.ag.gov) **AO**



## Food & Marketing



Michael Kurtzig

### The Influence Of Income On Global Food Spending

**F**ood spending patterns vary widely around the world. Geographic location and culture help to explain part of food expenditure variations across countries. Economic conditions such as per capita income, food prices, and rates of urbanization also provide critical information for explaining consumer expenditure behavior and for predicting trends in food spending, consumption, and trade.

Knowledge of the forces contributing to food spending patterns can help to improve predictions of future demand for agricultural commodities and of subsequent shifts in international production patterns, trade flows, and price levels. USDA's Economic Research Service studied 51 countries, home to 2.5 billion of the world's 5.8 billion people, to compare spending and consumption patterns and their relationship to income. The countries were divided into three groups based on their 1993 per capita gross domestic product (GDP): *high income* (per capita GDP exceeding US\$9,000), *middle income* (per

capita GDP between \$770 and \$9,000), and *low income* (less than \$770).

Economic theory offers several guidelines for measuring and predicting food spending behavior when controlling for noneconomic factors. *Engel's Law*—an empirical “rule” of consumption—states that the proportion of a nation's income spent on food is a good index of the nation's welfare. The lower the proportion, the more prosperous the nation.

Comparisons across the study countries are consistent with Engel's Law—as incomes rise, a smaller share of expenditures is devoted to food. *High-income* countries in the sample spent an average of 16 percent of their private consumption expenditure (PCE) on food, while *middle-income* countries spent 35 percent and the *low-income* group spent 55 percent. Of the countries included in the study, the U.S. spent the smallest share of its PCE on food at home—only 9 percent—while Tanzania, with the lowest per capita income, spent the highest share—71 percent.

While the share of PCE spent on food at home reflects the prosperity or poverty of a country's citizens, it also hints at differences in the composition of their diets. The study data confirmed that rising incomes are associated with more diverse diets, and that as incomes rise, caloric intake increases to a point of satiation. People with very low incomes are forced to spend most of their income on food simply to subsist. As a result, they tend to

focus purchases on low-cost, high-calorie foods. As incomes rise, they will almost always buy more food and add more costly items (e.g., meats) to their diets.

While absolute spending on food may increase as incomes move up, its share of total PCE declines. As basic food needs are satisfied, extra income will be spent on other consumer goods, such as clothes and entertainment.

The numbers presented here refer only to food consumed at home. Data on food eaten in cafeterias, restaurants, fast-food outlets, and other eating places are not available for some countries and were therefore not included. The U.S. is among the countries where spending on food eaten away from home is significant, amounting to one-third or more of total food spending.

In most developing countries, food expenditure data do not capture the total amount of food available to the average household because they exclude food grown for personal use in individual gardens and on subsistence farms. As a result, for households with significant at-home food production, the food share of PCE tends to understate the value of food consumed.

In *low-income* countries, there is substantial home food production in rural areas, where an average of 73 percent of the population lives. For example, a 1991 study of the “Rural Sierra” region of Peru indicated that 51 percent of all food

### Private Consumption Expenditure Defined

The United Nations defines private consumption expenditure (PCE) as the sum of spending by resident households and private nonprofit organizations serving households. Resident household spending consists of expenditures on food, clothing, rent, fuel, furniture, household operation, medical care and health, transportation, communication, recreation and entertainment, education and cultural services, personal care, and miscellaneous other items.

Expenditures by private nonprofit organizations consist of spending on research and education, and on medical, health, and welfare services by religious, professional, and labor organizations.

Expenditure data for this study are derived from the United Nations' System of National Accounts and from supporting World Bank data. Absolute spending on food was calculated in constant 1993 U.S. dollars for each country in the study.

consumed was produced at home. This included large shares of vegetable, meat, and dairy product consumption, whereas grains and oils were mostly purchased.

### ***Income: Primary Factor In Food Spending Behavior***

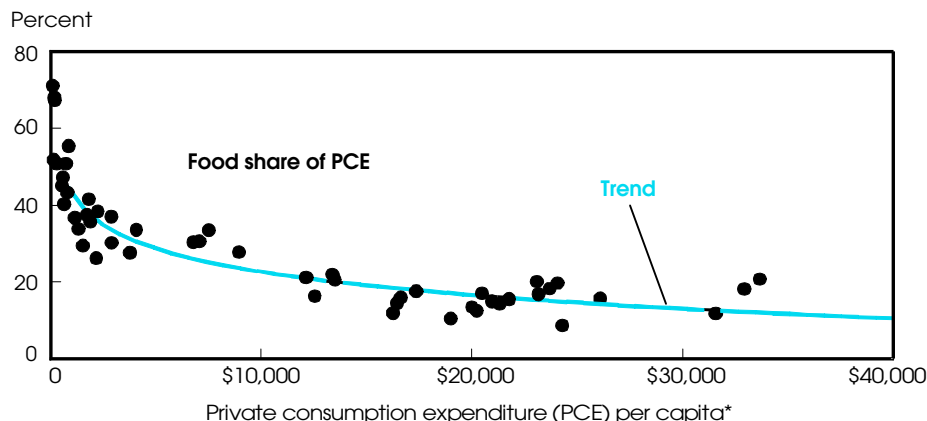
The level of per capita income explains most of the differences in food expenditure shares among countries. However, even within each income group, food expenditure shares differed considerably. Among the 24 countries in the *high-income* group, 5 spent more than 20 percent of their PCE on food, with the highest share held by Israel (22 percent). On the other hand, residents of Canada, Luxembourg, the United Kingdom (U.K.), and the U.S. spent less than 12 percent of their PCE on food.

For the 18 *middle-income* countries, the share of PCE spent on food ranged from a low of 26 percent in Thailand to a high of 55 percent in the Philippines. For all 9 *low-income* countries, the share of PCE spent on food exceeded 40 percent. Tanzania, Nepal, and Sierra Leone allocated over 67 percent of their PCE to food.

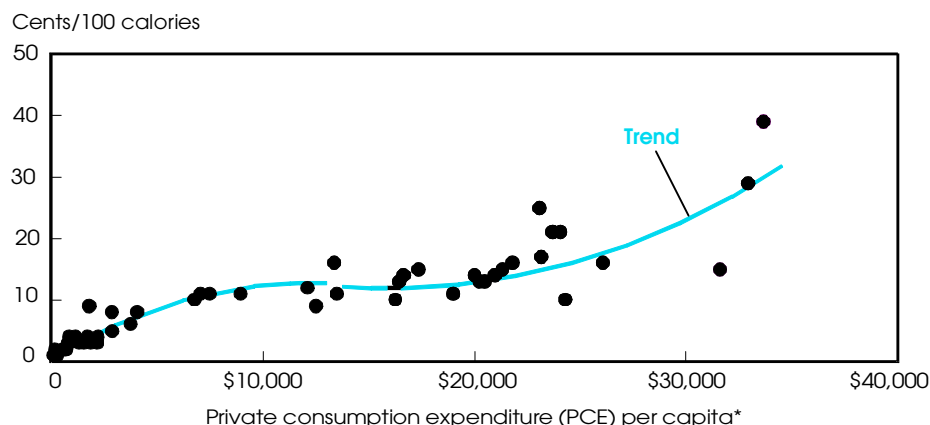
Within an income category, large differences in a country's food spending patterns are associated with differences in food prices, preferences for particular food items, and urbanization rates. Food prices vary for a number of reasons. While supply relative to demand is critical to price formation, food prices are also influenced by the efficiency of food production and marketing systems, import conditions, and/or the level of government-provided food subsidies.

Efficiencies in meat production and marketing, for example, help to lower the marketing margin, and ultimately the retail price of meat, for consumers in the U.S. For decades, industrial countries in North America and Europe have enjoyed low-priced tropical foods imported from Latin America and Africa under preferential trade terms. In the countries of the former Soviet Union and Eastern Europe, food subsidies during the Soviet era (and some that survive today) helped to keep prices for meat and other basic foods relatively low.

### **Food Share of Spending Is Lower for Higher Income Countries . . .**



### **. . . While Their Spending per Calorie Is Greater**



\*U.S. dollars. Used as proxy for a country's per capita income.

Source: U.N. System of National Accounts; World Bank, *World Development Report 1995*.

Economic Research Service, USDA

The role of food preferences in per capita food expenditures is well illustrated by comparing the U.K. and Italy. In the U.K., food accounts for only 12 percent of PCE, compared with 18 percent in Italy. A closer look at diets indicates that U.K. residents eat four times the amount of potatoes—an inexpensive food item—as people in Italy. Italians consume almost twice as much of other, more expensive vegetables and fruits, and per capita meat consumption is higher in Italy than in the U.K.

As countries develop, changing rates of urbanization are also expected to affect decisions on food expenditures. As urbanization accelerates, diets tend to diversify. One reason for this is the wider variety of

foods available in urban markets compared with rural areas. Another is the increasing likelihood of employment of women in urban areas; as the opportunity cost of a woman's time rises, so will demand for foods that require less preparation time.

Since 1980, urbanization rates have increased steadily in low- and middle-income countries. According to the World Bank, the urban population rose from 22 to 28 percent of total population between 1980 and 1994 in *low-income* countries, and from 52 to 61 percent in *middle-income* countries. These population shifts are expected to result in more highly diversified diets and therefore changes in food expenditures.

## Food & Marketing

### *Food Intake Precariously Low In Many Countries*

A high share of PCE spent on food does not translate into high consumption—the opposite is generally the case. Sierra Leone, for example, with a 68-percent food share of PCE, consumes less than 1,700 calories per capita. On the other hand, the U.S., with the lowest share of PCE spent on food, has one of the highest per capita daily calorie consumption levels in the world—3,732 calories.

*High-income* countries average 3,364 calories a day, 50 percent more than *low-income* countries, whose consumption as a group is less than 2,200 calories a day. This is only slightly more than the 2,100 calories the United Nations recommends as a minimum to sustain life without allowing for work or play, and it is less than the 2,300 calories that the U.S. Agency for International Development (USAID) designates as a threshold level to determine food aid needs.

These recommended calorie levels represent guidelines for national averages and should not be confused with personal intake recommendations as provided by USDA for U.S. consumers. The data on per capita calorie consumption represent actual disappearance, not intakes, because they include food that was available but ended up being wasted. In *high-income* countries, some food ends up as trash; in *low-income* countries, food may spoil because of inadequate transportation and storage facilities.

The eight *middle-income* countries with per capita GDP above \$2,800 average almost the same level of calorie consumption as *high-income* countries—close to 3,300 calories a day. However, four *middle-income* countries—Peru, Guatemala, the Philippines, and Bolivia—fall below 2,300 calories, even though the average for the *middle-income* group is near 2,800.

In the *low-income* group, only Egypt, Honduras, and India have per capita daily consumption above 2,300 calories. Egypt's consumption of 3,335 calories per capita per day is extraordinarily high considering its yearly per capita GDP of \$697. This high value results from

### **Japan & Ireland: Exceptions to the Rule**

Rising incomes do not always translate into purchase of larger quantities of food. Japan, the nation with the highest per capita GDP, is at the bottom of the *high-income* group in calorie consumption, with less than 2,900 calories per capita per day. Ireland, one of the poorest of the *high-income* countries, has the highest calorie consumption—3,837 calories per capita per day. At the same time, the two countries allocate a similar share of their PCE to food.

Japan's per capita consumption is almost one-quarter lower than Ireland's. Part of this discrepancy can be explained by differences in diet. In Ireland, the amount of calories derived from animal products is twice as much as in Japan. Beef, pork, and butter, all high in fat (which contains more calories per gram than protein or carbohydrates), are particularly popular in Ireland. The Japanese prefer fish and seafood, which have a lower fat content. Milk, another important source of calories, is consumed four times more per capita in Ireland than in Japan. Vegetable products, which consist mainly of carbohydrates, account for almost 80 percent of the Japanese diet but less than 70 percent of the Irish diet.

government subsidies that keep food prices low and provide a safety net for low-income people.

Consumption in almost 20 percent of the 51 countries studied is below the USAID's suggested nutritional requirement of 2,300 calories. In Ethiopia, the average daily consumption of 1,610 calories per capita in 1992 was 30 percent below the threshold, even though the country received 1 million tons of cereals in food aid. Ethiopia's extremely low calorie consumption was reflected in all nutrition indicators. For example, almost half of Ethiopian children were underweight, and life expectancy at birth was just 48 years. The Tanzanian population, with the highest proportion of their PCE allocated to food, averaged only 2,018 calories per capita per day in 1992, and malnutrition affected 28 percent of children under 5 years of age.

### **Quantity & Quality In Food Consumption**

While *high-income* countries spend a lower share of their PCE on food, the absolute amount they spend on food is much higher than expenditures by *low-income* countries. In 1993, the Japanese spent an average of \$4,071 per capita a year on food at home, more than 80 times the \$49 spent by Tanzanians. Yearly U.S.

at-home food spending averaged \$1,427 per capita in 1993.

Higher absolute spending on food translates into higher cost per calorie. *High-income* countries spent 16 cents per 100 calories on average—8 times as much as the average cost in *low-income* countries—while the per capita GDP in *high-income* countries was almost 60 times greater on average. In *middle-income* countries, the average cost per 100 calories was 6 cents.

High-income countries can afford to consume larger amounts of costly and more nutritious meat and fish, dairy products, fruits, vegetables, and processed foods. France consumes the highest share of meat and fish, which account for 19 percent of daily calorie consumption. In the U.S., meat and fish account for 16 percent of daily calories. In contrast, cheaper cereals and root crops make up three-quarters of the daily diet in Tanzania, Nepal, and Ethiopia.

People in Algeria and Mexico consume almost twice the amount of cereals per capita as U.S. residents, but only half the amount of vegetables. Per capita milk consumption in the U.S. is 2.5 times that in Algeria and Mexico. Vegetable oils, a relatively expensive food item, are another important source of calories in high-income and middle-income countries.



## Food &amp; Marketing

Annual per capita meat consumption is only 40 pounds in Algeria and 89 pounds in Mexico, far below the 223 pounds in France or the 264 pounds in the U.S.

High costs per calorie can also result from high domestic food prices. In Japan, for example, high farm production costs, import tariffs, and manufacturers' traditional control of retail prices have contributed to food prices that are among the highest in the world. Rice, the staple in Japan, and meat and fruit, are very expensive and constitute a large part of food spending. Moreover, the high value of the Japanese currency in recent years results

in even higher prices when the yen is converted into U.S. dollars for comparison.

Over the next decade and beyond, economic growth, coupled with high rates of population growth and urbanization, is expected to fuel demand for food and stimulate diet diversification in low- and middle-income countries, particularly those in East Asia, Latin America, North Africa, and the Middle East. As incomes rise, these countries are likely to replace some of the grains, roots, and tubers in their diets with high-value products (HVP's) such as meat, milk, vegetable oil, fruits, and vegetables.

While most developing countries tend to produce meat domestically rather than rely on imports, demand for imported feed is expected to rise. Most other HVP's are generally not produced domestically. Diet diversification stemming from strong income growth in developing countries may create opportunities for increased agricultural exports to these countries.

*Birgit Meade (202) 219-0632 and Stacey Rosen (202) 501-8445*

*bmeade@econ.ag.gov*

*slrosen@econ.ag.gov*



## Marketing processed food around the globe

Two-thirds of all international trade in the food and agricultural sector is in processed foods. Exports and imports are a large part of the picture, but U.S. processed food firms reach overseas markets mainly through their affiliates abroad. Strategies for penetrating global markets, and the array of public policies that influence global commerce in processed foods, are examined in a fact-filled report.

### *Globalization of the Processed Foods Market*

**An Economic Research Service Report**

To order a copy, call 1-800-999-6779 in the U.S. and Canada. Other areas dial 703-834-0125.

**Stock No. AER-742**

**\$12 (\$18.75 for non-U.S. addresses)**

**Also available on the ERS Home Page**

Direct access to the Acrobat PDF file at <http://www.econ.ag.gov/epubs/pdf/aer742/>

For more information on ERS publications, databases, and other products, visit the

**ERS Home Page at <http://www.econ.ag.gov/>**

## Special Article



Frederick Crook

## WTO Accession for China & Taiwan: Potential Trade Impacts

Integration of China and Taiwan into the World Trade Organization's (WTO's) global trading system would expand world trade significantly. Both China and Taiwan as well as the U.S. would benefit, mainly because of the three countries' complementary resource endowments. The U.S., for example, is rich in capital and arable land, while China has an abundance of unskilled labor.

With China and Taiwan in the WTO, world exports of all products would expand by an estimated \$78 billion annually (1992 prices), and global consumption by \$45 billion, according to analysis by USDA's Economic Research Service (ERS). Global competition in the production of labor-intensive products would heighten, driving down prices. The demand for capital- and skill-intensive manufactured goods would increase, benefiting industrialized countries such as the U.S.

China's net agricultural imports would increase by over \$8 billion annually as rising incomes stimulate demand for more varied and higher quality foods, as labor and other resources shift out of farming to labor-intensive manufacturing, and as textile production expands. Total U.S. food and agricultural exports would increase by over \$2 billion annually, with nongrain crops (notably cotton) and processed foods gaining the most.

China was a founding member in 1948 of the WTO's predecessor, the General Agreement on Tariffs and Trade (GATT).

However, the country withdrew in 1950 after its communist revolution established the People's Republic. In 1986 China applied to re-enter the GATT. Taiwan, separated from the rest of China during the revolution, applied for admission in 1990. Taiwan's admission to the World Trade Organization (WTO) is very likely to coincide with China's.

The difficulties of bringing China's formerly command-driven economy into line with the market-oriented principles of the GATT and WTO have so far stymied agreement on terms for re-entry. The issues concerning Taiwan—which is rapidly becoming a mature market economy—are more tractable, although a number of contentious matters remain outstanding. Nevertheless, it remains highly unlikely that Taiwan's admission will be put to a vote until China's entry problems are solved. The British Crown Colony of Hong Kong has had a major role in world trade as a transit port, especially for goods going to and from China. Hong Kong reverted to Chinese control on July 1, 1997 as a special autonomous region and will retain its separate WTO status.

Since China and Taiwan will likely be admitted to the WTO at about the same time, the effects of enlarging the WTO are analyzed here in terms of their *combined* admission. In addition, the ERS study assumed that Hong Kong remains a free port and independent tariff territory (as required by the Basic Law governing the reunification of Hong Kong with China), with tariffs applied only when goods cross the border from Hong Kong to the rest of China.

### *Resource Endowments Influence Trade Patterns*

Differences in factor endowments—i.e., resources available for use as inputs in a country's various production processes—are important for understanding the direction of net trade flows. Removing trade barriers allows a country to export more of those goods which it produces relatively efficiently, with the proceeds applied to import more of the goods it produces less efficiently. This expansion of trade in both directions increases real incomes for all trading countries.

This study divided factors of production into four groups—*unskilled labor*, *skilled labor*, *land*, and *capital*. The different countries and regions of the world were classified into three groups—scarce, intermediate, and abundant.

*In China, South Asia, and Southeast Asia, capital is scarce and expensive relative to labor.* The reverse is true for the countries in the five *high-income* industrial regions—the U.S., Canada, the European Union (EU), Japan, and Australia/New Zealand. The newly industrialized economies of Korea, Hong Kong, and Taiwan fall somewhere in between—their labor costs are only a third or a fourth of those in *high-income* countries, but much higher than labor costs in *low-income* developing regions.

*Japan, Korea, Taiwan, and China are poorly endowed with arable land relative to labor.* Conditions are just the opposite in the U.S., Canada, and Australia/New Zealand where land is abundant and cheap. The EU, South Asia, and Southeast Asia have intermediate amounts of arable land per capita.

## The Model & Assumptions Behind the Results

To calculate the effects of China's and Taiwan's joining the WTO, ERS used a computable general equilibrium (CGE) model of world production and trade. The model divides the world into 12 regions, and classes all goods and services into 14 sectors, produced by 4 categories of production factors—unskilled labor, skilled labor, land, and capital.

The major data source for the model was the Global Trade Analysis Project (GTAP) database, Version 3 Prerelease. The model was implemented using the General Algebraic Modeling System (GAMS) software. A detailed description of the structure of the model and of the estimated changes induced by WTO enlargement are in USDA Technical Bulletin No. 1858.

Starting from the actual situation in 1992 (the latest year for which a reasonably complete data set is available), global income and trade calculations were made under the assumption that the Uruguay Round accord had already been completely implemented, but *without* China and Taiwan's participation. A second set of calculations was made assuming that the Uruguay Round accord had been fully implemented *with*

China and Taiwan as full members. The *difference* between these two hypothetical scenarios—Uruguay Round implementation *with* and *without* Chinese and Taiwanese participation—yields the estimated impact of China's and Taiwan's accession.

The analysis has some limitations. First, neither China nor Taiwan has finalized the terms of entry to the WTO. The size of their trade concessions, the timing of the start of trade liberalization, and the length of the phase-in period are all unknown. This analysis guessed at the likely size of trade concessions, and finessed the issue of timing by assuming the phase-in period had been completed by 1992.

Second, there are uncertainties about the size of parameters, such as elasticities of substitution between commodities or the effective rates of border protection, especially for China's pervasive nontariff barriers like quotas and state trading. Finally, the model is a highly stylized simplification of the world economy that is far from perfect. Therefore, the results should be interpreted with caution and viewed as rough estimates, not as precise measurements.

The level of land intensity greatly influences the direction of net trade flows in food and agricultural products. The U.S., Canada, and Australia/New Zealand—the land-abundant regions—are net exporters of all food and agricultural product categories. Japan, Korea, Hong Kong, and Taiwan—the land-scarce regions—are net importers of all such products. The EU, South Asia, and Southeast Asia, with intermediate land endowments, are each net exporters and net importers of different agricultural product categories. The EU is a net exporter of wheat, feed grains, and processed food, but a net importer of rice, nongrain crops, and livestock. South and Southeast Asia are net exporters of rice and nongrain crops, but net importers of wheat, other grains, meat and dairy products, and livestock.

China is the only exception to this pattern. A land-scarce country, it imports wheat while being a net exporter of rice, feed grains, and nongrain crops, and it is largely self-sufficient in livestock products. China's aggregate surplus in agricultural trade is a consequence of its government's food self-sufficiency policies rather than the result of taking best advantage of its factor endowments.

The general correspondence between capital intensities and the direction of net trade flows for different kinds of manufactured goods is also apparent. High-income industrial countries are net importers of labor-intensive manufactured goods (textiles and apparel, and other light manufactured goods), and net exporters of capital- and skill-intensive manufactured goods (machinery and equipment, and manufactured intermediates such as fertilizer and steel).

The trade patterns of labor-abundant regions such as China, Southeast Asia, and South Asia are mirror images: they are net

exporters of labor-intensive manufactured goods and net importers of capital-intensive manufactured goods. At an intermediate level of capital intensity, Korea, Hong Kong, and Taiwan are net buyers and sellers of different skill- and capital-intensive manufactured goods, while remaining net exporters of labor-intensive manufactured goods.

Because of China's comparative advantage in labor-intensive products, it has gained more than a 10-percent share of world exports of labor-intensive goods, even without the privileges of WTO membership. After induction into the WTO, China could further expand production of labor-intensive manufactured products, notably textiles and apparel. To supply its mills, China would have to import more cotton and wool. The expansion of labor-intensive manufacturing also would cause resources to be bid away from farming. This would reduce China's agricultural exports and increase its food and agricultural imports. U.S. farmers—especially feed grain, wheat, and cotton growers—would benefit.

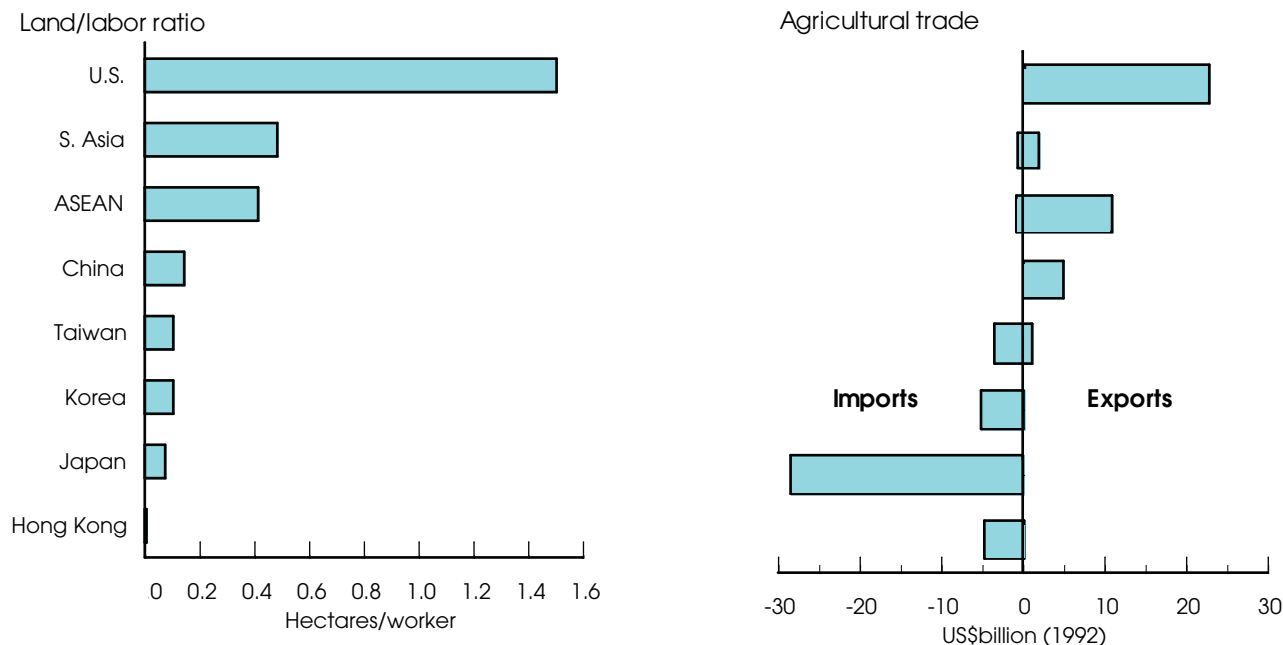
The South and Southeast Asian regions, which compete with China in exporting labor-intensive manufactured products, would face increased competition and lowered prices for their industrial exports. As a result, they would likely experience declines in market share and export revenue from labor-intensive manufacturing. Both China and Taiwan, with scarce arable land, would increase their imports of grain over time. Taiwan's farmers would adjust by cutting production of land-intensive crops like grains, while expanding their output of high-value products like meats, fruits, and vegetables.

*The U.S. and China are generally not competing economically for international trade, at their current relative stages of*

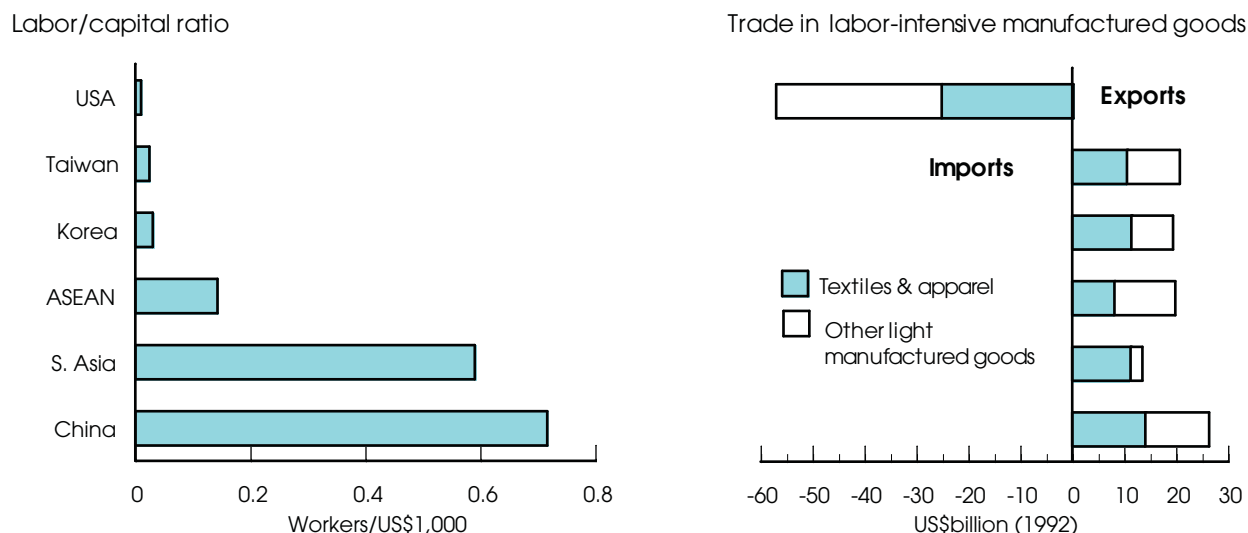


## Special Article

## Countries with Abundant Arable Land Tend to Export Agricultural Products



## Abundant Labor Is Associated with Exports of Light Manufactured Goods



Economic Research Service, USDA

development. Instead, their different factor endowments make their trade complementary. South and Southeast Asian countries compete with each other, and with China, to sell labor-intensive goods in industrialized countries, and to attract foreign direct investment from these countries. Similarly, Japan, the EU, and the U.S. compete to meet demand for technology- and capital-intensive goods in China and other Asian developing countries, and to tap investment opportunities there.

*U.S. & Global GDP to Rise*

If the Uruguay Round agreement had been in full effect in 1992 (the latest year for which a reasonably complete data set is available) *without* the participation of China and Taiwan, U.S. consumers would have been able to purchase an estimated additional \$20 billion of goods and services (over 0.3 percent of 1992 U.S. GDP). Full implementation of the Uruguay Round *with* Chinese and Taiwanese participation would have raised U.S.

GDP by nearly \$28 billion (almost 0.5 percent of 1992 GDP). Thus, the study suggests that the admission of China and Taiwan to the WTO would increase U.S. real GDP by more than \$7 billion (slightly more than 0.1 percent)—i.e., the *difference* between the “with” and “without” scenarios.

At the global level, the estimated increase in real consumption from Uruguay Round implementation in 1992 would have been about \$167 billion with present WTO membership, plus an *additional* \$46 billion (or 0.2 percent of 1992 world GDP) with Chinese and Taiwanese participation.

By far the largest benefits of WTO enlargement, when measured as a portion of national income, would accrue to the new members. The gains result from China and Taiwan undertaking reforms when joining the WTO, thereby improving resource allocations and increasing economic efficiency. Annual GDP would rise by nearly 5 percent (or about \$23 billion) in China and Hong Kong combined. Annual GDP would be more than 2 percent (over \$4 billion) greater in Taiwan. Real GDP in all other regions would rise by about 0.2 percent or less. The admission of China and Taiwan to the WTO would slightly reduce trade liberalization gains for South and Southeast Asia, as competition would intensify in world markets for labor-intensive manufactured exports like textiles and apparel, shoes, and toys.

### ***U.S. & World Ag Trade Would Expand***

Admission of China and Taiwan to the WTO would increase agricultural exports (including processed food) from almost all regions of the world, with the important exception of almost a \$3-billion reduction in Chinese exports. Along with an increase of nearly \$6 billion in China's imports, this would result in an increase of over \$8 billion in China's *net* agricultural imports.

China would increase its net imports of grain by nearly \$600 million, and Taiwan by almost \$100 million. Canada would supply most of the additional wheat, while the U.S. would furnish most of the additional feed grains. Reduced rice exports from China to global markets would be replaced by increased exports from other regions, principally South and Southeast Asia. Taiwan's *net* food imports would rise by more than \$0.6 billion, as increases in agricultural imports would more than offset an increase of over \$1 billion in agricultural exports. More than half of Taiwan's export expansion would consist of processed food, following a restructuring of its agricultural sector away from production of land-intensive crops like feed grains (down by 60 percent), and toward high-value crops and processed food.

Agricultural imports would increase most in China and Taiwan, as described above, followed distantly by Japan (\$0.5 billion). Hong Kong and Korea would see insignificant increases. Agricultural imports would decline by \$0.5 billion or less in the South and Southeast Asia regions, as well as the Rest of the World region (consisting mainly of Latin America, Eastern Europe, and Africa). Reduced production of labor-intensive manufactured goods in these regions, following increased Chinese competition in world markets, would leave them with more resources in agriculture and less need for food, fodder, and fiber imports.

## **The Steps in WTO Accession**

The Uruguay Round of the General Agreement on Tariffs and Trade (GATT) established the World Trade Organization (WTO) on January 1, 1995. The WTO is the legal and institutional foundation for the multilateral trading system and provides the forum for trade negotiations through collective debate, negotiation, and adjudication. The Uruguay Round also brought agriculture into the general discipline of the GATT through substantive reductions in export subsidies, internal support, and import barriers.

A country requesting membership must submit a memorandum to the WTO which details its trade policies as they relate to WTO laws. Interested WTO members form a working party to evaluate the policies of the applicant country. The working party requests additional information on existing policies and assesses commitments by the acceding country to liberalize its trade position. After interested WTO members are satisfied that the applicant government's trade policies conform with the laws of the WTO, the accession is put to the full membership for approval. As of March 27, 1997, 131 countries had become WTO members. An additional, 28 countries have requested permission to join the WTO.

Karen Ackerman (202) 501-8511  
ackerman@econ.ag.gov

The admission of China and Taiwan to the WTO would augment total annual U.S. food and agricultural exports by over \$2 billion (more than 3 percent), while raising U.S. agricultural imports by only \$100 million. Almost all of the net increase in U.S. exports would go to China and Taiwan, each importing about an additional \$1 billion from the U.S. Additional exports would go to Japan, Korea, and Hong Kong, replacing products that they previously imported from China.

The composition of increased U.S. agricultural exports going to China and to Taiwan would be quite different. In Taiwan, non-grain crops would account for 60 percent of the increase, and processed food for an additional 30 percent. The increase in U.S. exports to China would consist mainly of processed food products (79 percent). Livestock products, nongrain crops (such as cotton), and grains would make up the remaining 21 percent. These estimates, however, are sensitive to the details of trade concessions, which have yet to be negotiated.

Overall, U.S. agricultural exports would see the greatest expansion in the processed food sector, followed by feed grains and nongrain crops, and livestock products. As a result of the increase in global demand, export prices (f.o.b.) for U.S. food and agricultural products would increase in every sector, raising farm incomes.

Michael Lopez (202) 219-0683 and Zhi Wang (202) 219-0993  
mlopez@econ.ag.gov  
zwang@econ.ag.gov

