In This Issue . . .

The cabbage market... "Smart" farming... Impacts of GE crop use... China's land tenure policies... EU trade with developing countries

Competition, Rising Prices Confront U.S. Soybean Exports

The U.S. soybean crop for 2002 is forecast at 2,628 million bushels, well below last year's record 2,891 million. The forecast reflects both a decline in plantings and a slip in expected yield. Crop rotations, improved net returns for corn (with lower costs for nitrogen fertilizer), and economic and weather conditions in western states encouraged greater planting of corn and the lowest U.S. soybean area since 1998. Soybean yields were curbed by summer drought and high temperatures, and by an acreage shift from higher yielding to lower yielding states. Lower soybean supplies will promote a hard retreat in U.S. soybean exports. Higher U.S. prices will erode the ability to compete with likely aggressive export campaigns by Brazil and Argentina.

Cabbage Heads Higher

The French word for cabbage is incorporated into a term of endearment: "*mon petit chou*" ("my little cabbage"). This vegetable has recently become a little more endearing to Americans, a turnaround from a steady decline in use between the 1920s and the 1990s when Americans looked elsewhere for variety and convenience in their food. In the past decade, fresh-cut products, new recipes, and a growing body of nutritional research have lent new support to cabbage demand. Total cabbage consumption rose to 10.3 pounds per person in the early 2000s, but is still 57 percent below the 1920s.

The Ongoing Reform of Land Tenure Policies in China

The combined forces of economic transition, rapid economic growth, and increased integration into the world economy are propelling substantial changes in rural China. How farmers respond to changing economic opportunities and challenges depends critically on the choices they are able to make about use of land and other resources—choices that depend in turn on land tenure patterns. With 9 percent of the world's arable land and 40 percent of the world's farmers, China's land is scarce relative to its labor. Control over land in China reflects a complex and changing distribution of authority among the national government, local governments, and households, with potential implications for efficiency, equity, and environmental quality.

Trade Among Unequal Partners

The European Union (EU), more than other members of the World Trade Organization (WTO), has used exceptions to international trading rules to provide nonreciprocal trading preferences to selected developing countries. Some of these arrangements have been challenged under WTO procedures as discriminatory and not in compliance with trade rules. To achieve compatibility, the EU proposes to convert the arrangements into reciprocal free trade areas, which for developing countries could result in new trade competition and economic challenges, without clear advantages. The EU, on the other hand, would gain strong advantages for its agricultural and other exports to some developing countries at the expense of exports from the U.S. and other countries. Many elements of the EU's current and proposed free trade area arrangements remain controversial and untested in the WTO.

Genetically Engineered Crops: U.S. Adoption & Impacts

Since the introduction of genetically engineered (GE) crops in 1996, U.S. farmers have rapidly adopted some varieties, notwithstanding conflicting claims about economic and environmental impacts and consumer acceptance. Soybeans and cotton with herbicide-tolerant traits have been the most widely and rapidly adopted GE crops in the U.S., followed by insect-resistant cotton and corn. Analyses by USDA's Economic Research Service and others indicate economic benefits to many farmers adopting first-generation GE crops. Not all benefits of GE crop adoption are reflected in standard measures of net returns.

Does Off-Farm Work Hinder "Smart" Farming?

As off-farm income takes on greater importance to farm households, less time is available for farm management. Smart farming (e.g., soil testing, integrated pest management, and precision farming) typically substitutes management for capital, and management is time-intensive. The value of management time and effort does not typically enter into calculations of economic returns to alternative production technologies or farming systems. The result could be misleading in understanding the benefits of technology adoption, particularly if farm households, like most of their nonfarm counterparts, are willing to forego some financial return from farming to gain convenience.

U.S. Sugar Policy Under the 2002 Farm Act

The 2002 Farm Act reauthorized the sugar price support loan program, and a key change requires that USDA operate the program at no cost to the Federal government. To accomplish this, the Act includes measures to discourage forfeiture of sugar to the government by processors who offered it as collateral for nonrecourse loans under the program. Among the cost-reducing provisions is the authority for USDA to impose flexible marketing allotments for sugar (supply control).

Briefs

Livestock, Dairy, & Poultry

Pork Production to Reach Record Levels in 2002 & 2003

U.S. hog producers are expected to respond to higher feed costs by reducing the number of sows that farrow in 2003. Sow farrowings in 2003 are expected to decline about 1 percent from 2002. Pigs per litter are expected to increase slightly, as less productive sows are eliminated from the breeding herd. The pig crop is expected to be down about 1 percent next year, with slaughter to increase just slightly. Average dressed weights will be lower, with the higher cost of gain.

USDA produces a *Quarterly Hogs and Pigs* report. This information, combined with pork production figures for the first half of 2002, indicates record quantities of U.S. pork products, both this year and in 2003. USDA forecasts 2002 pork production at 19.8 billion pounds and 2003 production at 19.85 billion pounds. Both quantities exceed all previous U.S. production levels.

Total red meat and poultry production is expected to be about 85.3 billion pounds this year, but may decline slightly in 2003. This year's large meat production, combined with an 8-9 percent decline in exports and a 3-4 percent increase in imports, will create an abundant supply of meat for domestic consumption.

Hog Prices to Average in the Mid-$30s in 2002 & 2003

Prices of 51-52-percent lean hogs (liveweight equivalent) ended the second quarter on a high note, averaging $35 per hundredweight (cwt). Seasonally lower slaughter in June and higher demand for pork products, particularly since mid-June, have increased hog prices. With demand expected to remain comparatively strong through the summer months, prices are expected to average $35-$37 per cwt in the third quarter. Because of the seasonally heavy slaughter, prices are expected to decline into the high-$20s per cwt in the fourth quarter of 2002, while first-quarter 2003 prices are expected to average around $34 per cwt. Second-quarter 2003 hog prices are expected to rise again, and average around $37 per cwt.

Retail pork prices are expected to average about $2.68 a pound this year and decline slightly in 2003. The difference between prices received by the producer, the wholesaler, and the retailer indicates the total price spread. The spread has averaged about $1.86 a pound since 1999, but in second-quarter 2002 the total spread was $2.06. Over the last 3 years, the wholesale-retail price spread has accounted for 80 percent of the total spread. So far in 2002, the wholesale-retail price spread accounts for about 82 percent of the total. The total price spread is expected to narrow toward the 3-year average next year, pointing to lower retail prices.

The U.S. is expected to export almost 6 percent less pork in 2002 than in 2001. Lower demand for U.S. pork products can be attributed generally to muted consumer demand resulting from slower-than-anticipated economic growth in foreign markets. Specifically, weakness in several markets has already been noted or is likely to become apparent in the near future.

Japan Imposes Safeguard Again

Japan—the largest foreign market for U.S pork products—imported 4 percent less pork in the first 5 months of 2002 than for the same period last year. Moreover, the Safeguard was triggered at the end of June—after data for the first quarter of Japan's April-March fiscal year became available. The Safeguard is a World Trade Organization-sanctioned restriction that protects domestic markets from surges in imported products.

Imposition of the Safeguard raises the minimum price at which foreign pork can be imported into Japan by 25 percent, making imported pork products less attractive to Japanese consumers than domestically produced products. The higher minimum import price resulting from the Safeguard was imposed on August 1 and will remain in place until March 31, 2003.

While Safeguard imposition typically lowers demand for all imported pork, frozen products tend to decline the most. Since fresh pork tends to have larger margins and limited shelf life, demand for imported fresh pork has not declined as dramatically as has demand for frozen pork under past Safeguard scenarios. And, since fresh products comprise more than half of U.S. exports to Japan, the Safeguard has impacted U.S. pork exports to a lesser degree than to a country such as Denmark—whose exports to Japan are nearly all frozen.

Compared with demand patterns under past Safeguard scenarios, Japanese demand for imported pork appears to have changed under the Safeguard that was imposed from August 2001-March 2002. Total August 2001-March 2002 pork imports increased compared with the same period in 2000-2001, when no Safeguard was in place. Under the most recent Safeguard, Japan imported more pork products (fresh and frozen), despite higher prices.

Consumer fears of bovine spongiform encephalopathy (BSE) was one likely factor in continuation of Japanese consumer demand for higher priced imported pork under the August 2001-March 2002 Safeguard. Intense competition for market share among international exporting companies is another likely factor.

Prospects Mixed For Other Countries

Export totals for the first 5 months of 2002 to Mexico and Canada—the second and third largest foreign markets for U.S. pork—show a mixed picture. Exports to Mexico declined slightly, likely resulting from the relatively high U.S. dollar exchange rate, and continued economic uncertainty in Mexico. Canada has imported 7 percent more U.S. pork so far this year, to meet demand for selected pork cuts that the domestic Canadian pork industry is unable to meet, or to fill "shortages" created by Canada's aggressive pork export industry.

Russia's declining demand for U.S. pork products continued through May. So far this year, U.S. exports to Russia are 62 percent lower than for the same period last year. U.S. pork products continue to have difficulty competing with lower priced pork products from Brazil and China.

For South Korea, 2002 was to have been the year of re-entry into international pork markets—Japan in particular—after foot-and-mouth disease (FMD) infected the Korean herd in the spring of 2000. In anticipation of resuming the lucrative loin trade to Japan, the Korean pork industry accumulated significant stocks of pork this year. U.S. exports to Korea had increased 75 percent over the same period last year. Korean traders imported lower priced U.S. cuts in order to accumulate stocks of Korean products for export to Japan. But, the reappearance of FMD in May has postponed Korean loin exports to Japan. Large Korean pork stocks will likely slow Korean demand for U.S. pork products for the remainder of 2002.

U.S. Pork Imports Increase

So far through May 2002, the U.S. has imported 17 percent more pork than over the same period last year. About 80 percent of U.S. imports are from Canada, representing the continuing integration of the U.S. and Canadian pork and food service industries. Denmark accounts for about 13 percent of U.S. imports. The American appetite for pork ribs is the primary factor driving Danish exports to the U.S.

Despite concerns about low fourth-quarter 2002 prices, and uncertainty surrounding requirements for Country of Origin Labeling contained in the 2002 Farm Act, the U.S. continued to import large numbers of live Canadian hogs. In the first 5 months of 2002, imports were 18 percent higher than for the same period last year. So far this year, nearly 64 percent of live Canadian imports have been feeder pigs destined largely for finishing in the Corn Belt States. The U.S. is expected to import 6.2 million hogs from Canada this year, 17 percent more than in 2001. AO

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Specialty Crops

U.S. Sugar Policy Under the 2002 Farm Act

The 2002 Farm Act—the Farm Security and Rural Investment Act of 2002—reauthorized the sugar price support loan program and introduced measures to make the program work more effectively for producers and processors, and to lessen the cost of the program to the U.S. government.

The Sugar Loan Program

The 2002 Farm Act reauthorized the U.S. Department of Agriculture (USDA) to make loans available to processors of domestically grown sugarcane at the rate of 18 cents per pound and to processors of domestically grown sugar beets at 22.9 cents per pound for refined sugar. As before, loans are made for a maximum term of 9 months and must be liquidated along with interest charges by the end of the fiscal year. Processors are required to provide payments to producers in proportion to the amount of the loan value accounted for by the sugar beets and sugarcane the producers deliver. USDA retains the authority to establish minimum producer payment amounts.

Other sugar loan provisions in the 2002 Act include the following:

- Sugar loans must be nonrecourse, meaning that when the loan matures, the USDA must accept sugar pledged as collateral as payment in full in lieu of cash repayment of the loan, at the discretion of the processor.
- A new provision allows processors to obtain loans for "in-process" sugar and syrups at 80 percent of the loan rate. "In-process" sugar and syrups must be converted into raw cane or refined beet sugar at no cost to the Commodity Credit Corporation (CCC) before being eligible for forfeiture.
- The Act eliminates penalties that, under prior legislation, had been charged to processors who forfeited sugar to the CCC.
- The Act eliminates the requirement that sugar processors notify USDA of their intention to forfeit sugar under loan. Also eliminated are government assessments on sugar marketing by processors.

Operation of the program at no cost to the government. A key change in the 2002 Farm Act requires that USDA operate the U.S. sugar loan program at no cost to the Federal government, to the maximum extent possible. Specifically, USDA must avoid forfeiture of sugar to the CCC. To discourage loan forfeiture, the sugar price at the time of loan repayment must be high enough to cover the loan principal *plus* interest and marketing expenses.

The 2002 Farm Act gives USDA authority to accept bids from sugarcane and sugar beet processors to obtain raw cane sugar or refined beet sugar in CCC inventory in exchange for reducing production. This is one way to control expected excess (or "price-depressing") supplies of sugar. The 2002 Farm Act specifies that this authority is in addition to any authority the CCC may have under other laws.

Marketing allotments. Another way to guarantee that the sugar loan program operates at no cost to the Federal government is the requirement in the 2002 Farm Act that USDA establish flexible marketing allotments for sugar (supply control).

The overall quantity of sugar to be allotted for a crop year is determined by subtracting the sum of 1.532 million short tons raw value (STRV), plus carry-in stocks of sugar (including CCC inventory), from USDA's estimate of sugar consumption and reasonable carryover stocks at the end of the crop year. USDA must adjust allotment quantities to avoid forfeiture of sugar to the CCC.

The overall allotment quantity is divided between refined beet sugar (at 54.35 percent of overall quantity) and raw cane sugar (at 45.65 percent). For cane sugar, Hawaii and Puerto Rico are jointly allotted 325,000 STRV. For the mainland cane sugar producing states (Florida, Louisiana, and Texas), allocations are assigned based on past marketings of sugar, the ability to market sugar in the current year, and past processing levels. Beet sugar processors are assigned allotments based on their sugar production for the 1998-2000 crop years. The 2002 Farm Act provides for a number of contingencies that could require reassignment of allotments during the crop year.

USDA's authority to operate sugar marketing allotments is suspended if import levels of sugar for human consumption, not including Re-Export Program quantities, are estimated to exceed 1.532 million STRV (such that the overall allotment quantity would have to be reduced). The marketing allotments would remain suspended, until imports have been restricted, eliminated, or otherwise reduced to or below the 1.532 million STRV level.

Flexible marketing allotments are likely to provide more effective price support throughout the marketing year. When allotments are on, processors who have expanded marketings in excess of the rate of growth in domestic sugar demand will have to postpone the sale of some sugar, and either store it at their own expense or sell it for uses other than domestic food use. The cost of storing excess production is thus shifted from the Government to the industry. (However, the 2002 Farm Act requires that the CCC establish a sugar storage facility loan program to assist processors who want to construct or upgrade storage and handling facilities.)

Trade Measures

In addition to the sugar loan program, U.S. sugar policy is implemented through a tariff-rate quota (TRQ) system, which is continued under the 2002 Farm Act. The TRQ is a two-tiered tariff for which the tariff rate charged depends on the volume of imports. A lower (in-quota) tariff is charged on imports within the quota volume, and a higher (over-quota) tariff is charged on imports in excess of the quota volume. Each year, the Secretary of Agriculture announces the quantity of sugar that may be imported at the in-quota rate. Any quantity above that level would be imported at a higher tariff rate. The raw cane sugar TRQ is allocated to 40 countries. The 2002 Farm Act specifies that on June 1 of each year, the U.S. Trade Representative, along with USDA, must calculate the used and unused portions of the TRQ for each quota-holding country, and reallocate unused quota to qualified quota holders.

The U.S. also operates the Refined Sugar and Sugar-Containing Products Re-Export Programs to allow U.S. refiners to compete in global refined and sugar-containing product markets. The programs establish a license against which a company can import sugar at world prices for refining and sale to replace sugar that has been exported either as refined sugar or in sugar-containing products. The 2002 Farm Act specifies that all refined sugars derived from either sugar beets or sugarcane are substitutable under these programs. AO

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Specialty Crops

Demand Strong for Tree Nuts

Strong demand, especially from export markets, has been driving up tree nut shipments this season. Supply is also strong this season because of large crops and large beginning stocks. The net effect is lower grower prices. Overall revenue is expected to be high, despite expected lower prices, because of the large volume of tree nut crops being moved.

High almond shipments provide almond growers with good returns. Almonds dominate nut production in the U.S. The near-record crop in 2001/02 has provided ample supply for marketing. While lower than the previous season, beginning stocks were still very large, pushing total available supplies above the record crop in 1999/2000.

Domestic demand has been very strong so far this year (August through May), about 15 percent over last season, which could help drive domestic consumption to its highest level yet. Americans consume more almonds than any other tree nut, including those used in candy and baked goods, yet the average person consumes less than a pound a year. Fortunately for the industry, other regions of the world have a stronger preference for almonds. Europeans, the major customers U.S. almonds, use much of their nut imports to make paste.

Strong demand for almonds in Europe has helped fuel a rapidly expanding U.S. almond industry. Virtually the entire U.S. almond crop comes from California, which has an ideal environment for the trees. Foreign nut demand has driven this expansion, and bearing acres reached 525,000 in 2001. Acreage is likely to increase slightly for the 2002/03 crop, although the rate of growth is slowing

after several years of continuous expansion. In July, USDA's National Agricultural Statistics Service (NASS) forecast the new almond crop at a record 980 million pounds. As the 2001/02 season winds down, dwindled supplies put the industry in a good position to handle next year's expected record crop. The industry expects grower prices to improve despite the forecast, and the coming season, which got underway in early August, will likely see stable or even increasing prices as strong demand is expected to continue.

No big surprises expected for walnut crop. Almost all of the commercial walnut industry is concentrated in California's San Joaquin Valley. The good weather that boosted California's almond crop was also a plus to the walnut crop. Because this season was a record crop for walnuts, the trees will likely produce a smaller crop in 2002/03. Acreage has remained relatively stable over the past few years, and no major changes are expected in the near future.

The 2001/02 walnut crop movement was about 4 percent above the previous year through June (on an inshell equivalent basis). Domestic movement, which accounted for 58 percent of total shipments through May, was 3 percent higher than last season. Exports have been stronger so far this season, increasing 6 percent over 2000/01. Most walnuts are exported shelled, and are destined primarily for Japan, Germany, Israel, and Spain.

Walnut prices for the 2001/02 season averaged $1,120 per ton. The expected smaller crop this coming harvest should increase grower prices. As a result, total revenue should continue higher as it has the past 3 years.

Pistachio shipments strong. Finishing out the California tree nuts, the 2002/03 pistachio crop is expected to be larger than the present crop in the market, following the general alternate-year-bearing trend of tree nuts. Pistachio production is on the opposite cycle of the other tree nuts, and 2001 was the "off cycle" year for the crop. The 2001 crop was 34 percent below last year's record crop, but still 31 percent above the similar low cycle 2 years ago. A forecast of the new season crop will be available at the end of August.

Pistachio nut shipments were higher for September 2001-May 2002 than during the same period last year. Despite the smaller 2001 crop, exports were higher. Shipments of inshell pistachios increased 41 percent, with large increases in quantity going to the European Union. The major markets are Germany, France, Hong Kong, and Canada. Large beginning stocks for this year's crop likely contributed to the larger shipments. Strong demand has driven down inventory below last year's level, with stocks of loose kernel and artificially opened pistachios nearly depleted. As a result, growers are in good position to demand higher prices once the new crop harvest begins. Low inventory should help moderate price-depressing effects of a larger crop.

Pecan markets hurt by a slowed economy. The 2001/02 pecan crop suffered from the domestic economic slowdown this year. Unlike many of the other tree nuts, much of the pecan crop is not stored before marketing. Rather, inventory is held by processors who purchase the pecans to make cookies, ice cream, pies, and similar goods. As a result, much of the crop is sold shortly after harvest. With the pecan harvest beginning in September, the 2001/02 crop was hurt by the economic downturn that occurred after September 11. Growers were receiving good returns at the beginning of harvest, but demand fell once the economic effects of the tragedy reached the food industries. Because close to 90 percent of the crop is sold to the baking, candy, and ice cream industries, and nearly all the nuts are in the market at the same time, prices fell. As a result, the per pound price dropped to 68.7 cents, the lowest in 5 years. The value of the crop in 2001 fell 9 percent from the previous year.

In response to declining revenues, pecan farmers reduced their inputs to cut costs. The industry is expecting a much smaller crop this year because of the reduced input use, drought conditions throughout most of the pecan-growing States, and the alternate-bearing cycle of the trees. A smaller crop generally would be good news to growers, because prices would be expected to rise. However, pecan inventories held by processors are reported to be high as the season is ending, and the new harvest is just a few months away. As a result, processors will be unwilling to pay high prices for the new crop. Those pecans going to fresh market, such as the gift industry, should be able to get good prices.

Fewer hazelnuts expected this season. Following the largest crop on record, the incoming hazelnut crop is expected to return to normal levels for an off year. Producing such a large crop last year placed a heavy burden on the trees and could push this year's production down to around 20,000 tons, according to industry sources. This significantly lower crop should boost grower prices, which fell to $700 a ton in 2001, the lowest level since 1993. However, low prices helped move the crop and bring total revenue above last year's level.

Hazelnut shipments have been strong, leaving very little inventory at the end of the season. While domestic shipments were above a year ago, they were 18 percent below 2 years ago. Fortunately for the industry, export demand has been growing. At the end of April, over 24,000 tons of hazelnuts had been exported compared with only about 3,000 tons sold domestically. The major international markets for U.S. hazelnuts are Hong Kong, China, and Germany. Almost all of the shipments are inshell nuts. Kernels account for a very small proportion of sales. AO

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Visit the ERS Fruit and Tree Nuts briefing room on the ERS website: www.ers.usda.gov/Briefing/FruitAndTreeNuts/

Commodity Spotlight

Strong Competition & Rising Prices Confront U.S. Soybean Exports

The U.S. soybean crop for 2002 is forecast at 2,628 million bushels, well below last year's record of 2,891 million bushels. The smaller expected crop reflects both a drop in plantings and a drop in expected yield. Crop rotations and improved net returns for corn (because of lower costs for nitrogen fertilizer) created market anticipations earlier this year for much higher corn acreage and the lowest U.S. soybean area since 1998.

While corn planting advanced well in the upper Midwest, delays were acute in the Ohio River Valley. When the optimal planting dates for corn had passed, farmers in Indiana and Ohio planted more acres to soybeans than indicated by the March intentions, because late planting carries a greater risk to corn yields than to soybean yields. Fewer acres planted to cotton also raised soybean area in Mississippi and Louisiana. However, these additional soybean plantings were partially offset by economic and weather conditions in states farther west, encouraging farmers to expand their corn acreage at the expense of soybeans. Overall, actual soybean plantings for the nation dropped from 74.1 million acres in 2001 to 73 million acres this year.

Throughout the summer, drought and high temperatures worsened crop conditions in the heart of the soybean belt. Yields were also curbed by an acreage shift between higher-yielding and lower-yielding states. Average U.S. soybean yield this year is forecast at 36.5 bushels per acre, down from 39.6 last year. Soybean plantings in the high yield states of Illinois, Iowa, Nebraska, and Minnesota are down by a combined 1 million acres, while acreage increased in some states with below-average yields (particularly North Dakota, Mississippi, and Louisiana).

U.S. Exports Forecast Lower

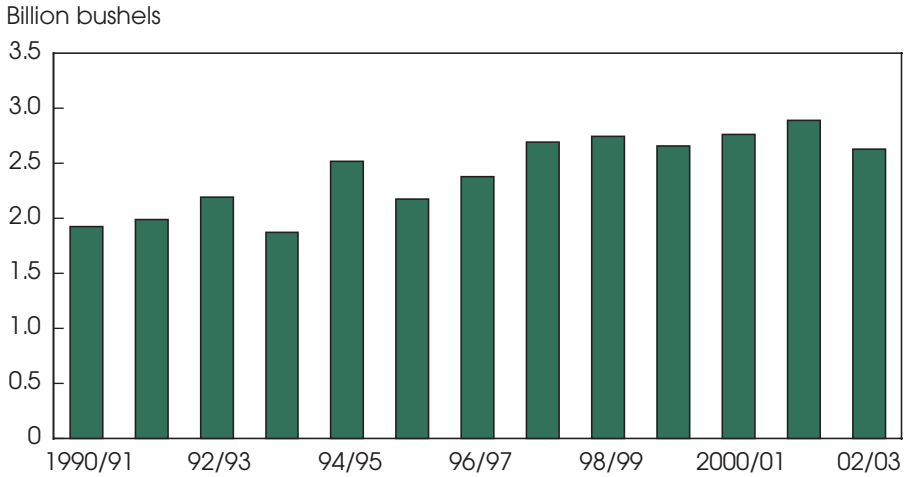
Despite interruptions in trade this year with China over its regulation of biotech crop imports, the overall strength of U.S. soybean export demand endured through 2001/02. Soybean exports rose to a record 1,060 million bushels, which contributed to surprisingly slim carryover stocks of 195 million bushels. For the upcoming marketing year, the brunt of the supply shortfall will be borne by a hard retreat in U.S. soybean exports. Higher prices will erode the ability to keep up with a likely aggressive export campaign by Brazil and Argentina. U.S. soybean exports are forecast plunging to 820 million bushels in 2002/03, which would be the lowest volume in 4 years.

Foreign oilseed production is projected to rise 2 percent in 2002/03 to 237.9 million metric tons (mmt), partly offsetting a 9-percent decline in U.S. output to 82 mmt. World oilseed supplies should shrink as larger soybean harvests for Brazil and Argentina in 2002/03 may only partly compensate for reductions elsewhere. In a repeat of similar circumstances from a year ago, Brazilian farmers are getting favorable returns on their latest soybean harvest (as well as forward sales for the next crop) and are likely to sharply expand plantings again in 2002/03. Argentina's continuing financial crisis is favoring planting proportionately more oilseeds than wheat and feed grains in 2002/03 because oilseeds can be grown with lower input costs.

In addition, Brazil and Argentina together carried over about 3.5 mmt more soybean stocks into 2002/03 than the previous year. Producers in both countries held back marketing of soybeans as they anticipated even higher farm prices following currency depreciations. That temporary deferment supported U.S. exports in 2001/02, but should intensify the competition for sales early in 2002/03. As tight supplies sparked a recovery in China's soybean imports last summer, South American exporters, with their large stock buildup, will compete strongly with U.S. suppliers for that and other markets this fall.

Soybean demand by the European Union (EU), the world's largest import market and U.S. buyer, will likely slow in 2002/03. Larger European oilseed harvests this year should curtail EU soybean meal consumption. A record-large EU wheat supply will expand its use in livestock feeds. Wheat has higher protein than corn, so feeding more wheat would also curb soybean meal demand, as less is needed as a protein supplement in feeds. This slowdown may occur despite a recent strengthening of the euro to near parity with the dollar (which increases the

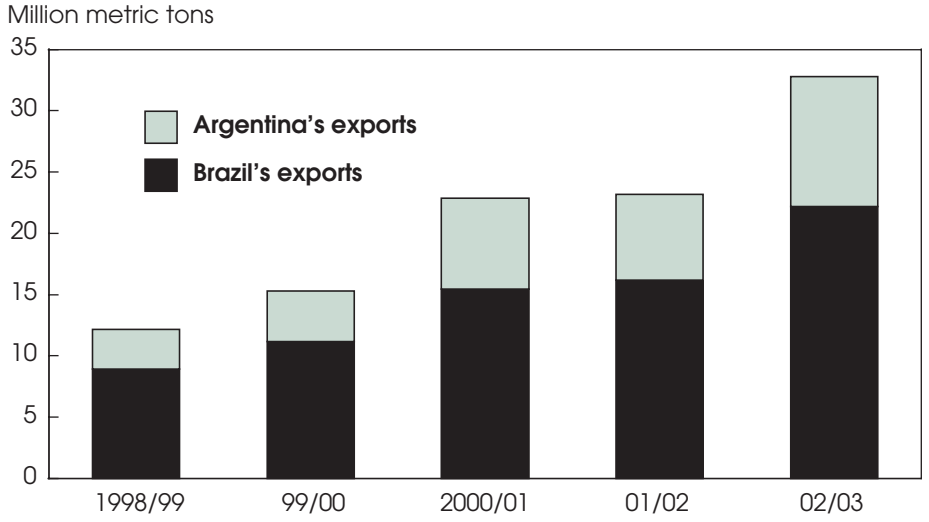
U.S. Soybean Production May Drop from 2001/02 Record



2002/03 forecast.

Economic Research Service, USDA

Brazilian and Argentine Soybean Exports Have Grown Rapidly



2002/03 forecast.
Source: Data from Foreign Agricultural Service, USDA.

Economic Research Service, USDA

purchasing power of foreign importers). In addition, a recovery of Canada's domestic soybean harvest from last year's drought would cut its import needs from the U.S.

The anticipated decline in U.S. soybean supplies is seen paring 2002/03 ending domestic stocks to a scant 155 million bushels. The 2002/03 forecast U.S. average farm price is $5.15-$6.05 per bushel, compared with the 2001/02 average of $4.35. A much higher market price and a lower national soybean loan rate ($5.00 per bushel) enacted in the Farm Security and Rural Investment Act of 2002 may eliminate any marketing loan gains this year, which were approximately $3.5 billion for the 2001 soybean crop.

Domestic soybean crushing is expected to decrease next season to 1,680 million bushels. Weaker export prospects, particularly for soybean meal, and higher soybean costs will temper processing demand. Soybean meal exports are forecast at 6.75 million tons, down sharply from 7.65 million in the current season.

Growth in domestic soybean meal consumption is likely to moderate next year as well, because of a slow expansion of livestock numbers. The U.S. feed outlook has dimmed because a large accumulation of frozen meat stocks has pressured prices for both hogs and poultry, the primary consumers of soybean meal. Domestic disappearance of soybean meal for 2002/03 is forecast up to 33.5 million tons from 33.2 million in 2001/02. Yet, a comparatively stronger market for soybean oil should produce surplus soybean meal supplies and limit any increase in value. Soybean meal prices for 2002/03 are expected to average $170-$200 per ton compared with the 2001/02 average of $166.50 per ton.

Demand Strong For Vegetable Oil

Disappointing foreign harvests of palm oil and oilseeds other than soybeans are tightening the global market for vegetable oil relative to the protein feed market. Even with a modest increase in soybean oil output, large U.S. carryover stocks will sustain steady demand through 2002/03. U.S. soybean oil exports will be competitive with an expected robust pace of South American shipments. In a year that portends a brisk rate for foreign vegetable oil imports, U.S. soybean oil exports may remain relatively high, edging up to a forecast 2,500 million pounds.

Domestic soybean oil consumption in 2002/03, like the previous year, will be supported by negligible supply increases for competing vegetable oils. USDA projects 2002/03 domestic disappearance of soybean oil to rise 2 percent to 17,200 million pounds.

Increased oil use will not be limited to just the edible applications; biodiesel consumption may also begin to expand. In April, Minnesota passed a law mandating that all diesel fuel sold in the state contain a 2-percent biodiesel blend by June 2005. When this law becomes fully implemented, analysts estimate that Minnesota alone

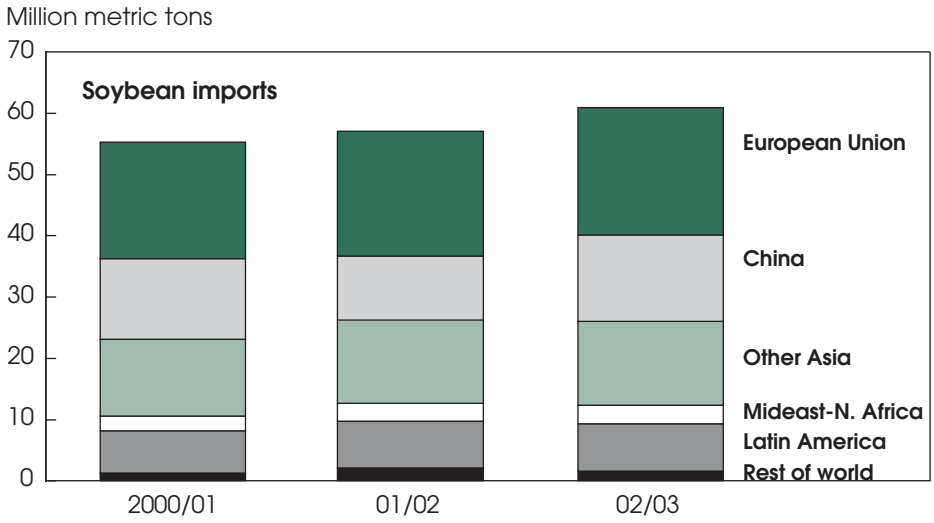
may require 120 million pounds of soybean oil annually for biodiesel. Although other fats and recycled oils can be substituted in biodiesel production, initially soybean oil may be the primary material. Other states and the federal government are considering similar legislation. Increased soybean oil use in 2002/03 is expected to cut season-ending oil stocks to 1,990 million pounds. Prices of soybean oil in 2002/03 would strengthen within the forecast average of 18.5-21.5 cents per pound, compared with the 2001/02 average of 16 cents.

Macroeconomic Policies & Biotech Shape World Trade

On January 7, **China** announced new details of its import policies for biotech products that were first issued in 2001. Beginning March 20, 2002, every import shipment of biotech products must have a safety certificate from the Chinese Ministry of Agriculture before it can be sold. Requirements for the certificate include proper product labeling and a statement from the originating country's government indicating that the shipment poses no harm to humans, animals, or the environment. The labeling requirement applies to biotech oilseeds as well as their processed derivatives such as soybean meal, soybean oil, rapeseed meal, and rapeseed oil. Upon arrival, imports are quarantined while inspections are conducted to verify the presence of any genetically engineered material, diseases, and impurities.

Shortly after the January announcement, exports of U.S. soybeans surged as Chinese processors rushed to secure delivery before March 20. Because of the complex and still unclear administration of the new policies, China later agreed to ease implementation of the regulations on biotech crop imports. On a transitional basis through December 20, China is providing interim safety certificates to importers within 30 days of receipt of required documents. Soybean imports resumed in June after many exporters had acquired the interim certificates, but the earlier lapse in obtaining certificates closed the pipeline of foreign shipments for April and May. The shutdown cut China's 2001/02 imports of soybeans to 10.5 mmt from 13.3 mmt the previous year and exhausted stocks held at ports and processing mills.

Rebound in China's Soybean Imports To Drive Global Gains in Soybean Trade



2002/03 forecast.
Source: Data from Foreign Agricultural Service, USDA.

Economic Research Service, USDA

Despite expectations of higher trade, China's imports of soybean oil were also subdued this year. Both China and Taiwan officially joined the World Trade Organization on December 11, 2001. China's accession agreement stipulated that its 2002 tariff-rate quota on soybean oil increase to 2.518 mmt and the within-quota tariff fall from 13 percent to 9 percent. China had originally announced it would issue its vegetable oil import licenses by March 5, but administrative delays prevented distribution until early April. Also, since prices for palm oil imports were generally cheaper, China's importers nearly filled the 2002 palm oil tariff-rate quota (2.4 mmt) first. Consequently, soybean oil imports increased minimally to just 375,000 tons.

Unlike 2001/02, China will not head into the new marketing year with a large cushion of oilseed stocks. These stocks allowed China to maintain consumption this year during the stoppage of soybean imports, but stocks have now been reduced to mere pipeline supplies that are used as fast as they can arrive. Minimal increases in domestic crops of soybeans, peanuts, and sunflowerseed are expected this fall, but will not likely ease the tight oilseed supply situation next year.

The most likely sources for meeting China's mounting domestic needs will be imports of soybeans, soybean oil, and palm oil. China would be a potentially good market for imports of rapeseed next season, but production shortfalls among the major foreign suppliers will raise prices and curtail imports. Soybean imports by China are projected to rise to 14 mmt in 2002/03 from 10.5 mmt in 2001/02. Domestic crushing will still provide most of the protein meal required, but China's vegetable oil deficit could double soybean oil imports to 0.8 mmt and modestly raise palm oil purchases to a record 2.2 mmt in 2002/03.

While China generally favored palm oil imports last season, **India** purchased a large volume of soybean oil because of a comparatively lower import duty. India is expected to import a record large 2 mmt of soybean oil in 2002/03 because poor monsoon rains will substantially reduce its domestic oilseed harvests. Another reason for expected strong gains in soybean oil imports by both India and China is that thinning supplies of palm oil are likely to slow exports by the major Southeast Asian producers.

Robust soybean demand in the rest of the world helped take up the slack left this

year by China's import stoppage. However, in 2002/03, China should reclaim its role as the world's fastest growing soybean market. EU oilseed harvests fell by 0.3 mmt in 2001, so a shortfall of vegetable oils increased the profitability of soybean crushing last season. Domestic oilseed harvests are better this year, so EU soybean imports in 2002/03 should moderate. In Japan, higher costs of importing rapeseed and a ban on feeding meat and bone meal promoted consumption of soybean meal, a factor expected to continue into 2002/03. A very dry summer in Canada last year cut soybean production by more than 40 percent and sharply raised imports of soybeans and soybean meal. But, a recovery in this year's Canadian soybean crop should limit import needs in 2002/03.

Argentine farmers in 2002 reaped a bumper soybean harvest, 1.7 mmt larger than last year's, in spite of the many weather and financial obstacles. Even so, a standoff between suppliers and the government curtailed exports to a modest increase in 2001/02.

Argentina's default in December 2001 on its large public debt forced currency devaluation in January. The peso had been pegged at a one-to-one rate to the U.S. dollar since 1991. But in February, the currency was allowed to freely float and has subsequently depreciated to around 3.6 pesos per dollar. By itself, such a large devaluation should benefit agricultural exports in the long run. However, oilseed exports temporarily ceased because of disputes over the government's reluctance to repay about $600 million of value-added taxes owed to agricultural exporters. With international grain companies compelled to finance their own trade, tighter controls on the dollar exchange slowed foreign sales. The government also converted all current dollar-denominated debts in the country (except farm debts) to pesos at a rate of one peso per dollar. Most significantly, the government raised export taxes to 23.5 percent for oilseeds and 20 percent for oilseed products. Argentina had imposed export taxes on agricultural products in the 1980s, but mostly abandoned them by 1991, retaining only a modest 3.5-percent tax on oilseeds.

Although the domestic soybean price in Argentina soared following the January devaluation, unpredictable policy shifts on export taxes, value-added tax refunds, and farm debt squelched the immediate incentives to export. In the current economic climate, producers lack confidence in the banking system and see their dollar-based soybeans as a hard asset with the best store of value. Also, Argentine farmers held on to their crops to protest high export taxes, fuel costs, and inequitable treatment of farm debt. They waited to see whether the peso stabilized or if rising U.S. prices continued. Trucker strikes further complicated transportation of crops.

To encourage soybean deliveries, Argentine exporters offered producers the opportunity to deliver sales immediately after harvest and defer pricing (with no discounts for storage) through August. Still there was only a modicum of farm sales and Argentine exporters had little to sell abroad. Thus, the government was unable to reap tax payments from agricultural exporters, the leading source of tax revenue for the cash-strapped treasury. The International Monetary Fund has yet to restore lending to the country. Having few financial resources, the Argentine government suspended the promised rebates of delinquent value-added tax to exporters. This hurt the ability of processors to expand output and to offer farmers better prices for their crops.

At the same time, demand from Argentina's largest soybean customer (China) had stalled. Thus, most of Argentina's increased 2002/03 supplies will be stocks carried over from the previous year. Argentine farmers have little cash to pay off debts or buy new inputs, so when they start planting new crops this October they should favor planting proportionately more oilseeds than feed grains. If fewer inputs are applied, lowering yield potential, the expansion in 2002/03 soybean output may moderate.

Like Argentina, **Brazilian** soybean producers also had a record-large 2001/02 crop that was sold piecemeal. Farmers locked in relatively high prices last year on a portion of the crop with forward sales and Brazil's soybean area surged 17 percent. Brazilian soybean prices slumped earlier this year when the currency strengthened against the dollar. But, farmers were capitalized well enough to wait for better post-harvest returns, which came by August after a substantial depreciation and a spike in U.S. prices. Low soybean shipments by Argentina and the resumption of import demand by China also subsequently accelerated Brazilian sales. Fortunes should turn in favor of South American soybean exports in 2002/03 as higher U.S. prices, larger South American supplies, and favorable exchange rates cut deeply into the U.S. market share for global exports. AO

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Commodity Spotlight

Cabbage Heads Higher

It was the French who inspired the English word "cabbage," believed to be derived from *caboche*, a slang term meaning "head." Head cabbage has been an important player in U.S. produce circles for many years. Thomas Jefferson grew 22 varieties of cabbage at his Monticello estate, according to the 1987 volume *Blue Corn and Square Tomatoes*.

The French also used "*mon petit chou*" ("my little cabbage") as a common term of endearment. In recent years, cabbage has recently become a little more endearing to Americans, gaining 7 percent in per capita use between 1990-92 and 2000-02. This is a turnaround from a steady decline between the 1920s and the 1990s, when Americans looked elsewhere for more variety and convenience in their food. In the past decade, fresh-cut products, new recipes, and a growing body of nutritional research have lent new support to cabbage demand. While total cabbage consumption rose to 10.3 pounds per person in the early 2000s, it is still 57 percent below the 1920s, when cabbage use averaged 22 pounds.

Cabbage has four distinct end uses:

- food manufacturing including deli-type coleslaw and frozen eggrolls;
- the traditional fresh market;
- the sauerkraut industry; and
- the fresh-cut salad industry which uses cabbage in salad mixes, shredded bagged cabbage, and as the main ingredient in fresh-cut bagged coleslaw.

According to estimates by USDA's Economic Research, processed deli-type coleslaw (40 to 45 percent of use) and fresh head cabbage (around 35 percent) account for the majority of cabbage disposition. Other major uses include sauerkraut (12 percent) and various fresh-cut products (5-10 percent). Retail sales of fresh-cut bagged coleslaw averaged about $70 million in 2000 and 2001—4 percent of the $2-billion fresh-cut salad retail industry. A small amount of cabbage is dehydrated (dried, flakes, or powder) for use as a flavoring agent in soups and as an ingredient in other dehydrated foods.

Fresh-market cabbage consumption averaged a fairly steady 8.5 pounds in the 1970s, 1980s, and 1990s. However, the 1990s saw increased use of red cabbage in fresh-cut salad mixes and popularity of fresh-cut bagged coleslaw, helping to spur consumption. Sauerkraut use appears to have stabilized at about 1.3 pounds per person over the past decade. Demand for sauerkraut peaked shortly after World War II and trended steadily lower before leveling off in the early 1990s.

The U.S. accounts for 4 percent of world cabbage production, ranking sixth behind China (38 percent of world output), India, Russia, South Korea, and Japan. U.S. cabbage production is largely centered in the East and upper Midwest but spreads across the 50 states, with 82,000 acres and 4,289 farms shipping to the fresh and processing markets. U.S. head cabbage had an average farm value of $319 million annually during 1999-2001, with the fresh market accounting for 97 percent of crop value.

Cabbage Volume Peaks In March

The volume of fresh-market cabbage shipments peaks in March, spurred by the traditional St. Patrick's Day fare of corned beef and cabbage. About 14 percent of the domestic crop is marketed in March, compared with 10 percent for February and December (the next-highest months). The majority of these winter shipments come from Texas, Florida, and New York. Volume is lowest in July at 4 percent of annual shipments.

Depending on the variety and growing conditions, a mature head of cabbage weighs from 1 to 5 pounds with some even larger, especially when destined for processing. Most fresh-market cabbage is hand harvested to minimize damage and maximize yield, while most cabbage destined for processing is machine harvested to keep costs down. Because cabbage plants do not mature uniformly, fresh-market fields are frequently harvested several times to maximize yield.

Shippers in states such as New York, Pennsylvania, Michigan, and Wisconsin routinely place late-season cabbage in cold storage for later marketing—even until the following summer in the case of New York, the industry leader. If stored under proper conditions (controlled atmosphere facilities) late-season cabbage can keep for as long as 6 months.

Annual cabbage shipping-point prices trended higher during the 1990s, after a decade of stagnation in the 1980s. Between 1991 and 2001, nominal f.o.b. shipping point prices nearly doubled. Higher average fresh cabbage shipping-point prices in the face of rising produc-

The Cabbage Patch

Cabbage belongs to the *Cruciferae* (mustard) family—which includes Brussels sprouts, broccoli, cauliflower, and kale. Cabbage is of the genus *Brassica*, species *oleracea*, and variety *capitata*. This shallow-rooted, cool-season crop (grows best when temperatures are 50-75 degrees F.) is cultivated for its large leafy head and is thought to have originated in Western Europe. Before being thought of as a food, cabbage was valued for medicinal purposes in treating headaches, gout, and diarrhea. Cabbage juice was reportedly used as an antitoxin for poisonous mushrooms.

The pungent smell for which cooked cabbage is noted is caused by sulfur compounds that are released when the vegetable is heated. Cabbage is best cooked in an uncovered steel pot or pan since aluminum pots and pans tend to enhance the sulfurous chemical reaction.

Although this article focuses largely on traditional head cabbage, there are several different types of cabbage. Several vegetables also have cabbage in their names but may not even resemble what we commonly consider cabbage. Some of the various kinds of cabbages and pretenders include:

Green head cabbage is the traditional common type that still dominates the market. It sports light green leaves in a large compact head consisting of many thick, overlapping, smooth, waxy leaves. The outer "wrapper" leaves on fresh cabbage fit loosely and are usually discarded by the consumer. On cabbage sold from cold storage, the wrapper leaves are trimmed off before retailing and the head color is usually much paler (prolonged cold storage whitens cabbage). There are three main types of green head cabbage—domestic, Danish, and pointed.

- **Domestic types** feature loose, rounded, or partly flattened heads which tend to be medium in size (2-3 pounds), relatively sweet, and preferred for coleslaw.
- **Danish types** feature smooth, round, hard and compact, almost white heads. These late varieties are both marketed in the late fall and moved into cold storage for later sale. They are suitable for sauerkraut and are also said to be good for cooking.
- **Pointed** varieties, grown chiefly in the Southwest, feature smooth leaves and small, cone-shaped heads.

Red cabbage (*Rubra* subgroup) resembles green head cabbage except that its leaves have a purplish-red color that adds interest to salad mixes.

Savoy-type cabbage varieties (*Sabauda* subgroup) feature crinkled leaves in a loosely compact, yellow-green, oval-shaped head. A good source of beta carotene, savoy tends to be tender and mild and is well suited for both cooking and salads.

Chinese cabbage (*brassica pekinensis*) is also known as *napa, hakusai, pe-tsai, won bok*, and *Peking cabbage*. Chinese cabbage is sweeter and milder than head cabbage and has oblong, thin, crisp, crinkly, cream-colored inner leaves with light green ends.

Bok choy (*brassica chinensis*) also called *Chinese white cabbage* and *white mustard cabbage*, has long, mild, white stalks topped with green leaves.

The pretenders (cabbage by name only. . .)

Cabbage palm yields a delicacy known as the "Heart of Palm"—the meat of the cabbage palm tree which is actually the Sabal Palm—Florida's state tree.

Ornamental cabbages also known as flowering kale. Some varieties are marketed as decorative garnishes for salad bars, but most are grown for fall and winter landscaping plants.

Cabbage turnip is another name for Kohlrabi, which resembles a turnip with leaves and whose flavor is similar to turnip.

Skunk cabbage *(Symplocarpus foetidus)*, unrelated to the cabbage family, is found in wet areas of the Midwest and Northeast. It is an early spring wildflower with an unpleasant odor.

tion likely results from strong demand. In this case, much of the additional demand is likely coming from fresh processing firms that use shredded cabbage in salad mixes.

The portion of the cabbage retail value accounted for by the shipping-point price has been slowly but steadily declining. During 1995-99, growers and shippers received about 27 percent of the retail value-up from 24 percent during 1990-94 and 25 percent during 1985-89 but down from 32 percent during 1980-84. In 2000, when final cabbage retail prices for the year were reported, shippers had received 29 percent of the retail value.

New York Heads the Pack

According to the 1997 Census of Agriculture, head cabbage is produced on 4,289 farms in all 50 states—down 22 percent from 1992. Although the number of farms producing cabbage has declined, output has trended higher and average farm size has risen, powered by demand for fresh-market cabbage. Over 1999-2001, total

annual cabbage production averaged 19 percent above 1979-81 levels. During that interval, cabbage used for sauerkraut (called "liberty cabbage" during World War I) declined 19 percent, but production of fresh-market cabbage rose 27 percent.

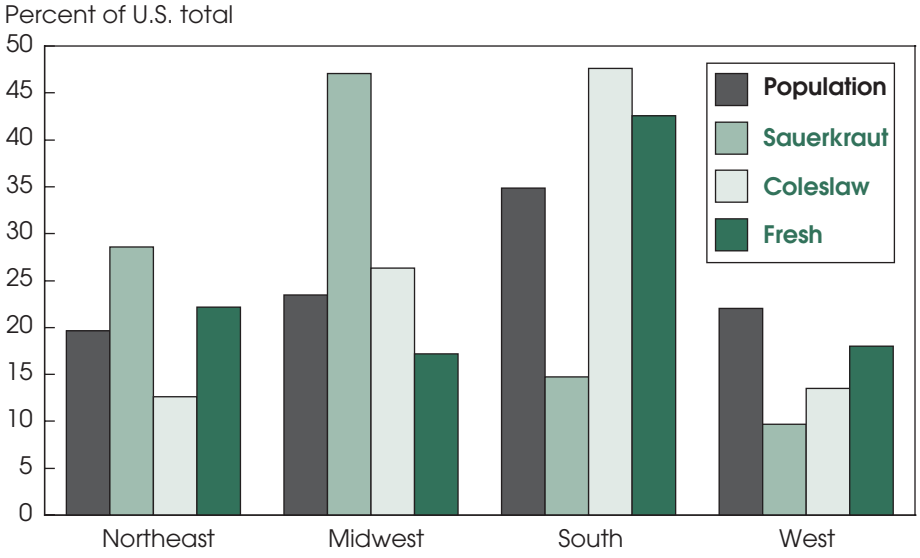
There is little overlap between the fresh cabbage and sauerkraut markets, as sauerkraut makers prefer cabbage varieties with white interiors and high solids content (less water). In any given year, 98 percent of cabbage used for sauerkraut is grown under contract with processors, with open-market purchases limited to a few hundred acres. According to the 1997 Census of Manufacturers, seven firms manufacturing sauerkraut had sales over $100,000—the same number as in 1992. These manufacturers shipped the equivalent of nearly 10 million gallons (in cans, jars, and fresh-market polybags), valued at $20.5 million, to distributors and retailers in 1997.

New York produces about a fourth of the nation's head cabbage, with 79 percent destined for the fresh market. New York tops the fresh market with 22 percent of national output and produces 39 percent of the nation's sauerkraut—second only to Wisconsin. According to the Census of Agriculture, 389 New York farms were growing cabbage in 1997—28 percent fewer than in 1992. Fresh-market production increased 61 percent over the past decade (1989-91 to 1999-2001). Output of cabbage for sauerkraut in New York has also increased, rising 23 percent in the past decade. Consolidation among U.S. processors has led to diminishing output in Michigan, Ohio, and Washington.

New York's fresh-market crop accounts for 95 percent of the State's $77 million in farm cash receipts for cabbage (1999-2001). New York's fresh-market cabbage is shipped year-round with planting beginning in early April. Harvest begins in August and continues into early December, with market shipments strongest from September through November and seasonally low in June. A portion of the crop is placed in cold storage and is marketed into the following summer.

California is the second-largest producer of head cabbage (virtually all for the fresh market), with 16 percent of national output and 18 percent of the fresh-market crop. Acreage and production have trended higher since bottoming out in the mid-1970s. With a farm value of $72 million, cabbage production during 1999-2001 averaged 44 percent above 1989-91 and 125 percent above 1979-81. According to the Census of Agriculture, cabbage was produced commercially on 252 California farms in 1997, up 14 percent from 1992 and 50 percent from 1982. Much of the recent acreage gains have originated in the Salinas Valley of Monterey County—sometimes referred to as the salad bowl of America and headquarters for many of the major fresh-cut salad firms in the U.S. California harvests and ships fresh-market cabbage year-round, with volume generally peaking in January and February and again in September and October.

Proportionately More Sauerkraut Is Consumed in Midwest and Northeast Than Other Regions



Source: Derived by ERS from *1994-96 Continuing Survey of Food Intake by Individuals*, Agricultural Research Service, USDA.

Economic Research Service, USDA

Texas is the third-largest domestic source of head cabbage, accounting for 13 percent of the U.S. crop and 15 percent of the fresh-market crop. Despite periods of extreme irrigation water shortages in key production areas, fresh-market cabbage production has increased 33 percent since 1989-91, but output remains 7 percent below the 1979-81 peak. With a farm value of $53 million, head cabbage was harvested by 152 farms in 1997—down 14 percent from 1992. Texas harvests and ships fresh-market cabbage year-round with volume peaking in January and February and again in September and October.

With 10 percent of U.S. production, Wisconsin is the fourth-leading source of head cabbage and is the top producer of cabbage for sauerkraut (nearly half of national output). Two-thirds of the state's head cabbage (valued at $4 million) goes into manufacturing sauerkraut. Although the Badger State's cabbage production during 1999-2001 was little changed from the past decade, it stood 25 percent higher than in 1979-81. Fresh-market production is up 44 percent since 1979-81, while cabbage for sauerkraut is up 16 percent. According to the 1997 Census of Agriculture, head cabbage is produced on 142 Wisconsin farms—down 34 percent from 1992. Fresh-market cabbage is shipped July-November, with volume generally peaking in October. Although Wisconsin only accounts for 4 percent of U.S. fresh-market production, the state provides one-third of national supply in October.

With 145 farms (1997 Census of Agriculture), Georgia supplies more than 8 percent of U.S. head cabbage (10 percent of

the fresh-market crop)—placing it fifth. Production in Georgia was valued at $22 million during 1999-2001—eight times greater than 1979-81. This reflects both a general increase in national vegetable production over the past two decades, plus the relocation and/or expansion of farm operations from other states.

Trading Heads

Foreign trade plays a relatively minor role in the U.S. fresh and processed cabbage industries. In terms of value, the U.S. has historically been a net exporter of cabbage as steady year-round supply from an efficient domestic industry keeps prices low and limits opportunities for imports. In 2001, exports of fresh-market cabbage totaled $18 million while imports were valued at $14 million. For sauerkraut, exports totaled $2.7 million while imports totaled $1.1 million in 2001.

Since at least 1960, the U.S. has exported a steady 3-4 percent of available fresh-market cabbage supply. While export share has changed little, fresh import share of consumption has increased from less than 1 percent in the 1960s and 1970s, to 2 percent in the 1980s, 3 percent in the 1990s, and nearly 4 percent thus far in the 21st century. Canada takes 89 percent of U.S. fresh exports, while fresh imports arrive mostly from Canada (55 percent) and Mexico (44 percent). Fresh imports peak in December but are also strong out of Canada during the summer and fall. For sauerkraut, imports have averaged under 2 percent of consumption over time, with Germany accounting for over half the volume. About 3 percent of U.S. sauerkraut supply is exported annually—most shipments going to Canada.

Cabbage Is Nutrient-Rich

Cabbage, a cruciferous vegetable, is rich in nutrients. It is a good source of vitamin C, contains some vitamin A, and has a fair amount of thiamin, riboflavin, potassium, and soluble and insoluble fiber. Fresh-market cabbage is low in calories and sodium, and free of fat and cholesterol. A 100-gram serving of fresh green cabbage (about a cup and a half of shredded cabbage) contains 24 calories and over three-fourths of the recommended daily allowance (RDA) for vitamin C. A 100-gram serving (just under one-half cup) of undrained sauerkraut contains 19 calories, has no fat, provides fiber, and has 25 percent of the RDA for vitamin C. According to researchers at the Duke Comprehensive Cancer Center, cruciferous vegetables like cabbage may be powerful anti-cancer agents. Cabbage reportedly contains 11 of the 15 identified vegetable-related compounds found to deter cancer.

In addition to various fresh uses (salads, slaws, garnishes), cabbage can be prepared by boiling, steaming, sautéing, baking, braising, or stir-frying. Cabbage is frequently used in soups, stews, eggrolls, casseroles, sweet and sour dishes, and meat dishes, including the traditional corned beef and cabbage. Shredded cabbage can replace lettuce in tacos. At retail, fresh cabbage is traditionally sold from bulk displays and in a variety of fresh-cut products sold in polybags.

Americans consumed 3 billion pounds of cabbage (fresh and processed) in 2001. About 88 percent of cabbage consumption is in fresh forms, with the remainder largely in sauerkraut. According to the USDA 1994-96 *Continuing Survey of Food Intakes by Individuals*, 71 percent of head cabbage is consumed at home. Most sauerkraut is consumed at home, while cole-slaw accounts for the largest share of cabbage consumed away from home. Reflecting a wide range of food-service uses, about 56 percent of coleslaw is consumed away from home, with fast food (26 percent of all coleslaw) the single largest source. Per capita use of fresh-market cabbage was 9.1 pounds in 2000 and 2001 and coleslaw was the primary source of fresh cabbage for many consumers.

Before recently stabilizing at 1.3 pounds per person, sauerkraut consumption had trended lower during the 1980s from an average of 2.2 pounds in the 1960s and 1970s. This may have reflected occasional negative publicity regarding red meat consumption (particularly smoked meats) and a general trend away from salty foods. The recent stabilization in per capita use may reflect the inclusion of sauerkraut in a wider array of recipes as consumers

Sour Cabbage

Although a type of wine-pickled sauerkraut was reportedly made in China over 2,000 years ago, the Germans are credited with being the first to ferment cabbage using salt near the end of the 16th century. The word “sauerkraut” means “sour cabbage” in German. Since it kept well and contained vitamin C, sauerkraut sailed the open seas and helped prevent scurvy. Sauerkraut was introduced to America by German immigrants in Pennsylvania.

Sauerkraut is made by shredding special varieties of cabbage, adding salt, and curing for several weeks in large wooden or concrete vats. Since it is a salt-pickled product, consumers concerned about sodium intake can rinse sauerkraut to reduce the sodium and also provide a milder flavor. According to the Pickle Packers International, there are several variations of sauerkraut, including;

- Bavarian kraut—includes caraway seeds and added sugar;
- Winekraut—fermented in white wine;
- Sauerkraut salad—a ready-to-eat, somewhat sweet and mild mixture of cabbage, onions, red peppers, vinegar, and seasonings.

According to the industry, over 1 billion servings of sauerkraut are consumed each year, with one-fourth of all households buying sauerkraut. Sauerkraut is featured at various Oktoberfest festivals (the first was in Bavaria in the early 1800s) around the world. Among the more popular uses for sauerkraut is the Reuben sandwich. This is a combination of corned beef, Swiss cheese, sauerkraut, and Russian dressing on rye bread and was invented by deli owner Reuben Kulakofsky in the kitchen of Omaha's Blackstone Hotel about 60 years ago. Even the juice remaining in a container of sauerkraut can provide added value as it makes an effective and tasty meat tenderizer. To top off your meal, sauerkraut can even contribute to dessert—among the many innovative recipes is one for chocolate sauerkraut cake.

search for more variety in foods. Despite the close association of sauerkraut with deli sandwiches like the Rueben and its popularity as a condiment on hot dogs, the USDA consumer diet survey indicated that sauerkraut is largely enjoyed at home (79 percent is consumed at home). The survey indicated that just 6 percent of sauerkraut came from fast-food places, and 8 percent each from other restaurants and "miscellaneous" places (e.g., ball parks, arenas, and street vendors).

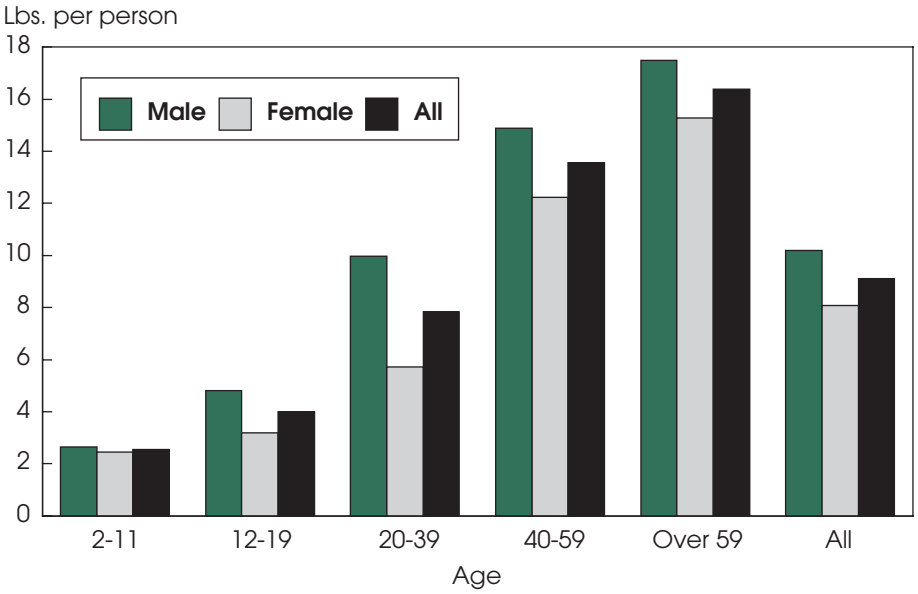
Who Eats Cabbage?

Regional breakdowns for total head cabbage consumption indicate that consumers in the South (a 16-state region defined by the Census Bureau) eat proportionately more cabbage than all other regions. This may reflect preferences along racial lines as 53 percent of non-Hispanic blacks reside in the South and blacks are the only major racial group (aside from Asians) to consume proportionately more cabbage. Whites and Hispanics each consumed less cabbage than their respective proportions of the population. As for sauerkraut, the survey indicated that three-fourths of sauerkraut was consumed in the Midwest and East, with consumers in the South and West reporting light consumption.

Whites and Hispanics consumed proportionately less fresh whole cabbage, while blacks and Asians ate a larger share. Non-Hispanic blacks, accounting for close to 13 percent of the population, consumed 33 percent of fresh whole cabbage. Whites dominated the market for coleslaw, consuming 85 percent, while other identified racial/ethnic groups consumed proportionately less than their population shares. Similarly, whites consumed 91 percent of all sauerkraut, while Hispanics and Asians consumed very little.

Sauerkraut and coleslaw appear to be favored most by consumers with the greatest financial means. Survey households identified as upper income (3.5 times the poverty level) represented 39 percent of the U.S. population but consumed 50 percent of the coleslaw and 43 percent of sauerkraut. For whole fresh cabbage, the 19 percent of consumers identified as lower income households consumed 20 percent of cabbage, while those in the upper income group consumed 36 percent. For all cabbage, middle-income households accounted for the greatest share of use (43 percent) with the lower income group consuming proportionally less.

Fresh Cabbage Consumption Rises with Age of Consumer*



*Fresh utilization for 2001 derived by ERS from 1994-96 *Continuing Survey of Food Intake by Individuals,* Agricultural Research Service, USDA.

Economic Research Service, USDA

Men consume about one-fourth more cabbage (fresh and processed) per capita than women. This may largely be explained by men's higher caloric intake, different preferences, and perhaps greater consumption of fast foods. In proportion to their population shares, both men and women over the age of 40 are strong consumers of cabbage. With the exception of coleslaw, men aged 20-39 (16 percent of the population) favor cabbage, particularly sauerkraut, accounting for 30 percent of the total. Curiously, the survey indicated that women between the ages of 20 and 39 tend to avoid cabbage of all types.

Relative to other age groups, people under 20 are very light cabbage consumers. This age group accounts for nearly 30 percent of the population, yet consumes just 10 percent of all cabbage. This may partly reflect a natural maturation of tastes and preferences, which seems plausible given strong cabbage consumption by men aged 20-39. These people were raised in the 1960s and 1970s when a wider array of foods was available, compared with the largely "old world" vegetable choices of those who grew up before 1960.

The U.S. cabbage market is a relatively mature, domestically oriented market. Demand for cabbage and cabbage products appears to have stabilized within the past decade after an extended period of contraction. The decline was likely arrested by the introduction of fresh-cut products containing cabbage, plus industry efforts to expand and encourage consumption. The success of the cabbage and sauerkraut industries may lie in expanding the range of product uses and also in the discovery and communication of product benefits. As medical and nutritional research continues to unlock the secrets to the potential health benefits of cruciferous vegetables like cabbage, consumer reaction to any new findings may ultimately hold the key to future industry growth. AO

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The Ongoing Reform of Land Tenure Policies in China

The combined force of economic transition, rapid economic growth, and increased integration into the world economy are propelling substantial changes in rural China. The changes not only expose China's farmers to competition from producers in other countries, but also provide them greater autonomy and incentives to produce crops more efficiently, drawing farm households from subsistence production into more commercialized agriculture and shifting rural resources out of agriculture into other sectors of the economy.

How farmers respond to changing economic opportunities and challenges depends critically on the choices they are able to make about the use of land and other resources. These choices depend in turn on land tenure patterns. With 9 percent of the world's arable land and 40 percent of the world's farmers, China is scarce in land relative to labor. Control over land in China (as elsewhere) reflects a complex and changing distribution of authority among national governments, local governments, and households, with potentially important implications for efficiency, equity, and environmental quality.

Land Tenure in China Today

China once had an active land market, but land tenure practices have undergone several major transformations since the early 1950s. The lack of incentives and the difficult management burdens inherent in the collective system (1958-78) ultimately gave way to reforms that restored the farm household as the main unit of production. Nevertheless, land rights continue to be shared by collectives and households.

Collective rights. Collectives maintain formal ownership of farmland in China, and the collective body allocates land use rights to member households. Initial allocations took place in villages during 1978-84 as what later became the Household Responsibility System (HRS) was evolving. To maintain the egalitarian access to land that was a hallmark of the collective system, households were generally allocated rights to land on a per capita basis (some villages also took the number of workers into consideration). Despite efforts to maintain fairness by allocating each household multiple plots of varying quality, these allocations had the potential to be very contentious.

Collectives also maintain the right to reallocate land between households periodically. Some reallocations are instigated by the *xiaozu*—groups of 30-40 households that are often the de facto owners of farmland—and only affect selected households. Under village-wide reallocations (*cunzhuang tiaozheng*), the village leadership makes the allocation decisions and most, if not all, of the land in the village is reallocated. The collective's right to reallocate land introduces tenure insecurity since farm households cannot count on being allocated rights to the same land in the future.

Household rights. Farm households' rights consist primarily of rights to produce and dispose of crops, although rights vary by type of plot. Farmers make most of the production decisions on their land, but the land must stay in agricultural production. Villages sometimes impose compulsory planting requirements on some of the land allocated to farm households. For example, most households receive *responsibility land* from which they are required to produce and deliver a fixed amount of grain to the state, although the grain delivery obligation has not been enforced in many provinces in the last few years. More recently, some villages have sought to promote cultivation of specific cash crops, and have imposed compulsory planting requirements on some plots. Some villages allow land to go fallow, but others enforce fallow taxes. Household land rights are subject to local taxes and fees (often paid in kind), which are usually based on households' land allocations.

The 1984 directive sanctioning the HRS explicitly extended to farm households the right to rent their land to other households, and most villages now allow households to exercise this right. A growing land rental market has developed, particularly in certain regions, but land rental arrangements in China tend to be very informal and short-term. Further growth in land rental transactions may be constrained by ambiguity over these rights. A 1996 survey of 780 rural households in northeast China found that 76 percent of farm households did not know if they had the right to rent their land to others.

Reallocation Practices

Since the original land allocations to households at the beginning of HRS, roughly 80 percent of villages have reallocated their land at least once. But reallocation practices vary widely. In Guizhou Province, less than 5 percent of the villages have carried out a reallocation since HRS, while in other provinces this figure is above 90 percent.

In the 1996 survey of rural households in northeast China, 4 of the 31 villages reported no village-wide land reallocations as of 1995, but 3 villages had reallocated land nearly every year since adoption of HRS. Why some provinces and local regions engage in reallocations while others do not is not fully understood and is widely debated among China scholars. There are a variety of possible economic and political explanations for these differences.

Underlying changes in household demographics are usually cited as the main motivation to reallocate village land. Marriages, births, and deaths can change the number of people in village households so the original land distributions no longer represent the egalitarian ideal. Many argue, however, that egalitarian reasons are usually not the main motivation for land reallocations.

Other reasons for land reallocations may include number of workers and availability of nonfarm employment. Many villages explicitly consider the number of workers, and sometimes the number of workers depending on agriculture, in their reallocation decisions. Villages where nonfarm employment is abundant may have established policies to pool land and allocate it to a small subset of village households to farm with labor-saving equipment. Many of these villages then allocate shares of the profits from agricultural production to village households. Households in which workers are engaged in nonfarm employment have less demand for their land, making them vulnerable to dispossession in land reallocations. In very wealthy villages where all residents earn income from nonfarm sources, farmland may be rented out to migrant workers.

Land Rights Are Distributed at Many Levels

National government	The central government establishes national land laws and directives that provide guidelines for local policymakers.
Provinces	Provincial as well as national policies affect local policies. For example, Guizhou Province promotes secure 30-year use rights for farmers, and has far less reallocation activity than other provinces.
Townships	In some areas, townships may influence village land policies, including village-wide land reallocations. A township district contains roughly 10-20 villages.
Villages	Villages in China comprise roughly 300-500 households. Village leaders usually have ultimate authority on land allocation, but often delegate some or all of this authority to the *xiaozu*.
Xiaozu	*Xiaozu* are groups of 30-40 households (remnants of production teams organized during the collective period). *Xiaozu* are often the de facto owners of the land, but generally work with village leaders on land allocation. *Xiaozu* leaders may periodically reallocate land among member households, usually to provide land for new households at marriage.
Households	Households are allocated rights to use land, usually several small plots. Specific rights on each plot may vary, but are mainly the right to farm the land for a finite period and to keep or sell the produce.
Farmers	Individual farmers do not have rights to the land, but farm the land allocated to their households.

Land management practices vary at the local level in China in part because of ambiguities in national laws and policies. National land laws state that rural land is collectively owned and that village leaders have ultimate authority over agricultural land. In some villages, however, the *xiaozu* are recognized as the de facto owners, while in other areas townships wield considerable influence over land use policy. In a recent World Bank survey, 26 percent of households reported that farmers (through their *xiaozu*) have the primary decisionmaking power concerning land reallocations, while 43 percent replied that villages had this authority, and 24 percent indicated the township was the primary decisionmaker. Instances of villages or townships reallocating land from village households also abound, with land often passed to outside investors for nonagricultural uses. Compensation to farm households in such cases is arbitrary.

Equity, Efficiency, & Environment

China's land tenure policies have both positive and negative effects. After adoption of HRS, productivity growth in agriculture and rural incomes rose dramatically, lifting hundreds of millions of rural residents out of severe poverty. Key factors in these developments include the enhanced incentives afforded to China's farmers once they had greater access to land and rights to their production.

Unlike many countries at similar stages of development, China does not have a large population of rural landless workers vulnerable to famine or other extreme economic shocks. This is in part due to land tenure policies that guarantee households access to land.

China does have large numbers of rural-urban migrants, but they are spread among several large urban centers and hundreds of smaller urban centers, and the number of rural-urban migrants is likely much smaller than it would be if land were not allocated on a per capita basis. Relatively egalitarian access to land has also ensured that nearly all rural households are at least food self-sufficient, and has been linked to levels of nutrition higher than other countries with similar income levels.

On the other hand, China's reallocation policies may have negative effects on land use efficiency. Many observers argue that tenure insecurity generated by realloca-

tion policies undermines households' incentives to invest in their land. The fragmented nature of household land holdings and the small plot sizes may also discourage investment. The negative effect on investment may be most pronounced in the case of expensive, long-term investments such as orchards, wells, and ditches. This may slow the process of specialization into labor-intensive crops for which China has a comparative advantage, since many of these crops require large investments. It may also slow the shift to higher-valued crops that are increasingly in demand by China's wealthy urban consumers.

China's land tenure practices may also adversely affect the process of specialization by making it difficult to take advantage of economies of size and scale and by discouraging movement off-farm. Farm households that develop successful cash crop operations may face obstacles to expanding these operations due to the difficulty of acquiring land. Other farm households may not rent their land to these specialized households due to village policies that discourage renting, or out of fear that renting out land heightens the risk of dispossession in the next reallocation.

Research suggests that land rental activity is constrained, but precise causes remain unclear. It may be that the risk of dispossession reduces the supply of land for rent. Alternatively, it could be that periodic land reallocations decrease overall demand for rental land. Households may also be discouraged from allocating labor off-farm for fear that land may be taken away if it appears they do not need it. When rights to land are ambiguous, households have an incentive to stay in the village and protect their rights by continuous occupation and cultivation.

Concern is also growing about the effects of China's land tenure policies on the environment. Farm households with insecure tenure have less incentive to apply conservation practices since the land is not theirs in perpetuity. This may encourage farm households to expand farm operations on environmentally sensitive land, causing soil erosion, overgrazing, and other environmental problems.

The Evolution of China's Land Tenure System

Private land markets, pre-1949. Under China's feudal system, land was held by small landowners who farmed their own land, and by landlords who rented land to tenant farmers. Land markets were supported by (often local) institutions to define boundaries, register ownership, and provide titles.

Land reform, 1950-53. China's new government implemented a national land reform movement soon after coming to power in 1949. Landholdings were redistributed to landless and land-short farm households. Deeds held by landlords were destroyed, and new deeds were issued to the new owners along with full rights to rent and sell their land.

Initial collectivization, 1953-57. Shortly after land reform, Party cadres began encouraging farmers to set up agricultural producer cooperatives—small groups of farm households that pooled some or all of their land and farmed the larger plots collectively. Income was distributed according to the land each household contributed to collective production. After forming cooperatives, the cooperatives were pooled into larger collectives where income was distributed according to the amount of land and labor contributed. By 1957, over 90 percent of farm households had organized into roughly 700,000 large agricultural collectives.

Full collectivization, 1958-78. Under the Great Leap Forward, agricultural collectives were ultimately merged into 24,000 communes encompassing entire townships. Households turned over nearly all of their productive assets, and teams of workers carried out nearly all production (households often maintained small private plots during all or part of the collective period). Income was distributed according to labor contribution and need through a complex system of "workpoints." This system existed through the end of the Cultural Revolution (1966-76), except for a period of partial liberalization in the early 1960s.

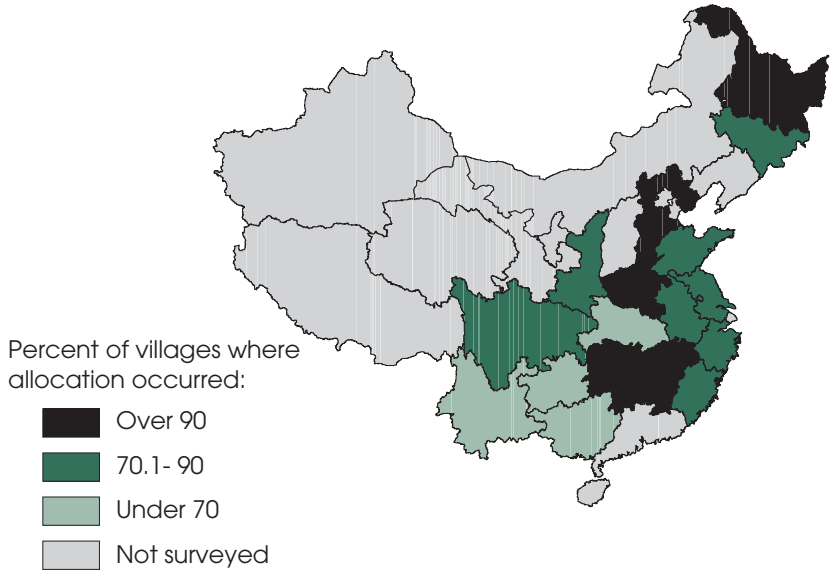
Decollectivization, 1978-84. Under new leadership, China's government encouraged efforts to alleviate poverty and induce economic growth. Many rural areas abandoned collective production entirely and contracted with households to deliver fixed amounts of grain in exchange for access to land. Households were allowed to keep the remaining production for their own consumption or to sell on the market.

Household Responsibility System, 1984-present. In 1984, the expanding system of contracting with households directly was officially approved by China's national government. The law stipulated that land was still owned by the collective, but did not clarify whether the collective was the village or the *xiaozu*. The law also stipulated that households should receive 15-year contracts to their land, and have the right to rent land and hire labor. Collectives maintained the right to reallocate land among households. Subsequent clarifications and directives have encouraged extending the contract length from 15 to 30 years, providing households with written contracts, and limiting the collective's right to reallocate land.

Toward a Land Market in China

Scholars and observers both inside and outside China advocate policies to increase tenure security. Some call for establishment of a land market based on private ownership of land. Others argue that this may exacerbate existing problems or generate new ones, noting that without a system of title registration, enforcement, and credit, a land market based on private property rights may be unworkable. It might also result in a concentration of land ownership and the rise of landless households, an outcome that is politically unacceptable to China's leaders. Market-based outcomes, however, can be achieved through a system of clear, enforceable, and tradable rights, without establishing full private ownership.

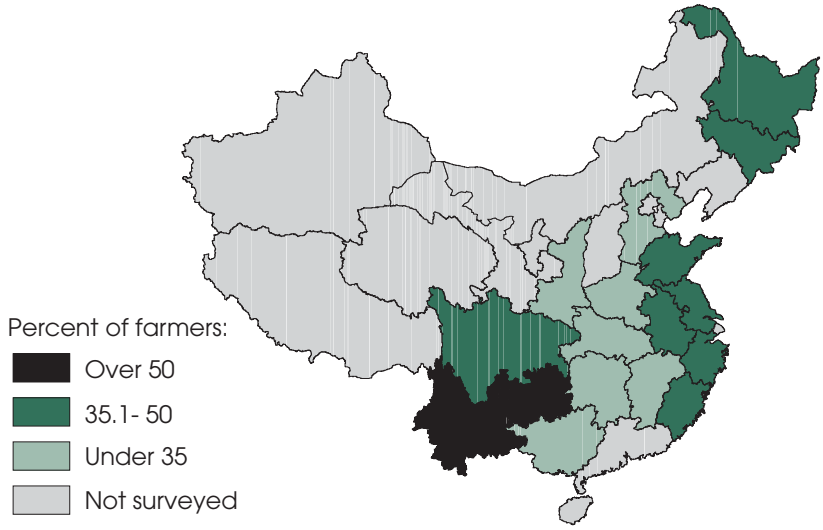
The Incidence of Land Reallocation Varies Among Provinces



Percent of surveyed villages having at least one land reallocation since inception of Household Responsibility System by province, 2001.
Source: World Bank, 2002.

Economic Research Service, USDA

Implementation of 30-Year Land-Use Contracts Varies by Province



Percent of surveyed farmers reporting 30-year signed contract by province, 2001.
Source: World Bank, 2002.

Economic Research Service, USDA

The current policy trend in China is to establish 30-year use rights to land and written contracts guaranteeing these rights. China's most recent national directive concerning land use (1998) encourages the extension of 30-year land use rights to farm households backed by a written contract. A World Bank survey found that 55 percent of farmers have signed a 30-year contract, but this varied by locality. Furthermore, many of these contracts do not explicitly rule out land reallocations during the 30-year period, and many contain language that specifically allows reallocation. Indeed, of the farmers who were aware of the national policy encouraging 30-year use rights and written contracts, only 12 percent felt that these policies will definitely prevent reallocations during the 30-year term, and 46 percent felt that reallocations will definitely continue despite the new policy.

These findings point to the critical issue of enforcement. No matter which policies are established to increase tenure security, they will fall short of their goal so long as fair and accessible institutions are not also established to resolve conflicts and settle disputes. Funding such a system through higher levels of government would help ensure that local governments do not use their control over finances to sway decisions. But such a system can be expensive, and China's government faces severe fiscal constraints already.

There are alternative ways to build a land market in China other than by establishing full private ownership rights in land. Clarifying and enforcing existing land rights, and making these rights tradable, has the potential to improve farm households' incentives for investment and specialization while maintaining broader public interests in equity and the environment. Fundamentally, a land market is simply a set of clear and enforceable property rights—including partial rights such as existing household rights to use land and dispose of crops—and a mechanism to trade these rights. China currently has a set of partial land rights that appears complex and ambiguous when viewed from the national level, since local areas engage in such a wide variety of land tenure practices. But the rights in particular localities may be very well established. If existing rights can be codified and institutions set up to enforce and trade them, right-holders will be able to trade them according to market principles—even in the absence of full private ownership at the household level. AO

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Peace Corps photo by Brandon Lundy

Trade Among Unequal Partners

Changing EU Trade Arrangements With Developing Countries

The European Union (EU) has been a major player in the General Agreement on Tariffs and Trade (GATT) since its inception in 1947 and in World Trade Organization (WTO) agreements since 1995, when the WTO began administering international trading rules. The foremost WTO principle is most-favored-nation (MFN) treatment, requiring WTO members to accord all members the best trading conditions provided to any particular country. Implicitly, the MFN principle precludes special trading arrangements.

WTO rules provide exceptions to the MFN principle, however. Far more than other WTO members, the EU has used these exceptions to justify preferential trading arrangements. The EU's many preferential arrangements form a mosaic of tariffs, quotas, and other restrictions on EU agricultural imports (*AO* December 2001).

Some EU preferential trading arrangements with developing countries were challenged under GATT procedures, and again more recently in the WTO, as discriminatory and not in compliance with international trade rules. The challenges focused on EU import regimes that favored EU distributors over other distributors and former colonies over other countries.

Since 1996, EU actions and proposals to make its trading arrangements compatible with WTO rules have centered on renegotiation of arrangements with some developing countries to establish free trade areas. The WTO compatibility of EU proposals and of numerous elements of current EU preferential arrangements remains controversial and untested in the WTO, however.

The proposed free trade areas could have important implications for global trade. Some developing countries could face difficult new trade competition and economic challenges, without clear new advantages. The EU, on the other hand, will gain strong advantages for its agricultural and other exports to some developing countries at the expense of exports from the U.S. and other countries.

WTO Exceptions to the MFN Requirement

The GATT and WTO agreements have recognized a need to improve developing countries' access to world markets. Since 1979, the "**Enabling Clause**" has provided a permanent exception from MFN obligations so that developed countries "may accord differential and more favorable treatment to developing countries" through a "system of generalized, nonreciprocal, and nondiscriminatory preferences" (usually referred to as a Generalized System of Preferences, or GSP).

Under GSP provisions, developed countries do not expect reciprocity for commitments made by them in trade negotiations to reduce or remove tariffs and other barriers to the trade of developing countries. Developing countries are not required to make concessions that are inconsistent with their development, financial, and trade needs. These provisions for nonreciprocal concessions acknowledge that developing countries cannot necessarily compete economically with developed countries.

The Enabling Clause also provides that countries identified as Least Developed Countries (LDC) by the United Nations may be granted even more favorable treatment. Additional concessions for the LDCs allow for differentiation of trading preferences based on economic capabilities and needs.

WTO rules provide another, very different, exception to MFN obligations. WTO members may establish free trade areas (FTAs) within which the duties and other restrictive regulations of commerce (except where expressly permitted within WTO rules) are eliminated on substantially all trade between the member countries. Unlike nonreciprocal arrangements, FTAs expose all partners to economic competition with all other partners at zero duties on substantially all traded goods.

In addition to the FTA and GSP exceptions, special waivers of MFN or other WTO obligations can be granted with approval of three-fourths of WTO members.

EU Trade Arrangements & WTO Compatibility

The EU (previously as the European Community) has provided a GSP to most developing countries since 1971. Since the 1970s, the EU also has provided special nonreciprocal tariff reductions for former African, Caribbean, and Pacific (ACP) colonies and for Mediterranean countries. For agricultural products, many of these concessions have been limited by quotas. Historically, most EU preferential arrangements with developing countries have been nonreciprocal, providing no preferences to EU exports. The EU's preferential trade agreements have provided relatively greater advantages to some developing countries, effectively disadvantaging others. Least favored are the GSP countries that are neither LDCs, ACP, or Mediterranean countries.

Challenges to EU preferential trading arrangements have arisen from unresolved ambiguities in WTO provisions. Most publicized has been a challenge to the EU banana import regime. The EU's banana regime clearly was GATT/WTO-incompatible long before resolution of the case in 2001. Several countries had successfully challenged the banana quotas in 1992, but the EU prevented adoption of the panel rulings by blocking the consensus required under GATT dispute resolution rules. The U.S. filed a case against the regime in 1997 under the new WTO dispute settlement procedures. The WTO panel found the regime to be discriminatory. Because of the binding nature of WTO dispute settlement and the procedures providing for automatic adoption of WTO findings, no longer requiring consensus, the EU could not ignore the WTO findings.

Binding WTO dispute resolution procedures have greatly improved prospects for less-favored developing countries to successfully challenge EU trading arrangements. These countries presented considerable resistance in 2001 to a waiver for newly adopted ACP arrangements, which included the revised EU banana quotas. Since 1994, Brazil, India, Venezuela, and Thailand have filed challenges to the EU's GSP.

Initial Terms

ACP African, Caribbean, and Pacific: former colonies of Britain and France.

CAP Common Agricultural Policy: the policy that governs agriculture within the European Union.

EBA Everything But Arms: a policy providing for duty- and quota-free imports from the least developed countries.

EU European Union: the economic and free trade grouping of most western European countries, now enlarging to include some eastern European and Mediterranean countries.

FTA Free Trade Area: as provided for by Article XXIV of the GATT.

GATT General Agreement on Tariffs and Trade: the original rules governing international trade, augmented by various WTO agreements since 1994.

GSP Generalized System of Preferences: a GATT exception to MFN requirements allowing developed countries to provide preferential arrangements for developing countries.

LDC Least Developed Countries: the poorest countries as designated by the United Nations.

MFN Most-favored-nation treatment: the fundamental principle of the WTO requiring all countries to provide the same trading conditions to all WTO members.

WTO World Trade Organization: since 1994, the organization supervising the GATT and WTO agreements governing international trade.

Generalized System of Preferences. The EU's GSP provides reduced tariffs without quotas on selected products to most developing countries. However, only small or no tariff reductions are granted on most agricultural products supported by the EU's Common Agricultural Policy (CAP). Additional tariff reductions are granted to countries observing environmental or labor standards and for participation in drug control programs. Since March 2001, under its ***"Everything But Arms"*** (EBA) policy, the EU has provided duty- and quota-free access to its markets for the agricultural products of 42 LDCs. Quotas will manage transition to duty-free and quota-free imports of sugar, bananas, and rice until 2008. The EU's current GSP program expires in 2004, and will be reconsidered at that time.

Some countries have been "graduated"—i.e., GSP preferences have been withdrawn because a country became relatively wealthy, or became a dominant supplier of EU imports of a particular commodity. Nine countries, including Brazil, Argentina, Malaysia, and Thailand, have lost preferences on specific agricultural commodities. South Korea and Taiwan have lost all preferences.

The EU has not acknowledged any WTO incompatibilities regarding its GSP, even though faced with challenges. The challenges focus on the graduation (withdrawal of preferences) for some countries, and on tariff concessions related to environmental, labor, and drug programs. Challengers see these provisions as inconsistent with the Enabling Clause's provision for generalized and nondiscriminatory preferences for all developing countries. Provisions of the EBA policy have not been controversial and have not been challenged in the WTO.

Nonreciprocal ACP and Mediterranean arrangements. In addition to the GSP, the EU has granted special nonreciprocal trade preferences to 76 former ACP colonies and to Mediterranean countries since the

1970s. Unlike the GSP, which is quota-free but generally with somewhat higher tariffs, tariff-rate quotas limit some of the most valuable ACP and Mediterranean tariff preferences. Particularly important are ACP protocols for EU imports of 52,000 tons of beef from 6 ACP countries and 1.2 million tons of sugar from 13 other ACP countries. The Mediterranean countries have had valuable import quotas for fruits and vegetables.

The EU banana import regime favored EU banana distributors over distributors of other countries, and former ACP colonies over other developing countries. The WTO dispute panel found the banana import quotas for former colonies to be discriminatory and inconsistent with WTO rules. Following the WTO panel finding, the EU requested a waiver and received approval by the necessary three-fourths of WTO members to operate the ACP arrangements, including a revised banana regime, for an interim period while implementing a tariff-only system for banana imports and renegotiating EU trading arrangements with ACP countries.

Of WTO disputes that involve preferential trading arrangements, only the EU banana case has so far been resolved through WTO dispute resolution. The findings in that case are numerous and complex, limiting clear application to other situations. Consequently, many issues relating to WTO requirements for preferential trading arrangements remain unresolved. Positions taken by the EU and others relating to preferential arrangements await clarification through WTO dispute panels or multilateral negotiations. At this point, none of the EU's current FTA agreements, or those of other countries, have been verified by WTO review processes as fully consistent with WTO requirements.

Without clarity on important issues relating to preferential trade arrangements, the EU is proceeding based on its own view of WTO requirements. EU positions are implicit in its proposals, background papers, and the provisions of EU trading agreements already negotiated. In nonreciprocal arrangements, the EU appears to believe that preferences to a selected group of developing countries require a waiver of MFN obligations.

WTO rules also require that administration of quantitative restrictions be nondiscriminatory—"no prohibition or restriction shall be applied by any contracting party on the importation of any product of the territory of any other contracting party…unless the importation of the like product of all third countries…is similarly prohibited or restricted." EU proposals imply that the provision of tariff-rate quotas for a selected group of developing countries within nonreciprocal arrangements requires a waiver of that WTO requirement.

The overarching problem for the EU is that current WTO rules provide limited unambiguous scope for differentiation of trading preferences among developing countries.

Free trade area agreements. The EU itself is an FTA, and the EU has FTA agreements with Mexico, South Africa, and various non-EU European and Mediterranean countries. FTAs have been controversial. In review of more than 120 FTA agreements, GATT and WTO working parties on regional trade agreements have almost never agreed unanimously that GATT or WTO criteria were fully met. Lack of binding dispute resolution before 1994 seriously limited effective challenges, however.

EU FTA agreements include tariff-rate quotas for sensitive agricultural products that compete with EU products, even though WTO provisions for FTAs call for free trade and do not provide for quota restrictions. Whether tariff-rate quotas within FTAs must conform to WTO requirements for nondiscriminatory administration of quantitative restrictions is a key unresolved issue. Current EU FTA agreements and EU proposals imply that the EU considers that tariff-rate quotas need not be nondiscriminatory so long as "substantially all the trade" is duty- and quota-free. The EU strategy is that current tariff-rate quotas for sensitive agricultural products in nonreciprocal relationships can be maintained without waivers within FTA agreements. This proposition has not been tested within the WTO, however.

While the WTO requires that "substantially all the trade" within an FTA be liberalized, no precise interpretation of that phrase has yet been established. The EU has interpreted the requirement to mean substantially all historical trade. The problem with relying on historical trade is that it effectively allows continuation of significant historical trade barriers. Historical trade has excluded the EU's most sensitive agricultural products. EU FTA agreements protect sensitive agricultural products by excluding them from liberalization or by restricting imports through tariff-rate quotas. The EU-Mexico agreement, for example, provides for total liberalization of 95 percent of historical EU imports. For agriculture, however, only 62 percent of historical trade will be fully liberalized, and historical trade already excluded sensitive products. In the EU agreements with Mexico and South Africa, those countries also excluded some of their imports from liberalization.

Complying with WTO Rules

The overarching problem for the EU is that current WTO rules provide limited unambiguous scope for differentiation of trading preferences among developing countries. For example, should small or poor countries like St. Kitts or Senegal, which are not LDCs, be provided better trading preferences than larger and more economically powerful developing countries such as Brazil or China?

The WTO framework clearly provides for only four classes of differentiation between trading partners: 1) MFN treatment, 2) bilateral reciprocal free trade, 3) nonreciprocal and nondiscriminatory preferences for developing countries, and 4) special nonreciprocal and nondiscriminatory preferences for the LDCs. Further differentiation among non-LDC developing countries remains controversial. To maintain historical trade preferences for some developing countries by opting for reciprocal FTA arrangements also provides large advantages for EU exports, especially in agriculture.

EU arrangements effectively have differentiated among non-LDC developing

countries. GSP "graduation" (withdrawal of preferences) is based upon economic criteria related to trade performance or economic development. ACP preferences, however, are not based on economic criteria, but reflect the legacy of European colonial relationships. Nonreciprocal Mediterranean preferences also have had no economic basis, but reflect longstanding trade relationships and important political associations.

Having accepted that its trading arrangements with former colonies do not comply with WTO requirements, the EU has committed to negotiating FTA agreements with ACP and Mediterranean countries on the assumption that current ACP quotas are compatible with WTO requirements for FTAs. WTO provisions, however, do not necessarily support such an assumption. EU FTA agreements may be a fertile field for WTO contests.

Nonreciprocal Mediterranean arrangements shared most of the problems of ACP arrangements. Appropriate waivers could provide for current ACP or other arrangements, but the EU apparently assumes that politics would not allow for such waivers beyond the interim period to 2008 provided by the current waiver.

For some developing countries, solutions already are in place. For ACP countries that also are LDCs, the EBA policy provides the best preferences available and those preferences are uncontested. Solutions for the Mediterranean countries are also largely in place. Since 1997, FTA agreements with the Palestinian Liberation Organization, Tunisia, Israel, Morocco, Egypt, and Jordan have been implemented or negotiated to replace earlier nonreciprocal arrangements. Additional FTAs are envisioned to replace nonreciprocal arrangements with the remaining Mediterranean countries.

The EU proposes to negotiate FTA agreements by 2008 with several groupings of ACP countries. In the EU plan, regional integration would be enhanced, while the broader unity of ACP countries would be maintained. Agreements would provide development assistance to foster integration into the global economy. The agreements would include tariff-rate quotas equivalent to current ACP provisions for sugar and beef.

Current EU provisions for the GSP expire in 2004. Proposals for a revised GSP have focused on bolstering preferences to provide a viable alternative for ACP countries that are unable or unwilling to enter into FTAs. Extension to all developing countries of preferences equivalent to current ACP preferences would reduce the value of ACP preferences. Some advocates of ACP countries would like to see WTO rules revised to allow for greater differentiation of preferences among developing countries. For LDC arrangements, no changes have been proposed.

Implications of EU's Proposed Free Trade Agreements

The implications of proposed FTA agreements depend on the EU policy context in which they would operate. To protect EU agriculture, the Common Agricultural Policy has carefully managed EU imports of agricultural products that compete domestically with those of EU producers. The CAP has ensured that import quantities are consistent with internal price objectives by applying tariffs high enough to raise the price of imports to CAP levels, by establishing minimum import price requirements, or by restricting import quantities to tariff-rate quota amounts.

The EU really cannot lose with the proposed FTA agreements. It is likely simply to continue current preferences, including quotas, in arrangements that it hopes will be WTO-compatible.

The EU is largely an open market for nonagricultural products, with an average MFN tariff of only 4.2 percent in 1999. However, for agricultural products, MFN tariffs average 30 percent and exceed 50 percent for grains, sugar, and frozen meats, and 87 percent for dairy products. The potential application of very high MFN tariffs enforces minimum import price requirements and ensures that imports do not exceed tariff-rate quota amounts, despite WTO elimination, in principle, of all nontariff import restrictions. Most of the EU's agricultural tariff-rate quotas are provisions of preferential trading arrangements.

Since EU agricultural imports remain restricted by the CAP to amounts consistent with CAP internal price objectives, EU preferential trading agreements do not create trade. Principally, they determine the sources of imports. Throughout eight rounds of multilateral trade negotiations, the EU has maintained high MFN agricultural tariffs and retained effective control of its agricultural imports. The unconditional opening of EU agricultural markets to the LDCs under the EBA policy was possible because the limited export potential of those countries posed a limited threat to EU interests.

Current EU FTAs exclude sensitive agricultural products from liberalization. If proposed FTAs with ACP countries conform to historical practice, they are unlikely to expand EU agricultural imports. Without increased EU agricultural imports, the principal outcome of the revised agreements for developing countries may be some reallocation of historical EU imports among developing country partners.

The EU really cannot lose with the proposed FTA agreements. It is likely simply to continue current preferences, including quotas, in arrangements that it hopes will be WTO-compatible. While giving up little, the EU would gain preferred access to the markets of developing-country FTA partners. The U.S. and other exporters would lose share in these markets as the EU gains advantage.

The advantage for the EU could be quite strong for agricultural products. Developing countries maintain relatively high MFN agricultural tariffs, with average tariffs of 71 to 113 percent in Africa, the Caribbean, and South Asia and 39 percent in South America. MFN tariffs on cereals in the important North African markets average 84 percent. EU products priced well above world prices could be competitive as exports to FTA partners so long as the MFN tariff is as large as the gap between EU and world prices. The EU potentially would be able to export to FTA partners without subsidies, effective-

ly circumventing WTO restrictions on subsidized exports.

Even if the FTA agreements exclude some agricultural products from liberalization, important advantages for the EU could be obtained within quotas. Current FTAs include preferences for 800,000 tons of EU wheat annually to Mediterranean countries.

For developing countries, benefits from FTA agreements with the EU are uncertain. The strong advantage of LDCs in EU markets would be unaffected. ACP and Mediterranean countries entering into FTA agreements would largely maintain current preferences in EU markets, although proposed arrangements also would liberalize trade among regional neighbors.

Current proposals would diminish preferences only for non-LDC ACP countries that do not negotiate FTA agreements. ACP countries probably have had the best access to EU markets that is politically possible. They have had duty- and quota-free access to EU markets for all industrial goods and 80 percent of agricultural products, and they have been exempt from disciplines on textiles and clothing. Including duty-free agricultural imports within quotas, 99 percent of EU imports from non-LDC ACP countries enter duty-free. Of course, these imports do not include sensitive CAP products. Retention of current quotas for sugar and beef is key for ACP countries.

Loss of benefits by any ACP country would benefit all other countries, particularly those that are neither LDCs nor ACP countries. Those countries would be better off in the sense that they would be less disadvantaged. Moreover, successful challenges to the GSP could also benefit those countries that have graduated.

Proponents of reciprocal FTAs argue that economic integration will create trade, attract foreign investment, and lead to greater efficiency and improved competitiveness in developing countries. By expanding the effective home market, regional economic integration would expand the range of viable economic activities, allowing for diversification of production and exports. They also argue that trade and other policy reforms would be locked in, leading to more stable and effective governance. A more stable economic and trade environment would stimulate higher levels of investment. FTAs also would benefit consumers by increasing real incomes through lowering import prices. Developmental assistance, which could be part of the FTA arrangement, would increase scientific and technical capacity and enhance infrastructures.

However, many developing countries are concerned about competition with the EU. Subsidized EU agricultural exports are particularly worrisome. Most developing countries are protected by agricultural and other tariffs that are much higher than those of the EU. Reduced tariff revenues could force drastic restructuring of government finance, and many fear worsening balance-of-payments problems. The most feared result of free trade would be partial deindustrialization and increased unemployment if imports from the EU and elsewhere displace domestic production.

EU proposals are for lengthy transition periods of up to 12 years, and transition would be asymmetrical, with the EU eliminating tariffs more quickly than developing countries. Liberalization of regional trade also would be more rapid than liberalization of trade with the EU, allowing competitiveness to be developed first through competition with other developing countries.

The impetus for revision of EU trading arrangements is WTO compatibility, but the options are limited. The conflict actually is among developing countries trying to obtain or maintain relative advantages over one another in access to EU markets. Reciprocal arrangements will not provide new advantages to ACP and Mediterranean countries, but rather maintain historical ones. The dangers of reciprocal trade agreements are central to the broader debate concerning the economic path of developing countries in the context of globalization. Developing countries have assumed a more prominent role in multilateral trade activities since the Uruguay Round of trade negotiations, and arrangements affecting developing countries are likely to attract greater attention in future negotiations. For the EU, proposed reciprocal FTA agreements will provide significant new advantages for EU agricultural exports. AO

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Further Reading

USDA's Economic Research Service

"EU Preferential Trading Agreements: Heightened Competition for U.S.," *Agricultural Outlook*. December 2001. www.ers.usda.gov/publications/AgOutlook/dec2001/

European Union briefing room
www.ers.usda.gov/briefing/EuropeanUnion/

WTO briefing room
www.ers.usda.gov/briefing/WTO/

Commission of the European Union

Green Paper on relations between the European Union and the ACP countries on the eve of the 21st century—Challenges and options for a new partnership. Brussels: European Commission. 1996. www.europa.eu.int/comm/development/publicat/l-vert/lv_en.htm

Consequences for the ACP Countries of Applying the Generalized System of Preferences (GSP). Joint analysis by EU and ACP experts for Negotiating Group 3. Brussels. April 1999.

World Bank

Global Economic Prospects and the Developing Countries. December 2001. www.worldbank.org/prospects/gep2001/

Photo courtesy of Syngenta Seeds, Inc.

Genetically Engineered Crops

U.S. Adoption & Impacts

Since the introduction of genetically engineered (GE) crops in 1996, U.S. farmers have rapidly adopted most of them, notwithstanding conflicting claims about economic and environmental impacts and consumer acceptance. Soybeans and cotton with herbicide-tolerant traits have been the most widely and rapidly adopted GE crops in the U.S., followed by insect-resistant cotton and corn.

Analyses by USDA's Economic Research Service (ERS) and others indicate economic benefits to many farmers adopting first-generation GE crops. Not all benefits are reflected in standard measures of net returns. (See following article.)

Extent of GE Crop Adoption

Herbicide-tolerant (HT) crops, developed to survive application of specific herbicides that previously would have destroyed the crop along with the targeted weeds, provide farmers with a broader variety of options for effective weed control. Based on USDA survey data, **HT soybeans** expanded from 17 percent of U.S. soybean acreage in 1997, to 68 percent in 2001 and 75 percent in 2002. Plantings of **HT cotton** expanded from 10 percent of U.S. acreage in 1997 to 56 percent in 2001 and 58 percent in 2002. The adoption of **HT corn**, however, has been much slower, barely exceeding 10 percent of U.S. corn acreage in 2002.

Insect-resistant crops containing the gene from the soil bacterium Bt (*Bacillus thuringiensis*) have also been available for corn and cotton since 1996. These bacteria produce a protein that is toxic to certain lepidopteran insects (insects that go through a caterpillar stage), protecting the plant over its entire life.

Plantings of **Bt corn** grew from 8 percent of U.S. corn acreage in 1997 to 26 percent in 1999, then fell to 19 percent in 2000 and 2001, before climbing back to 24 percent in 2002. Plantings of **Bt cotton** expanded more rapidly, from 15 percent of U.S. cotton acreage in 1997 to 37 percent in 2001, but adoption appears to be leveling off, as U.S. farmers planted 35 percent in 2002. Use of Bt corn will likely continue to fluctuate over time, based on expected infestation levels of European Corn Borer (ECB). Similarly, adoption of Bt cotton is based on expected infestation of Bt target pests. Adoption appears to have reached the low-growth phase, as adoption has already occurred on acreage where Bt protection is most needed. Insects have not posed major problems for soybeans, so insect-resistant varieties have not been developed.

Some farmers have adopted "stacked" varieties of cotton and corn that have both HT and Bt traits. Stacked cotton reached 24 percent of cotton plantings in 2001, dropping slightly to 22 percent in 2002. Plantings of stacked corn are much lower, making up only 2 percent of corn acres in 2002.

Total adoption of GE cotton, taking into account the acreage with either or both HT and Bt traits, reached 71 percent in 2002, slightly lower than that for soybeans at 75 percent. In contrast, adoption of GE corn in total was 33 percent.

Factors in GE Crop Adoption

Adoption of HT soybeans has occurred uniformly across all farm sizes. This might be expected, since GE crop technologies require changes only in variable inputs (such as seeds), which are completely divisible (unlike machinery, they may be purchased as needed).

What Is Genetic Engineering?

Genetic engineering is, very broadly, a technique used to alter or move genetic material (genes) of living cells to create, improve, or modify plants, animals, and microorganisms. Narrower definitions are used by agencies that regulate genetically engineered organisms. In the U.S., under guidelines issued by USDA's Animal and Plant Health Inspection Service, genetic engineering is defined as "the genetic modification of organisms by recombinant DNA techniques." Definitions used in Europe are somewhat broader.

Using conventional techniques, such as selective breeding, scientists have been working to improve plants and animals for human benefit for hundreds of years. Genetic engineering techniques now enable scientists to move genes (and therefore desirable traits) in ways not possible before, and with greater ease and precision.

However, adoption of HT and Bt corn has occurred more often on larger farms. For HT corn, this is attributed to its low overall adoption rate, which implies that adopters were largely innovators and other early adopters. Adoption is more responsive to farm size at the innovator stage and this effect generally diminishes as diffusion increases. In the case of Bt corn, larger farms may be adopting more frequently because Bt corn targets a pest problem that is generally most severe in areas where operations growing corn are largest, such as the western Corn Belt and Great Plains.

GE crop adoption is positively and significantly related to operator education, experience, or both. More educated or experienced operators are more likely to understand that the greatest economic benefits of new technologies generally accrue to early adopters. Use of marketing or production contracts is positively associated with GE crop adoption, possibly reflecting the greater importance placed on risk management by adopting farms. Contracting ensures the adopter a market for the GE crop, reducing price and any market access risk.

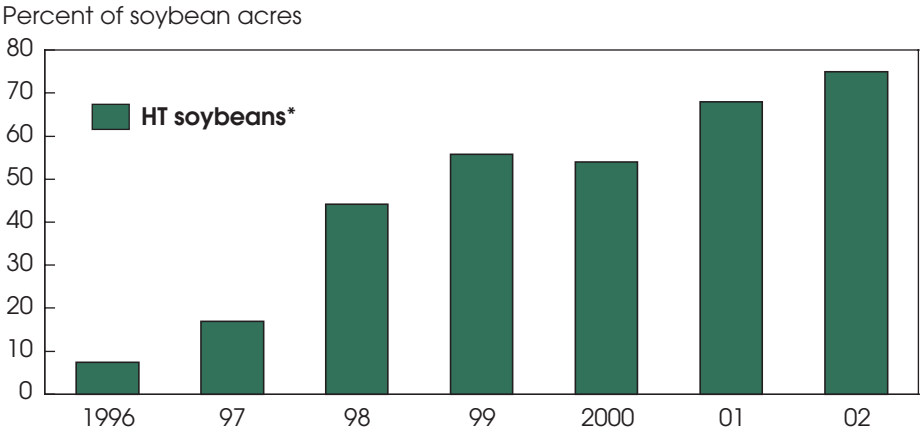
The Impacts of Adoption

The impacts of GE crop adoption on U.S. farmers vary by crop and technology. GE crops potentially benefit U.S. farmers through yield gains over conventional varieties or through savings in insecticide/herbicide costs. In addition, HT soybeans and cotton are relatively simple to use, increase flexibility in timing herbicide applications, and fit in well with conservation tillage and other production systems. While these latter benefits have an economic value in terms of saving farmers' own labor and management time, this value is difficult to measure and has not yet been incorporated into impact estimates.

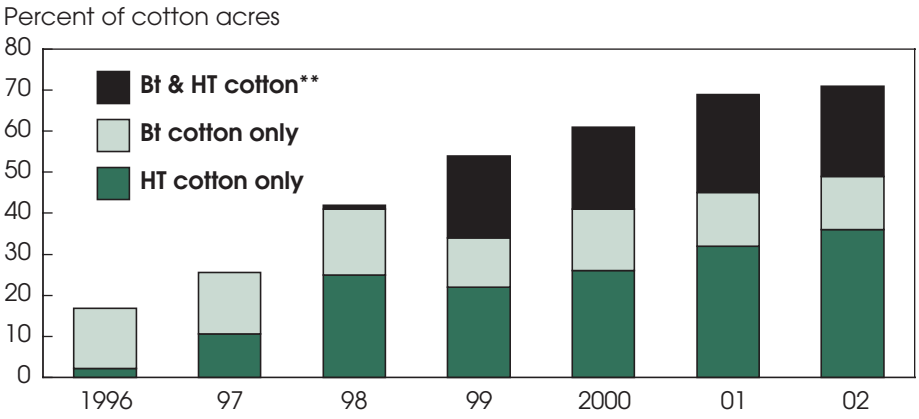
Various studies have examined the impacts of GE crop adoption. ERS analyses for 1997-98, based on data from the Agricultural Resource Management Survey (ARMS), are highlighted below.

Planting HT cotton and corn increased producer net returns. ERS analyses found yields higher, pesticide use lower, and net returns higher with HT cotton and

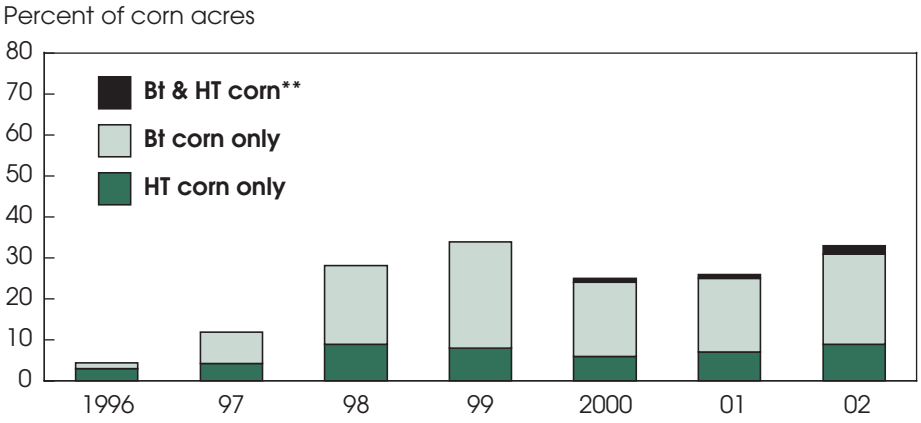
Adoption of Gentically Engineered Soybeans Has Reached 75 Percent. . .



. . .and GE Cotton Adoption Exceeds 70 Percent. . .



. . .while GE Corn Adoption Stands at 34 Percent



Planted acreage.
HT=herbicide-tolerant. Bt denotes insect-resistant crops containing the gene from a soil bacterium, *Bacillus thuringiensis.*
*Insect-resistant varieties have not been developed for soybeans, since insects have not posed a major problem for that crop.
**Estimated for 1998 and 1999.

Economic Research Service, USDA

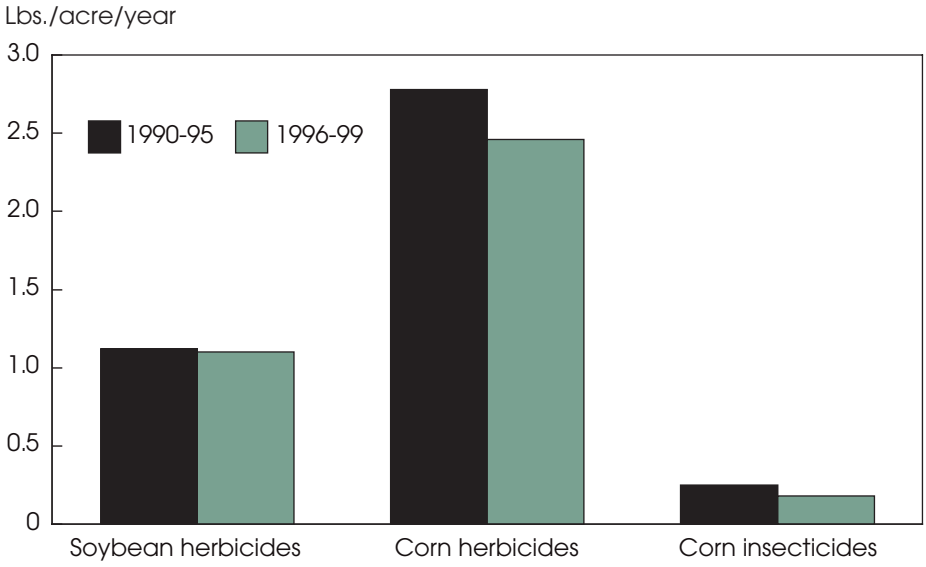
corn, compared with conventional varieties. Despite the positive impact on net returns, production and marketing factors may be contributing to the stagnant growth in adoption of HT corn. The limited acreage on which HT corn has been used is likely the acreage with the greatest comparative advantage for this technology. Limited adoption of HT corn compared with HT soybeans and cotton may be due in part to constraints imposed on corn-soybean rotations (such as "volunteer" corn growing in soybean fields because it tolerates the applied herbicide). Also, some HT corn varieties so far have limited approval and consumer acceptance outside the U.S., restricting their export market potential.

Adoption of Bt cotton and corn increases returns when pest pressures are high. Adoption of Bt cotton had a positive impact on producer net returns in 1997, but the impact was negative for Bt corn in 1998. This suggests that Bt corn may have been planted on some acreage where the value of protection against the ECB was lower than the premium paid for the Bt seed.

Pest infestations differ across the country (for example, ECB infestations are more frequent and severe in the western Corn Belt), and the economic benefits of Bt corn are greatest where target pest pressures are most severe. The decision to use Bt corn is complicated, because damage caused by the ECB varies from year to year and because the decision must be made before observing the ECB pest pressure. Thus, some farmers may have overestimated infestation levels, yield losses, and corn prices, resulting in "overadoption." Also, some producers plant Bt corn because it reduces the risk of significant losses due to pest damage, a factor not explicitly included in ex-post net returns calculations.

HT soybeans did not significantly affect farmers' net farm returns in 1997 or 1998. The crop has been profitable for some farms, depending on the types of weed problems on the farm. But for other farms, factors such as simplicity and flexibility may be driving adoption—factors that allow the use of one product instead of several herbicides to control a wide range of both broadleaf and grass weeds, making harvest "easier and faster." Such benefits are not reflected in standard measures of net returns to farming.

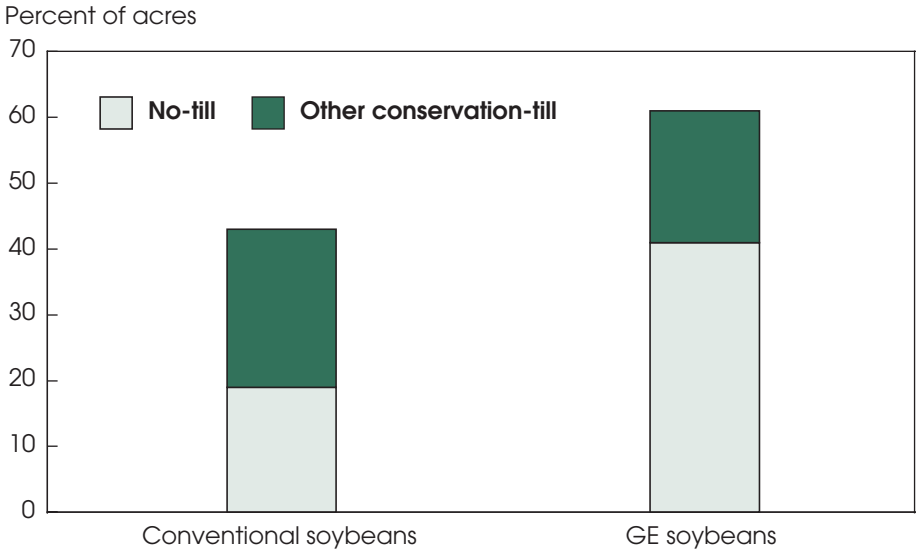
Pesticide Use on Corn Has Dropped Since Advent of GE Varieties in 1996



Insect-resistant varieties have not been developed for soybeans, since insects have not posed a major problem for that crop.
Source: USDA's Agricultural Resource Management Survey (ARMS).

Economic Research Service, USDA

Conservation Tillage Use Is Higher on Acreage in GE Soybeans Than in Conventional Varieties



Source: USDA's 1997 Agricultural Resource Management Survey (ARMS).

Economic Research Service, USDA

Pesticide use has changed and declined, benefiting the environment. Pesticide use on corn and soybeans has declined since the introduction of GE corn and soybeans in 1996. Planting Bt varieties

ERS Study on Adoption of GE Crops

Issues related to the adoption of GE crops—including farm impacts, consumer acceptance, environmental safety, and others—are among the leading concerns affecting U.S. agriculture. Because of the controversy surrounding these issues and the continual introduction of new technologies, a need exists for objective measurement and analysis of all social welfare implications of GE crops, including farm-level impacts.

USDA's Economic Research Service (ERS) has studied GE crops and their adoption by farmers since 1998. The farm-level component of this research program used econometric methods and data obtained from surveys conducted by USDA to address the following three questions.

- What is the extent of adoption of GE crops and their diffusion path?
- What factors have affected the adoption of GE crops and how?
- And finally, what are the farm-level impacts of the adoption of GE crops?

The GE crops considered here include those with herbicide-tolerant and insect-resistant traits—the principal GE crops available to and adopted by U.S. farmers. This article summarizes the findings of the recent ERS report ***Adoption of Bioengineered Crops***, AER 810, May 2002 (www.ers.usda.gov/publications/aer810/).

has led to reductions in insecticides previously used to treat the pests targeted by Bt. However, use of conventional insecticides targeting other insects has not been affected. Adoption of herbicide-tolerant crops involves substitution of a particular herbicide (such as glyphosate) for others, changing the mix of herbicides used in the cropping system.

Field tests and enterprise studies have analyzed the agronomic, environmental, and economic effects of adopting GE crops, including actual changes in pesticide use associated with using GE crops. Many of these studies have shown that insecticide use declines with the adoption of Bt varieties and that herbicide use is reduced with herbicide-tolerant varieties.

ERS analysis, using an econometric model that statistically controls for other factors affecting pesticide use, shows an overall reduction in pesticide use (including insecticides and herbicides) associated with the increased adoption of GE crops (Bt cotton, and herbicide-tolerant corn, cotton, and soybeans; Bt corn data were not available). The decline in total pesticide use between 1997 and 1998 on U.S. corn, soybeans, and cotton was estimated to be 19.1 million acre-treatments, or 6.2 percent of total treatments. Total active ingredients applied to corn, soybean, and cotton fields also declined by about 2.5 million pounds, resulting in a significant reduction in potential exposure to pesticides.

The amount of herbicide active ingredient applied to soybeans increased slightly because the additional amount of glyphosate applied to HT soybeans exceeded the reduction in other types of soybean herbicides. However, glyphosate has a lower toxicity to mammals, birds, and fish; binds to the soil rapidly, preventing leaching; and is easily biodegraded by soil bacteria. Glyphosate is only a third as toxic to humans and is likely to persist in the environment for only half as long as the herbicides it displaces.

HT crops may indirectly benefit the environment by encouraging adoption of conservation tillage. Nearly 60 percent of the area planted with HT soybeans in 1997 was under conservation tillage, which reduces soil erosion, soil degradation, and runoff. In comparison only 40 percent of soybean acres planted with conventional varieties was under conservation tillage. Differences in the use of no-till between adopters and nonadopters of HT soybeans were even more pronounced. Of acres planted with HT soybeans, 40 percent were under no-till (where weed control is fully dependent on herbicides), twice the corresponding share for farmers planting conventional soybeans.

Analyses of impacts will continue. ERS analyses of impacts are based on just 2 years of survey data: 1997 and 1998. The extent and impacts of GE crops vary with several factors, most notably annual pest infestations, seed premiums, prices of alternative pest control programs, and any premiums paid for segregated crops. These factors will continue to change over time as the technology, marketing strategies for GE crops, and consumer perceptions evolve. ERS will continue to provide information on the evolution, as well as the impacts on farmers, consumers, and the environment. Future surveys and analyses will attempt to evaluate the most widely touted farmer benefits of HT seeds—simplicity and flexibility of use and management—that are not captured by the standard measurement of net returns. AO

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For further information

Acreage data available from the USDA's National Agricultural Statistics Service (NASS)
http://usda.mannlib.cornell.edu/reports/nassr/field/pcp-bba/acrg0602.pdf

ERS briefing rooms

Biotechnology
www.ers.usda.gov/Briefing/biotechnology/

Agricultural Chemicals and Production Technology
www.ers.usda.gov/Briefing/AgChemicals/

Agricultural Resource Management Survey
www.ers.usda.gov/briefing/ARMS/

Agricultural Research Service, USDA

Does Off-Farm Work Hinder "Smart" Farming?

As off-farm income takes on greater importance in the portfolio of farm household activities, less time is available for farm management. Management, the key to "smart" farming, is time-intensive. But management does not typically figure in analysts' calculations of economic returns to alternative production technologies or farming systems. The result could be misleading in understanding the benefits of technology adoption, particularly if farm households, like most of their nonfarm counterparts, are willing to forego some financial return from farming to gain convenience.

Smart farming typically substitutes management for capital. Smart farming is the practice of collecting data (or paying someone to collect data) on specific, variable aspects of a farm's production system; analyzing the data to discern whether, how much, or when a farm input is needed; and adjusting practices to optimize input use.

Examples of smart farming include:

- soil testing to determine the extent of nitrogen and phosphorus application needed on a particular field for optimal crop growth—a practice directed at avoiding out-of-pocket and environmental costs of over-fertilization;
- integrated pest management (IPM)—scouting for insect pests and using economic thresholds to help ensure optimal insecticide timing, to derive the most from expenditures on input applications, and, when insect populations stay low, to avoid the expense of "insurance" use of insecticides altogether;
- precision farming to apply inputs in optimal patterns within and across fields.

Economic assessments of smart farming management systems invariably show a potential reduction in variable production costs that is greater than the value of any concurrent loss in average yield. The assessments sometimes demonstrate both lower variable input costs and higher average yields.

Not All Farms Practice "Smart" Farming

More than 35 years after the introduction of integrated pest management systems, the Clinton Administration goal of IPM practice on 75 percent of crop acres in the U.S. has not been achieved, despite long-standing evidence that IPM systems tend to increase net returns (as traditionally measured) by optimizing pest control actions and inputs. Moreover, nitrogen testing of soil occurred on less than half of corn acreage in 1996. As for precision farming, 14 percent of U.S. grain and oilseed farmers had embraced aspects of this practice by 1998, but adoption growth rates are slow.

These paths of technology adoption stand in stark contrast with the remarkable rates of adoption for genetically engineered (GE) insect-resistant and herbicide-tolerant crops (see previous article). In the case of herbicide-tolerant soybeans, first available in 1996, adoption grew to nearly 70 percent in just 5 years, despite no significant impacts on farm financial net returns attributable to adoption. Indeed, empirical results from more than 20 studies of the financial implications of first-generation GE corn and soybeans have been mixed. They tell a story quite dissimilar to IPM's tale. Though not always profitable by standard measures, adoption of GE seed has been soaring.

A major difference between planting GE crop varieties and practicing IPM is that the former is management saving while the latter is management using.

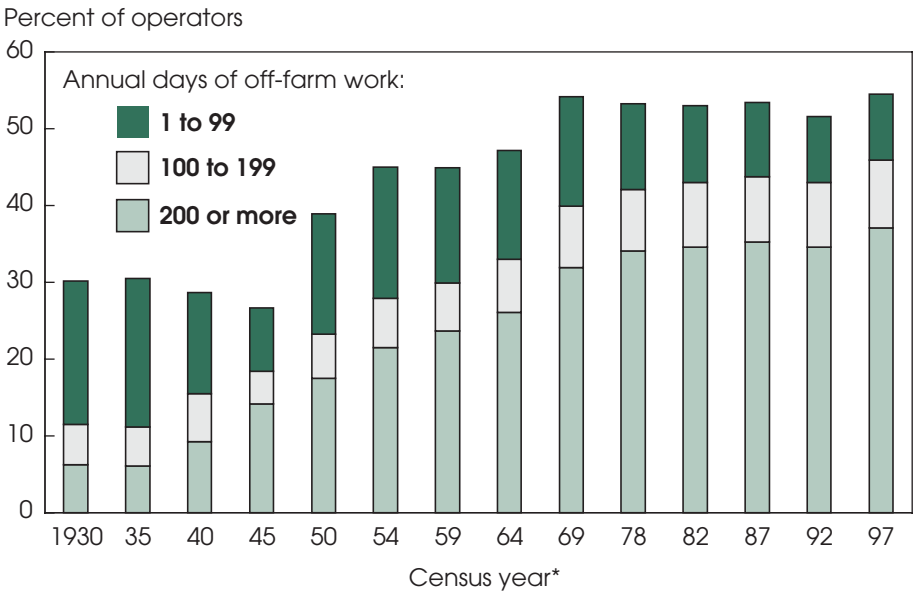
The Appeal of "Convenience Agriculture"

When asked what motivated their adoption of GE crop varieties, farmers often respond that these varieties are simply easier to use. Cultivation of these crop varieties is characterized by simplicity and flexibility. A great advantage of adoption is that it saves time… *and takes no extra thought*. It is convenient.

Farm operators are likely to be as appreciative of convenience as is the busy, multi-tasking member of the average U.S. household. In fact, farm households are increasingly similar to nonfarm households in terms of working spouses, diversity of income sources, and dependence on the general economy (*AO* August 2002).

While one-third of farm operators have worked off the farm essentially full time since the 1970s, this is not the full story. What has changed most over the last few

A Third of Farm Operators Have Worked Off-Farm Essentially Full-Time Since the 1970s



*Data for 1974 are unavailable.
Sources: U.S. Bureau of the Census, 1930-92 Censuses of Agriculture; and National Agricultural Statistics Service, USDA,1997 Census of Agriculture.

Economic Research Service, USDA

decades is the *importance* of off-farm income to farm households. Since 1999, less than 10 percent of farm household income (including government payments to the farm operator) derives from the farm operation. The rest—the vast majority—is off-farm income. Off-farm income comes from off-farm employment of the operator, off-farm work by the operator's spouse, nonfarm businesses run by the operator or household members, and a gamut of investments.

The observed trend in importance of off-farm income has many causes: higher wage rates in non-farm jobs, more females in the general workforce, and efficient household financial management. The common feature of all sources of off-farm income is that each takes time away from concentration on the farm business, if not time off the farm altogether. In 2002, when a farm operator and spouse are working at the kitchen table (or at their computer), they are as likely to be poring over brokerage account statements or bringing work home from the office, as they are to be reviewing farm accounts or scrutinizing ratios of livestock weight gains to feed rations.

As more time and more thought is devoted to off-farm endeavors, less of each is available for farm management and/or leisure by the operator or members of the operator's household. Recognizing that farm households face time/management constraints generates several lines of inquiry:

- whether the traditional ways of measuring the economic returns to new technologies capture the convenience factor,

Off-Farm Share of Operator Household Income

	Farms		
	Small	Large	All
	Percent		
1960	--	--	52.8
1964	--	--	59.2
1969	--	--	61.5
1979	--	--	74.1
1987	--	--	61.9
1997	98.7	27.9	88.2
1998	101.9	28.2	88.1
1999	100.0	25.9	90.1
2000	104.6	32.5	95.8

-- Not available.
Large farms are those with over $250,000 in annual sales. Off-farm share is over 100 percent if income from farm business is negative.

Economic Research Service, USDA

- the implications of structural shifts for off-farm activity and, consequently, for the feasibility of various technologies, and
- the effect of farm programs on interactions among off- and onfarm work and on preferences for certain types of production technologies.

The Measurement Dilemma: "Time Is Money"

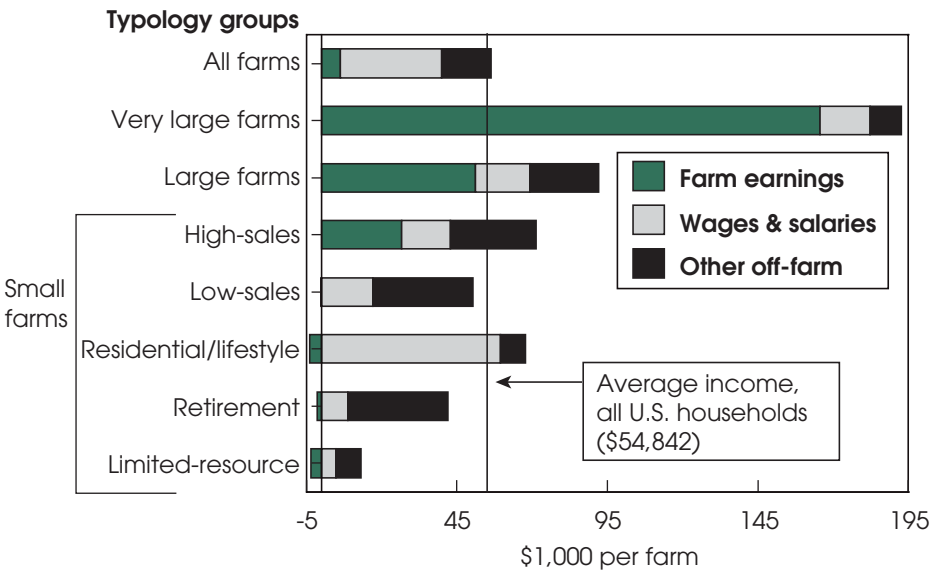
The standard metric for farm profitability is net returns to labor and management. The farm-level profitability of technology adoption is typically calculated as the difference between net returns with and without the technology. In this month's article on GE crops, for example, farm-level financial implications of adoption are measured by estimating the change in variable production costs (mainly seed and pesticide costs) plus the value of change in average yield associated with specific GE varieties, and comparing the results with those for their conventional counterparts.

This widely accepted practice of measuring profitability holds the value of management time/thought/effort constant when comparing returns to various production practices, technologies, or systems. It measures *financial* returns quite well. But it gives an incomplete picture of *economic* returns because it excludes changes in the value of management.

If increased importance of off-farm income acts also to increase the opportunity cost of spending time on farm management (lost opportunity to spend time in another pursuit), then the consequences of this exclusion become serious. An indication of negative net returns, as typically measured, can be misleading if unmeasured management costs are actually decreasing (in which case total *economic* returns might actually be increasing). This appears to be the case with herbicide-tolerant soybeans. It may be the case with other "convenience technologies."

Two potential ways out of the measurement dilemma are discussed here. Analysts could use the prevailing off-farm wage rate as a proxy for the value of a unit of management time. Assuming that

Operators on Small Farms Derive Most or All Household Income From Off-Farm Sources



Source: USDA's 1999 Agricultural Resource Management Survey (ARMS).
Economic Research Service, USDA

differences in management time necessitated by various practices or technologies were known, changes in the value of management could be incorporated into a more robust measurement of economic returns. An alternative is to examine net returns in terms of a farm household's total income, rather than limiting it to income generated by the farm operation. With this approach, the tradeoffs between time spent managing the farm operation and time spent generating off-farm income become inherent in calculations of the impact of a change in farm production practice.

Either of these approaches to more precise measurement of net economic returns is data demanding. Also, both fail to account for the value of leisure, which is how farm operator time could be spent if not devoted to generating income.

Farm Structure, Off-Farm Work, & Technology Adoption

Analysis by USDA's Economic Research Service (ERS) demonstrates that, for a large sample of corn/soybean farm operations, there is a definite tradeoff between time spent onfarm and in off-farm employment. For these farm households, it seems clear that economies of scope (derived from engaging in multiple income-generating activities, on and off the farm, as a single economic unit) can substitute for economies of scale in farming. Thus, households operating small corn/soybean farms that lack economies of scale may be more likely to devote time to off-farm employment, more likely to adopt management-saving technology, and less likely to adopt management-intensive technologies.

Evidence from ERS research on the adoption of the growth hormone bovine somatatropin (rBST) in dairy production suggests that the relationship between scale of farm operation and management intensity of production technology holds for large farms as well. Use of rBST is very management-intensive. While in 2000 only about 17 percent of U.S. dairy operations were using rBST, these operations accounted for 32 percent of all dairy cows. In this case, it is the larger operations that could accommodate management-intensive technology. This makes sense in the context of off-farm work, since it is only for large and very large farms that off-farm income has *not* represented the majority of farm household income in recent years.

Economists have become accustomed to considering capital-intensive technologies as scale-dependent. Perhaps management intensity should also be viewed as a potential source of scale bias.

Does Farm Policy Play a Role?

The direction of farm policy affects many farm household decisions. ERS research on the effects of different types of farm program payments on the time allocation of operators and spouses has implications for off-farm work and technology adoption. Research has shown that, in accordance with the theory of labor supply, an increase in decoupled farm program payments (payments not linked to production) is likely to result in decreased off-farm work and increased leisure time spent by farm household members. By facilitating substitution of leisure for off-farm work, decoupled payments should have a neutral impact on the management intensity of adopted technologies.

By contrast, it was found that an increase in farm program payments linked to or coupled with production is associated with less off-farm work, but *more* farm income generation. In this case, there is a substitution of effort on the farm for effort off the farm. Relatively less off-farm effort may diminish the appeal of management-extensive or "convenience" technologies that do not also exhibit strong, positive net returns exclusive of management time saved.

Food for Thought

At the downstream branches of the agriculture and food system are convenience stores and convenience foods. It is likely that, as off-farm income takes the lead in farm household portfolios, farm operators at the upstream branches of that system will also take advantage of convenience. Individuals developing new technologies or analyzing their implications will want to keep this development in mind, and measure its impact to the extent possible. And because it appears that structural change and government policy can reinforce or dampen the value of convenience in farm management, they will also influence the direction of technological change in agriculture. AO

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Statistical Indicators

Summary Data

Table 1—Key Statistical Indicators of the Food & Fiber Sector

	Annual			2001		2002				2003
	2001	2002	2003	III	IV	I	II	III	IV	I
Prices received by farmers (1990-92=100)	102	99	--	108	94	100	--	--	--	--
Livestock & products	106	93	--	111	100	96	--	--	--	--
Crops	99	105	--	105	90	104	--	--	--	--
Prices paid by farmers (1990-92=100)										
Production items	120	118	--	120	118	118	--	--	--	--
Commodities and services, interest, taxes, and wage rates (PPITW)	124	123	--	124	123	123	--	--	--	--
Cash receipts ($ bil.)	203	196	--	51	61	47	40	48	61	--
Livestock	106	97	--	27	28	25	22	23	27	--
Crops	96	99	--	24	33	22	18	25	34	--
Market basket (1982-84=100)										
Retail cost	177	--	--	178	179	181	--	--	--	--
Farm value	106	--	--	110	108	107	--	--	--	--
Spread	215	--	--	215	217	220	--	--	--	--
Farm value/retail cost (%)	21	--	--	22	21	21	--	--	--	--
Retail prices (1982-84=100)										
All food	173	177	180	174	175	177	176	176	178	180
At home	173	176	180	174	175	177	176	176	177	179
Away from home	174	178	182	175	176	177	178	179	180	181
Agricultural exports ($ bil.)[1]	52.8	54.5	--	12.3	15.2	13.8	12.2	12.4	--	--
Agricultural imports ($ bil.)[1]	39.0	40.0	--	9.4	10.0	10.1	10.9	9.5	--	--
Commercial production										
Red meat (mil. lb.)	45,663	46,944	45,470	11,371	12,048	11,259	11,733	11,947	12,005	11,229
Poultry (mil. lb.)	37,343	38,384	39,175	9,406	9,444	9,372	9,807	9,605	9,600	9,550
Eggs (mil. doz.)	7,152	7,186	7,210	1,788	1,829	1,767	1,789	1,800	1,830	1,770
Milk (bil. lb.)	165.3	170.0	172.0	40.6	40.8	42.3	44.0	41.8	41.9	43.2
Consumption, per capita										
Red meat and poultry (lb.)	213.3	219.9	215.2	53.7	54.9	52.2	56.0	56.0	55.8	52.6
Corn beginning stocks (mil. bu.)[2]	1,899.1	--	--	3,924.0	1,899.1	1,899.1	8,264.7	--	--	--
Corn use (mil. bu.)[2]	9,780.0	--	--	2,026.3	3,143.7	3,143.7	2,471.1	--	--	--
Prices[3]										
Choice steers--Neb. Direct ($/cwt)	72.71	67-68	72-78	70.19	65.13	70.19	65.58	62-64	69-73	70-76
Barrows and gilts--IA, So. MN ($/cwt)	45.81	34-35	34-36	51.05	37.30	39.43	35.03	35-37	28-30	33-35
Broilers--12-city (cents/lb.)	59.10	56-57	57-61	61.10	58.50	56.00	56.10	56-58	54-58	55-59
Eggs--NY gr. A large (cents/doz.)	67.20	66-67	64-69	61.40	68.20	69.10	58.40	64-66	71-75	67-73
Milk--all at plant ($/cwt)	14.97	12.10-12.30	11.90-12.90	16.60	14.50	13.07	12.10	11.15-11.45	12.05-12.65	11.65-12.55
Wheat--KC HRW ordinary ($/bu.)	3.33	--	--	3.18	3.30	3.26	3.33	--	--	--
Corn--Chicago ($/bu.)	2.03	--	--	2.10	2.01	2.06	2.09	--	--	--
Soybeans--Chicago ($/bu.)	4.58	--	--	4.89	4.45	4.42	4.86	--	--	--
Cotton--avg. spot 41-34 (cents/lb)	39.68	--	--	35.58	30.62	32.32	33.12	--	--	--
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Farm real estate values[4]										
Nominal ($ per acre)	740	798	844	887	926	974	1,020	1,080	1,150	1,210
Real (1996 $)	806	848	879	904	926	955	988	1,032	1,074	1,106
U.S. civilian employment (mil.)[5]	129.2	131.1	132.3	133.9	136.3	137.7	139.4	140.9	--	--
Food and fiber (mil.)	23.5	24.1	24.5	24.2	24.1	24.2	24.4	24.1	--	--
Farm sector (mil.)	1.8	1.9	2.0	2.0	1.9	1.8	1.8	1.7	--	--
U.S. gross domestic product ($ bil.)	6,642.3	7,054.3	7,400.5	7,813.2	8,318.4	8,781.5	9,268.6	9,872.9	--	--
Food and fiber--net value added ($ bil.)	957.6	1,026.6	1,048.2	1,078.9	1,101.9	1,132.7	1,180.6	1,264.5	--	--
Farm sector--net value added ($ bil.)[6]	70.2	77.8	73.5	85.7	82.6	74.0	66.9	82.0	--	--

-- = Not available. Annual and quarterly data for the most recent year contain forecasts. 1. Annual data based on Oct.-Sep. fiscal years ending with year indicated. 2. Sep.-Nov. first quarter; Dec.-Feb. second quarter; Mar.-May third quarter; Jun.-Aug. fourth quarter; Sep.-Aug. annual. Use includes exports and domestic disappearance. 3. Simple averages, Jan.-Dec. 4. As of January 1. 5. Civilian labor force taken from "Monthly Labor Review," Table 18--Annual Data: Employment Status of the Population, Bureau of Labor Statistics, U.S. Department of Labor. 6. The value-added data presented here are consistent with accounting conventions of the National Income and Product Accounts, U.S. Department of Commerce.

U.S. & Foreign Economic Data

Table 2—U.S. Gross Domestic Product & Related Data

	Annual			2000	2001				2002	
	1999	2000	2001	IV	I	II	III	IV	I	II
	Billions of current dollars (quarterly data seasonally adjusted at annual rates)									
Gross Domestic Product	9,274.3	9,824.6	10,082.2	9,953.6	10,028.1	10,049.9	10,097.7	10,152.9	10,313.1	10,369.9
Gross National Product	9,297.1	9,848.0	10,104.1	9,982.8	10,038.0	10,081.0	10,109.3	10,188.1	10,314.9	--
Personal consumption expenditures	6,246.5	6,683.7	6,987.0	6,808.0	6,904.7	6,959.8	6,983.7	7,099.9	7,174.2	7,253.2
Durable goods	755.9	803.9	835.9	797.2	816.8	820.3	824.0	882.6	859.0	857.8
Nondurable goods	1,830.1	1,972.9	2,041.3	2,011.1	2,031.5	2,044.8	2,044.3	2,044.4	2,085.1	2,105.6
Food	898.9	955.0	992.4	968.8	984.2	988.7	993.8	1,002.8	1,025.0	1,023.5
Clothing and shoes	301.0	313.7	315.3	318.7	317.9	313.6	312.1	317.4	325.8	324.1
Services	3,660.5	3,906.9	4,109.9	3,999.7	4,056.4	4,094.7	4,115.4	4,172.9	4,230.1	4,289.8
Gross private domestic investment	1,636.7	1,755.4	1,586.0	1,757.4	1,671.1	1,597.2	1,574.9	1,500.7	1,559.4	1,588.8
Fixed investment	1,577.2	1,691.8	1,646.3	1,700.4	1,698.3	1,654.3	1,635.5	1,597.2	1,589.4	1,589.6
Change in private inventories	59.5	63.6	-60.3	57.1	-27.2	-57.1	-60.6	-96.5	-29.9	-0.8
Net exports of goods and services	-249.9	-365.5	-348.9	-393.2	-372.7	-365.7	-312.6	-344.5	-360.1	-432.7
Government consumption expenditures and gross investment	1,641.0	1,751.0	1,858.0	1,781.4	1,825.0	1,858.5	1,851.7	1,896.8	1,939.5	1,960.6
	Billions of 1996 dollars (quarterly data seasonally adjusted at annual rates) [1]									
Gross Domestic Product	8,859.0	9,191.4	9,214.5	9,243.8	9,229.9	9,193.1	9,186.4	9,248.8	9,363.2	9,387.9
Gross National Product	8,883.7	9,216.2	9,237.3	9,274.0	9,241.7	9,224.3	9,199.8	9,283.5	9,367.5	--
Personal consumption expenditures	5,964.5	6,223.9	6,377.2	6,288.8	6,326.0	6,348.0	6,370.9	6,464.0	6,513.8	6,544.2
Durable goods	812.5	878.9	931.9	876.5	900.6	912.4	922.6	992.0	975.9	981.7
Nondurable goods	1,765.1	1,833.8	1,869.8	1,853.1	1,863.7	1,862.3	1,868.3	1,885.0	1,921.4	1,918.6
Food	846.8	879.0	887.0	883.9	889.1	887.4	884.3	887.1	901.4	898.9
Clothing and shoes	312.1	329.4	337.7	335.1	334.3	334.7	337.1	344.8	355.8	355.2
Services	3,395.4	3,524.5	3,594.9	3,570.6	3,576.3	3,589.3	3,597.5	3,616.6	3,642.2	3,669.2
Gross private domestic investment	1,660.5	1,762.9	1,574.6	1,755.2	1,661.8	1,583.5	1,562.7	1,490.3	1,554.0	1,584.7
Fixed investment	1,595.2	1,691.9	1,627.4	1,691.3	1,682.1	1,633.5	1,615.7	1,578.4	1,576.4	1,577.5
Change in private inventories	62.8	65.0	-61.4	59.9	-26.9	-58.3	-61.8	-98.4	-28.9	1.0
Net exports of goods and services	-320.5	-398.8	-415.9	-418.5	-404.5	-414.8	-419.0	-425.3	-446.6	-497.5
Government consumption expenditures and gross investment	1,540.6	1,582.5	1,640.4	1,593.4	1,615.7	1,638.0	1,633.3	1,674.5	1,697.3	1,704.8
GDP implicit price deflator (% change)	1.4	2.1	2.4	2.1	3.7	2.5	2.2	-0.5	1.3	1.2
Disposable personal income ($ bil.)	6,627.4	7,120.2	7,393.2	7,259.8	7,317.5	7,340.0	7,524.2	7,391.2	7,668.3	7,789.8
Disposable pers. income (1996 $ bil.)	6,328.4	6,630.3	6,748.0	6,706.2	6,704.3	6,694.8	6,864.0	6,729.1	6,962.5	7,028.3
Per capita disposable pers. income ($)	23,742	25,205	25,859	25,577	25,713	25,717	26,275	25,729	26,621	26,964
Per capita disp. pers. income (1996 $)	22,671	23,471	23,602	23,627	23,558	23,456	23,970	23,424	24,171	24,328
U.S. resident population plus Armed Forces overseas (mil.)[2]	272.9	275.4	--	276.3	--	--	--	--	--	--
Civilian population (mil.)[2]	271.5	273.9	--	274.9	--	--	--	--	--	--

	Annual			2001	2002					
	1999	2000	2001	Jun	Jan	Feb	Mar	Apr	May	Jun
	Monthly data seasonally adjusted									
Total industrial production (1992=100)	144.7	151.6	144.8	145.0	142.6	142.9	143.4	143.5	144.3	145.4
Leading economic indicators (1996=100)	108.8	109.9	109.5	109.5	111.8	111.9	111.9	111.6	112.3	112.1
Civilian employment (mil. persons)	133.5	135.2	135.1	135.0	133.5	134.3	133.9	134.0	134.4	134.1
Civilian unemployment rate (%)	4.2	4.0	4.8	4.6	5.6	5.5	5.7	6.0	5.8	5.9
Personal income ($ bil. annual rate)	7,786.5	8,406.6	8,685.3	8,681.3	8,774.9	8,815.6	8,840.8	8,876.2	8,915.6	8,972.6
Money stock-M2 (daily avg.) ($ bil.)[3]	4,650.3	4,936.0	5,454.8	5,184.1	5,466.7	5,500.7	5,497.4	5,480.8	5,545.1	5,579.3
Three-month Treasury bill rate (%)	4.66	5.85	3.45	3.48	1.66	1.73	1.81	1.72	1.74	1.71
AAA corporate bond yield (Moody's) (%)	7.04	7.62	7.08	7.18	6.55	6.51	6.81	6.76	6.75	6.63
Total housing starts (1,000)[4]	1,640.9	1,568.7	1,602.7	1,633	1,713	1,788	1,675	1,566	1,735	1,672
Business inventory/sales ratio[5 6]	1.41	1.42	1.43	1.44	1.38	1.39	1.38	1.35	1.36	--
Retail & food services sales ($ bil.)[6 7]	3,149.2	3,388.8	3,504.2	289.7	296.1	296.5	296.2	299.6	296.6	300.7
Food and beverage stores ($ bil.)	441.4	465.3	481.1	39.3	40.9	40.2	40.1	39.9	40.0	40.1
Clothing & accessory stores ($ bil.)	159.7	168.5	169.7	14.0	14.7	14.7	14.7	14.6	14.3	14.7
Food services & drinking places ($ bil.)	286.3	306.1	321.0	26.7	27.6	28.1	28.0	28.1	28.1	28.3

-- = Not available. 1. In October 1999, 1996 dollars replaced 1992 dollars. 2. Population estimates based on 1990 census. 3. Annual data as of December of year listed. 4. Private, including farm. 5. Manufacturing and trade. 6. In July 2001, all numbers were revised due to a changeover from the Standard Industrial Classification System to the North American Industry Classification System. 7. Annual total.

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Table 3—World Economic Growth

	Calendar year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	Real GDP, annual percent change									
World	3.1	2.8	3.5	3.4	1.9	2.8	3.9	1.3	1.9	3.1
less U.S.	2.7	2.8	3.4	3.0	1.0	2.4	3.9	1.4	1.6	3.0
Developed economies	2.8	2.3	3.1	3.0	2.1	2.7	3.5	1.0	1.5	2.5
less U.S.	2.1	2.2	2.8	2.3	1.0	1.9	3.1	0.9	0.9	2.2
United States	4.0	2.7	3.6	4.4	4.3	4.1	4.1	1.2	2.6	3.2
Canada	4.7	2.7	1.5	4.4	3.3	4.6	4.6	1.5	3.3	3.2
Japan	0.6	1.5	5.1	1.6	-2.5	0.2	2.2	-0.5	-0.5	0.8
Australia	4.5	4.5	3.8	4.7	4.5	4.4	2.0	2.6	3.8	3.9
European Union	2.8	2.4	1.6	2.5	2.8	2.7	3.6	1.5	1.3	2.7
Transition economies	-8.1	-1.3	-0.8	1.4	-1.4	3.5	6.3	4.5	3.6	3.9
Eastern Europe	3.9	5.6	4.0	2.7	2.7	2.5	3.9	2.7	2.5	4.2
Poland	5.2	7.0	6.0	6.8	4.8	4.1	4.2	1.1	1.3	4.0
Former Soviet Union	-14.1	-5.4	-4.0	0.5	-4.4	4.2	8.1	5.9	4.4	3.7
Russia	-12.6	-4.1	-3.4	0.9	-4.9	5.0	8.3	5.1	4.0	3.5
Developing economies	6.3	5.3	5.8	5.3	1.2	3.4	5.7	2.3	3.1	5.0
Asia	8.8	8.3	7.4	5.8	0.4	6.4	7.2	3.7	5.6	6.2
East Asia	9.7	8.7	7.7	7.0	1.9	7.4	8.3	4.1	6.3	6.2
China	12.8	10.5	9.6	8.8	7.8	7.1	8.0	7.4	7.8	7.2
Taiwan	7.1	6.4	6.1	6.7	4.6	5.4	5.9	-1.9	3.2	4.1
Korea	8.2	8.9	6.8	5.0	-6.7	10.7	9.5	3.0	6.5	5.7
Southeast Asia	8.3	8.3	7.3	4.0	-7.5	3.6	6.1	1.8	3.9	6.2
Indonesia	7.5	8.2	7.8	4.7	-13.2	0.7	4.8	3.4	3.5	6.5
Malaysia	9.2	9.8	10.0	7.3	-7.4	5.8	8.4	0.5	4.0	7.8
Philippines	4.4	4.7	5.8	5.2	-0.8	3.2	4.4	3.2	4.0	4.3
Thailand	9.0	8.9	5.9	-1.7	-10.2	4.2	4.7	1.8	4.4	5.2
South Asia	6.6	7.1	6.3	4.2	6.1	6.1	4.8	4.7	5.2	5.8
India	7.3	7.7	7.0	4.6	6.8	6.5	4.8	4.9	5.6	6.1
Pakistan	3.9	5.1	3.9	1.0	2.5	4.0	3.9	3.4	3.7	5.0
Latin America	5.3	1.4	3.7	5.2	1.8	0.0	3.7	0.3	-1.1	3.4
Mexico	4.4	-6.2	5.2	6.8	4.9	3.5	6.7	-0.3	1.4	4.8
Caribbean/Central	4.1	3.8	3.6	6.4	6.8	6.9	4.9	1.5	2.4	5.8
South America	5.6	3.1	3.3	4.8	1.0	-1.1	2.9	0.4	-1.8	2.9
Argentina	5.8	-2.8	5.5	8.1	3.9	-3.2	-0.8	-4.4	-13.8	1.9
Brazil	5.9	4.2	2.8	3.2	-0.1	0.8	4.4	1.6	1.4	3.6
Colombia	5.8	5.2	2.1	3.4	0.5	-4.3	2.2	1.6	0.5	1.8
Venezuela	-2.3	3.7	-0.5	6.5	-0.7	-6.1	3.2	3.2	-4.1	-1.5
Middle East	-0.3	4.4	4.7	4.4	2.7	-0.8	5.6	-0.9	2.1	4.0
Israel	6.9	7.0	5.1	3.2	2.6	2.2	5.9	-0.6	-2.3	1.4
Saudi Arabia	0.5	0.5	1.4	1.9	2.3	-0.8	4.5	2.2	-0.5	3.2
Turkey	-5.5	7.2	7.0	7.5	3.1	-4.7	7.2	-7.1	4.5	5.4
Africa	3.2	2.9	5.2	2.8	3.1	2.6	3.5	3.4	2.3	3.7
North Africa	3.9	1.5	6.5	2.6	5.6	3.8	3.5	4.2	2.6	3.9
Egypt	3.9	4.7	5.0	5.5	5.6	6.0	5.2	3.3	1.7	3.5
Sub-Sahara	2.6	3.9	4.3	3.0	1.3	1.7	3.6	2.8	2.0	3.6
South Africa	3.2	3.1	4.2	2.5	0.6	1.2	3.4	2.2	2.1	3.4
	Consumer prices, annual percent change									
Developed economies	3.1	2.6	2.6	2.4	2.1	1.5	1.4	2.3	2.4	1.7
Transition economies	635.8	274.2	133.8	42.5	27.3	21.8	43.9	20.0	16.4	10.7
Developing economies	49.2	55.3	23.2	15.4	9.9	10.5	6.8	6.0	5.9	5.1
Asia	10.8	16.0	13.2	8.3	4.8	7.7	2.5	1.9	2.8	3.3
Latin America	194.6	200.3	36.0	21.2	12.9	9.9	8.8	8.1	6.2	4.9
Middle East	29.4	37.3	39.1	29.6	27.7	27.6	23.2	19.2	18.9	14.5
Africa	39.0	54.7	35.3	30.2	14.2	10.8	11.5	13.6	12.6	8.0

The last 3 years are either estimates or forecasts. Sources: Oxford Economic Forecasting; International Financial Statistics, IMF.

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Farm Prices

Table 4—Indexes of Prices Received & Paid by Farmers, U.S. Average

	Annual			2001	2002					
	2000	2001	2002	Jul	Feb	Mar	Apr	May	Jun	Jul
					1990-92=100					
Prices received										
All farm products	96	102	99	108	99	105	95	97	98	100
All crops	96	99	105	104	101	117	100	106	106	111
Food grains	85	91	90	88	84	85	84	86	95	105
Feed grains and hay	86	91	94	95	91	91	92	94	97	100
Cotton	82	65	50	64	47	49	48	47	58	53
Tobacco	107	107	109	107	108	95	--	--	--	--
Oil-bearing crops	85	80	83	86	76	79	80	83	88	99
Fruit and nuts, all	101	108	101	127	85	92	85	106	119	128
Commercial vegetables	121	126	158	125	191	271	125	124	115	121
Potatoes and dry beans	93	98	152	106	132	145	147	173	166	184
Livestock and products	97	106	93	112	97	95	90	90	91	89
Meat animals	94	97	88	102	93	92	87	85	85	86
Dairy products	94	115	95	124	100	97	96	93	89	86
Poultry and eggs	106	116	99	119	100	101	91	96	102	97
Prices paid										
Commodities and services, interest, taxes, and wage rates (PPITW)	120	124	123	124	122	123	123	123	123	123
Production items	116	120	118	120	117	118	119	118	118	118
Feed	102	109	109	109	106	109	110	109	110	112
Livestock and poultry	110	111	102	114	110	106	102	98	95	96
Seeds	124	132	140	134	134	134	144	144	144	144
Fertilizer	110	123	107	119	104	107	107	108	109	111
Agricultural chemicals	120	120	119	120	121	119	119	118	118	118
Fuels	134	121	105	115	84	112	114	110	107	106
Supplies and repairs	124	128	129	128	128	129	129	130	130	130
Autos and trucks	119	118	116	117	117	116	116	116	115	115
Farm machinery	139	144	147	144	141	147	147	147	147	147
Building material	121	121	121	122	121	121	122	122	122	122
Farm services	119	121	120	122	120	120	119	120	121	121
Rent	110	117	120	117	120	120	120	120	120	120
Interest payable per acre on farm real estate debt	113	114	109	114	109	109	109	109	109	109
Taxes payable per acre on farm real estate	123	124	126	124	126	126	126	126	126	126
Wage rates (seasonally adjusted)	140	146	153	143	155	155	153	153	153	153
Prod. items, interest, taxes & wage rates (PITW)	118	122	121	122	120	121	121	121	121	121
Ratio, prices received to prices paid (%)*	81	82	80	87	81	85	77	79	80	81
Prices received (1910-14=100)	612	649	626	684	628	670	601	619	1,639	1,643
Prices paid, etc. (1910-14=100)	1,594	1,646	1,638	1,645	1,624	1,641	1,643	1,638	622	632
Parity ratio (1910-14=100) (%)*	39	39	38	42	39	41	37	38	38	38

Values for the two most recent months are revised or preliminary. *Ratio of index of prices received for all farm products to index of prices paid for commodities and services, interest, taxes, and wage rates. Ratio uses the most recent prices paid index.

Data for this table are taken from the publication *Agricultural Prices*, which is produced monthly by USDA's National Agricultural Statistics Service (NASS) and is available at http://usda.mannlib.cornell.edu/reports/nassr/price/pap-bb/. For historical data or for categories not listed here, call the NASS Information Hotline at 1-800-727-9540, or access the NASS Home Page at http://www.usda.gov/nass.

Table 5—Prices Received by Farmers, U.S. Average

	Annual [1]			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
Crops										
All wheat ($/bu.)	2.48	2.62	2.80	2.63	2.83	2.87	2.84	2.81	2.93	3.22
Rice, rough ($/cwt)	5.93	5.61	4.25	5.32	4.10	3.97	3.88	3.96	3.86	3.80
Corn ($/bu.)	1.82	1.85	2.00	1.87	1.93	1.94	1.91	1.93	1.97	2.07
Sorghum ($/cwt)	2.80	3.37	3.50	3.72	3.26	3.22	3.14	3.17	3.83	3.88
All hay, baled ($/ton)	76.90	85.00	97.30	96.30	90.40	91.40	99.90	102.00	95.80	93.60
Soybeans ($/bu.)	4.63	4.54	4.30	4.79	4.21	4.38	4.47	4.64	4.88	5.50
Cotton, upland (¢/lb.)	45.00	49.80	32.40	38.90	28.70	29.90	29.30	28.60	34.90	32.10
Potatoes ($/cwt)	5.77	5.08	6.60	6.46	7.60	8.50	8.63	10.40	9.95	11.40
Lettuce ($/cwt) [2]	13.30	17.40	17.60	16.40	44.10	86.40	13.70	9.97	10.50	12.30
Tomatoes, fresh ($/cwt) [2]	25.90	30.80	30.20	27.40	26.60	38.50	32.30	30.00	28.40	29.80
Onions ($/cwt)	9.78	11.30	11.40	15.50	8.27	6.92	19.00	21.80	20.70	19.40
Beans, dry edible ($/cwt)	16.40	15.50	19.40	16.80	26.20	26.60	27.20	27.50	26.70	25.60
Apples for fresh use (¢/lb.)	21.30	17.80	22.90	15.20	21.40	21.00	21.50	21.80	22.00	20.60
Pears for fresh use ($/ton)	294.00	264.00	282.00	405.00	276.00	267.00	267.00	267.00	337.00	312.00
Oranges, all uses ($/box) [3]	5.47	3.58	3.56	4.33	4.42	4.88	4.30	4.82	4.13	3.90
Grapefruit, all uses ($/box) [3]	3.17	3.89	2.24	5.01	1.70	1.23	1.02	1.05	4.16	6.36
Livestock										
Cattle, all beef ($/cwt)	63.40	68.60	71.30	71.80	69.90	70.70	67.20	65.20	64.10	63.30
Calves ($/cwt)	87.70	104.00	106.00	108.00	105.00	104.00	100.00	98.50	94.80	93.20
Hogs, all ($/cwt)	30.30	42.30	44.30	51.70	38.50	36.00	31.80	33.10	35.80	38.20
Lambs ($/cwt)	74.50	79.80	66.90	64.30	67.40	66.30	64.30	64.30	72.80	--
All milk, sold to plants ($/cwt)	14.38	12.40	15.05	16.20	13.10	12.70	12.50	12.20	11.60	11.20
Milk, manuf. grade ($/cwt)	12.84	10.52	13.44	14.90	12.00	11.30	11.30	11.10	10.30	9.90
Broilers, live (¢/lb.)	37.10	33.60	39.30	42.00	34.00	32.00	30.00	32.00	33.00	31.00
Eggs, all (¢/doz.) [4]	62.20	61.80	62.20	54.00	55.90	68.50	51.90	50.50	63.20	57.60
Turkeys (¢/lb.)	40.80	40.70	39.00	38.50	34.10	32.90	32.60	35.50	36.90	38.30

-- = Not available.

Values for the two most recent months are revised or preliminary. 1. Season-average price by crop year for crops. Calendar year average of monthly prices for livestock. 2. Excludes Hawaii. 3. Equivalent on-tree returns. 4. Average of all eggs sold by producers including hatching eggs and eggs sold at retail.

Data for this table are taken from the publication *Agricultural Prices*, which is produced monthly by USDA's National Agricultural Statistics Service (NASS) and is available at http://usda.mannlib.cornell.edu/reports/nassr/price/pap-bb/. For historical data or for categories not listed here, call the NASS Information Hotline at 1-800-727-9540, or access the NASS Home Page at http://www.usda.gov/nass.

Producer & Consumer Prices

Table 6—Consumer Price Indexes for All Urban Consumers, U.S. Average (not seasonally adjusted)

	Annual			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
					1982-84=100					
Consumer Price Index, all items	166.6	172.1	177.1	177.5	177.8	178.8	179.8	179.8	179.9	180.1
CPI, all items less food	167.0	172.9	177.8	178.2	178.2	179.2	180.4	180.4	180.6	180.8
All food	164.1	167.8	173.1	173.5	175.9	176.1	176.2	175.8	175.8	176.0
Food away from home	165.1	169.0	173.9	174.1	177.0	177.1	177.2	177.6	178.2	178.5
Food at home	164.2	167.9	173.4	173.9	176.0	176.3	176.4	175.5	175.0	175.2
Meats[1]	142.3	150.7	159.3	160.8	159.9	161.3	160.6	160.6	160.5	160.2
Beef and veal	139.2	148.1	160.5	162.1	160.7	161.8	162.3	162.1	160.2	159.7
Pork	145.9	156.5	162.4	164.8	163.3	163.2	161.3	161.7	162.7	162.5
Poultry	157.9	159.8	164.9	166.6	167.8	168.0	166.9	167.0	165.6	167.2
Fish and seafood	185.3	190.4	191.1	191.0	186.0	185.6	189.2	191.0	188.1	191.2
Eggs	128.1	131.9	136.4	129.6	138.6	141.0	138.4	131.8	136.0	134.8
Dairy and related products[2]	159.6	160.7	167.1	168.3	170.1	169.4	168.7	169.0	168.0	167.6
Fats and oils[3]	148.3	147.4	155.7	157.8	157.2	156.4	156.5	155.9	154.6	154.9
Fresh fruits	266.3	258.3	265.1	263.8	263.5	265.5	266.9	278.1	266.7	261.6
Fresh vegetables	209.3	219.4	230.6	226.3	258.1	265.3	255.9	238.6	239.3	241.8
Potatoes	193.1	196.3	202.3	213.4	225.7	230.2	244.1	248.0	253.4	260.7
Cereals and bakery products	185.0	188.3	193.8	194.9	197.6	197.0	198.1	198.2	198.7	198.7
Sugar and sweets	152.3	154.0	155.7	156.1	158.5	157.2	159.6	157.9	158.7	160.2
Nonalcoholic beverages[4]	134.3	137.8	139.2	138.9	140.0	140.1	140.0	138.0	137.5	138.3
Apparel										
Footwear	125.7	123.8	123.0	121.3	119.5	123.5	124.6	124.5	121.2	118.5
Tobacco and smoking products	355.8	394.9	425.2	441.2	449.3	433.4	461.4	449.0	467.4	467.2
Alcoholic beverages	169.7	174.7	179.3	179.7	182.6	182.5	182.9	183.3	183.5	183.8

1. Beef, veal, lamb, pork, and processed meat. 2. Included butter through December 1997. 3. Includes butter as of January 1998.
4. Includes fruit juices as of January 1998.
This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at http://www.bls.gov and a Consumer Prices Information Hotline at (202) 691-7000.

Table 7—Producer Price Indexes, U.S. Average (not seasonally adjusted)

	Annual			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
					1982=100					
All commodities	125.5	132.7	134.2	133.4	128.4	129.8	131.0	131.0	131.1	131.2
Finished goods[1]	133.0	138.0	140.7	140.5	137.7	138.7	139.0	138.8	139.2	138.9
All foods[2]	132.2	133.0	137.3	137.5	137.7	138.9	134.2	134.5	134.8	135.0
Consumer foods	135.1	137.2	141.3	141.4	142.3	143.4	139.2	139.4	139.6	139.6
Fresh fruits and melons	103.6	91.4	97.7	85.8	94.4	91.3	84.0	101.8	89.6	84.6
Fresh and dry vegetables	118.0	126.7	124.7	105.4	176.7	216.8	116.1	118.1	131.9	138.4
Dried and dehydrated fruits	121.2	122.9	118.5	118.4	118.9	118.9	118.9	118.9	119.0	119.0
Canned fruits and juices	137.8	140.0	143.6	144.4	143.1	143.3	143.4	143.4	137.4	138.9
Frozen fruits, juices and ades	123.0	120.9	114.1	111.6	115.1	114.9	115.4	115.0	115.0	119.0
Fresh vegetables except potatoes	117.7	135.0	135.2	109.7	188.7	242.5	101.7	107.2	123.2	127.1
Canned vegetables and juices	120.9	121.2	123.8	124.1	128.2	128.0	127.9	128.4	127.8	127.5
Frozen vegetables	126.1	126.0	128.6	128.9	131.1	130.1	130.6	130.8	130.0	131.5
Potatoes	126.9	100.5	128.9	140.0	179.0	181.8	218.6	203.6	222.0	244.2
Eggs for fresh use (1991=100)	77.9	84.9	81.8	69.9	74.5	92.6	71.2	66.2	85.5	76.8
Bakery products	178.0	182.3	187.7	188.6	189.3	189.1	189.7	189.5	189.4	189.4
Meats	104.6	114.3	120.3	122.7	116.9	118.3	115.7	112.9	113.6	114.3
Beef and veal	106.3	113.7	120.6	118.7	119.6	120.8	117.9	114.4	116.1	114.5
Pork	96.0	113.4	120.3	129.9	112.9	115.1	109.9	107.9	108.5	112.4
Processed poultry	114.0	112.9	116.8	117.2	114.4	112.4	110.9	113.0	112.5	112.0
Unprocessed and packaged fish	190.9	198.1	190.8	185.9	203.8	185.2	187.0	193.1	183.2	190.7
Dairy products	139.2	133.7	145.2	151.2	139.1	138.1	137.7	136.2	135.2	134.0
Processed fruits and vegetables	128.1	128.6	129.6	129.6	132.3	132.1	131.8	132.1	130.4	131.4
Shortening and cooking oil	140.4	132.4	132.9	132.5	131.2	131.9	133.6	135.8	138.7	140.5
Soft drinks	137.9	144.1	148.2	147.6	152.1	151.1	151.6	151.4	151.7	150.9
Finished consumer goods less foods	130.5	138.4	141.4	140.9	135.4	136.9	139.2	138.8	139.6	139.3
Alcoholic beverages	136.7	140.6	145.4	145.4	146.5	146.4	147.1	147.4	147.4	146.4
Apparel	127.1	127.4	126.8	126.7	125.7	125.3	124.4	124.5	125.1	124.5
Footwear	144.5	144.9	145.8	145.7	146.0	145.8	145.7	145.7	146.0	146.1
Tobacco products	374.0	397.2	441.9	447.4	448.0	448.7	466.0	466.1	466.4	466.9
Intermediate materials[3]	123.2	129.2	129.7	130.0	125.2	126.1	127.6	127.2	127.9	128.1
Materials for food manufacturing	120.8	119.2	124.3	126.3	122.6	122.9	122.0	121.4	122.1	122.8
Flour	104.3	103.8	109.9	110.5	112.3	113.3	107.9	110.1	111.4	114.4
Refined sugar[4]	121.0	110.6	109.9	109.5	115.5	117.3	118.8	117.3	118.1	117.4
Crude vegetable oils	90.2	73.6	70.1	72.9	70.1	71.2	72.1	73.8	84.3	84.5
Crude materials[5]	98.2	120.6	121.0	113.8	98.0	103.7	107.9	110.5	106.4	106.7
Foodstuffs and feedstuffs	98.7	100.2	106.1	109.6	102.0	102.8	96.4	98.4	97.1	97.8
Fruits and vegetables and nuts[6]	117.4	111.1	114.4	99.9	134.4	149.6	103.0	113.7	112.8	112.8
Grains	80.1	78.3	81.2	81.0	80.9	81.2	79.4	82.8	82.1	89.9
Slaughter livestock	86.4	96.5	99.6	102.9	96.4	98.4	90.1	90.3	86.6	86.4
Slaughter poultry, live	129.9	124.7	130.7	133.8	119.9	118.8	112.7	120.8	128.8	125.7
Plant and animal fibers	86.5	93.9	67.2	62.7	56.6	55.2	54.3	52.2	58.2	67.2
Fluid milk	106.3	92.0	111.8	121.9	98.0	94.9	93.3	92.7	89.0	83.7
Oilseeds	90.8	93.8	89.7	97.4	85.3	88.0	90.6	91.7	96.9	106.8
Leaf tobacco	101.6	--	105.2	109.6	110.2	96.7	--	--	--	--
Raw cane sugar	113.7	101.8	111.4	111.4	109.9	106.6	104.4	105.1	105.6	109.9

-- = Not available. 1. Commodities ready for sale to ultimate consumer. 2. Includes all raw, intermediate, and processed foods (excludes soft drinks, alcoholic beverages, and manufactured animal feeds). 3. Commodities requiring further processing to become finished goods. 4. All types and sizes of refined sugar. 5. Products entering market for the first time that have not been manufactured at that point. 6. Fresh and dried. This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at http://www.bls.gov and a Producer Prices Information Hotline at (202) 691-7705.

Farm-Retail Price Spreads

Table 8—Farm-Retail Price Spreads

	Annual			2001	2002					
	1999	2000	2001	Jun	Jan	Feb	Mar	Apr	May	Jun
Market basket[1]										
Retail cost (1982-84=100)	167.3	170.6	177.2	177.2	180.7	180.4	181.0	180.9	180.2	179.6
Farm value (1982-84=100)	98.3	96.9	106.2	107.5	106.8	105.2	108.7	102.6	102.8	103.2
Farm-retail spread (1982-84=100)	204.5	210.3	215.4	214.8	220.6	221.0	220.0	223.0	221.9	220.7
Farm value-retail cost (%)	20.6	19.9	21.0	21.2	20.7	20.4	21.0	19.9	20.0	20.1
Meat products										
Retail cost (1982-84=100)	142.3	150.4	159.3	160.2	160.0	159.9	161.3	160.6	160.6	160.5
Farm value (1982-84=100)	81.6	88.4	97.4	98.8	101.1	100.9	101.3	101.6	101.8	101.8
Farm-retail spread (1982-84=100)	204.7	214.0	222.8	223.2	220.4	220.5	222.9	221.2	221.0	220.7
Farm value-retail cost (%)	29.0	29.8	31.0	31.2	32.0	31.9	31.8	32.0	32.1	32.1
Dairy products										
Retail cost (1982-84=100)	159.6	160.7	167.1	166.9	169.9	170.1	169.4	168.7	169.0	168.0
Farm value (1982-84=100)	107.9	98.8	118.5	127.4	106.1	104.0	101.7	100.0	98.5	94.6
Farm-retail spread (1982-84=100)	207.2	217.7	211.8	203.3	228.7	231.0	231.9	232.0	234.0	235.7
Farm value-retail cost (%)	32.4	29.5	34.0	36.6	30.0	29.3	28.8	28.4	28.0	27.0
Poultry										
Retail cost (1982-84=100)	157.9	159.8	164.9	164.5	166.8	167.8	168.0	166.9	167.0	165.6
Farm value (1982-84=100)	119.0	117.4	126.2	129.8	116.8	108.7	102.7	97.1	103.9	107.3
Farm-retail spread (1982-84=100)	202.7	208.7	209.3	204.5	224.4	235.9	243.2	247.3	239.6	232.7
Farm value-retail cost (%)	40.3	39.3	41.0	42.2	37.5	34.7	32.7	31.1	33.3	34.7
Eggs										
Retail cost (1982-84=100)	128.1	131.9	136.4	130.8	138.4	138.6	141.0	138.4	131.8	136.0
Farm value (1982-84=100)	74.9	80.6	74.3	61.5	77.4	62.9	88.5	55.2	51.0	76.5
Farm-retail spread (1982-84=100)	223.7	223.9	248.0	255.2	248.1	274.6	235.3	287.9	276.9	242.9
Farm value-retail cost (%)	37.6	39.3	35.0	30.2	35.9	29.2	40.3	25.6	24.9	36.1
Cereal and bakery products										
Retail cost (1982-84=100)	185.0	188.3	193.8	194.2	196.7	197.6	197.0	198.1	198.2	198.7
Farm value (1982-84=100)	82.5	75.2	78.8	77.7	77.6	76.3	77.3	75.1	76.1	78.3
Farm-retail spread (1982-84=100)	199.2	204.0	209.9	210.5	213.3	214.5	213.7	215.3	215.2	215.5
Farm value-retail cost (%)	5.5	4.9	5.0	4.9	4.8	4.7	4.8	4.6	4.7	4.8
Fresh fruit										
Retail cost (1982-84=100)	294.3	284.3	291.7	295.4	305.2	289.9	291.5	294.0	306.9	293.4
Farm value (1982-84=100)	153.7	141.3	145.7	128.7	168.7	162.4	157.4	152.7	151.7	131.2
Farm-retail spread (1982-84=100)	359.3	350.3	359.1	372.4	368.2	348.8	353.4	359.2	378.5	368.3
Farm value-retail cost (%)	16.5	15.7	15.8	13.8	17.5	17.7	17.1	16.4	15.6	14.1
Fresh vegetables										
Retail cost (1982-84=100)	209.3	219.4	230.6	226.4	251.6	258.1	265.3	255.9	238.6	239.3
Farm value (1982-84=100)	118.1	121.4	129.9	135.7	141.5	154.7	214.2	147.8	142.9	152.6
Farm-retail spread (1982-84=100)	256.2	269.8	282.4	273.0	308.2	311.2	291.6	311.5	287.8	283.9
Farm value-retail cost (%)	19.2	18.8	19.1	20.4	19.1	20.4	27.4	19.6	20.3	21.7
Processed fruits and vegetables										
Retail cost (1982-84=100)	154.8	153.6	159.3	159.5	161.7	162.3	162.9	164.5	165.7	164.4
Farm value (1982-84=100)	113.5	106.4	107.9	106.6	111.6	111.5	112.8	113.7	114.4	113.6
Farm-retail spread (1982-84=100)	167.7	168.3	175.3	176.0	177.3	178.1	178.5	180.3	181.7	180.3
Farm value-retail cost (%)	17.4	16.5	16.1	15.9	16.4	16.3	16.5	16.4	16.4	16.4
Fats and oils										
Retail cost (1982-84=100)	148.3	147.4	155.7	155.7	158.3	157.2	156.4	156.5	155.9	154.6
Farm value (1982-84=100)	89.0	80.9	76.9	90.5	76.2	75.6	79.6	79.0	82.7	90.6
Farm-retail spread (1982-84=100)	170.0	171.9	184.7	191.3	188.5	187.2	184.7	185.0	182.8	178.1
Farm value-retail cost (%)	16.2	14.8	13.3	20.5	12.9	12.9	13.7	13.6	14.3	15.8

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	Annual			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
Beef, all fresh retail value (cents/lb.)	260.5	275.3	300.5	302.9	307.9	306.3	306.5	309.0	302.3	303.2
Beef, Choice										
Retail value (cents/lb.)[2]	287.8	306.4	337.7	345.4	330.5	329.8	333.5	333.5	330.0	328.9
Wholesale value (cents/lb.)[3]	171.6	182.3	192.1	185.9	188.2	188.6	182.8	180.7	178.7	172.4
Net farm value (cents/lb.)[4]	141.1	149.0	154.5	150.7	155.1	155.6	145.6	141.4	138.6	135.4
Farm-retail spread (cents/lb.)	146.7	157.4	183.2	194.7	175.4	174.2	187.9	192.1	191.4	193.5
Wholesale-retail (cents/lb.)[5]	116.2	124.1	145.6	159.5	142.3	141.2	150.7	152.8	151.3	156.5
Farm-wholesale (cents/lb.)[6]	30.5	33.3	37.6	35.2	33.1	33.0	37.2	39.3	40.1	37.0
Farm value-retail value (%)	49.0	48.6	45.8	43.6	46.9	47.2	43.7	42.4	42.0	41.2
Pork										
Retail value (cents/lb.)[2]	241.5	258.2	269.4	270.5	271.7	270.3	266.7	269.9	266.6	264.2
Wholesale value (cents/lb.)[3]	99.0	114.5	117.8	126.2	108.3	104.6	98.2	99.3	102.6	104.0
Net farm value (cents/lb.)[4]	60.4	79.4	81.2	95.2	72.4	66.7	58.6	61.6	66.2	71.8
Farm-retail spread (cents/lb.)	181.1	178.8	188.2	175.3	199.3	203.6	208.1	208.3	200.4	192.4
Wholesale-retail (cents/lb.)[5]	142.5	143.7	151.6	144.3	163.4	165.7	168.5	170.6	164.0	160.2
Farm-wholesale (cents/lb.)[6]	38.6	35.1	36.6	31.0	35.9	37.9	39.6	37.7	36.4	32.2
Farm value-retail value (%)	25.0	30.8	30.1	35.2	26.6	24.7	22.0	22.8	24.8	27.2

1. Retail costs are based on CPI-U of retail prices for domestically produced farm foods, published monthly by the Bureau of Labor Statistics (BLS). Farm value is the payment for the quantity of farm equivalent to the retail unit, less allowance for by-product. Farm values are based on prices at first point of sale, and may include marketing charges such as grading and packing for some commodities. The farm-retail spread, the difference between the retail value and farm value, represents charges for assembling, processing, transporting, and distributing. 2. Weighted-average value of retail cuts from pork and Choice yield grade 3 beef. Prices from BLS. 3. Value of wholesale (boxed beef) and wholesale cuts (pork) equivalent to 1 pound of retail cuts adjusted for transportation costs and by-product values. 4. Market value to producer for live animal equivalent to 1 lb. of retail cuts, minus value of by-products. 5. Charges for retailing and other marketing services such as wholesaling and in-city transportation. 6. Charges for livestock marketing, processing, and transportation.

Information contacts: Veronica Jones (202) 694-5387, William F. Hahn (202) 694-5175

Table 9—Price Indexes of Food Marketing Costs

	Annual			2000	2001				2002	
	1999	2000	2001	IV	I	II	III	IV	I	II
					*1987=100**					
Labor—hourly earnings and benefits	503.3	514.0	533.8	521.7	527.5	531.8	534.4	541.5	548.2	551.6
Processing	511.4	525.0	544.8	531.3	536.4	542.7	546.5	553.4	554.6	560.6
Wholesaling	564.6	589.4	615.4	601.0	606.4	611.3	618.7	625.5	625.8	625.8
Retailing	465.8	469.9	486.9	477.2	483.8	485.8	485.2	492.7	507.5	509.7
Packaging and containers	399.4	412.0	415.9	413.7	414.2	417.8	416.6	414.9	415.6	416.1
Paperboard boxes and containers	373.0	407.7	411.7	413.5	412.0	413.1	412.1	409.7	406.9	403.7
Metal cans	486.6	452.5	444.4	440.1	441.5	444.3	446.0	445.7	451.6	454.2
Paper bags and related products	440.9	470.4	475.7	474.5	474.2	481.3	474.6	472.6	473.8	474.0
Plastic films and bottles	324.2	336.7	344.2	344.3	344.0	345.8	344.4	342.6	340.2	339.7
Glass containers	447.1	450.8	469.7	450.8	460.2	471.7	473.7	473.0	480.8	494.6
Metal foil	227.3	232.4	241.4	234.8	235.5	246.1	242.7	241.4	241.6	243.1
Transportation services	394.0	394.3	404.0	396.9	401.0	403.1	406.3	405.9	405.3	405.3
Advertising	623.7	635.7	646.6	638.6	644.3	645.6	646.0	649.3	660.0	662.9
Fuel and power	651.5	841.1	803.5	859.6	830.3	826.6	826.4	730.7	699.3	748.5
Electric	489.4	498.2	532.3	504.9	514.3	526.1	559.9	529.1	516.8	526.0
Petroleum	565.9	1,135.8	912.7	1,166.4	998.5	974.7	937.2	740.4	678.2	808.6
Natural gas	1,235.6	1,275.4	1,354.3	1,305.7	1,403.3	1,391.5	1,363.3	1,259.1	1,226.6	1,247.8
Communications, water and sewage	309.3	309.1	313.7	309.5	312.6	312.5	314.2	315.5	317.1	315.9
Rent	256.9	258.2	257.5	259.0	259.2	257.7	257.1	256.0	254.8	254.7
Maintenance and repair	541.6	561.2	582.3	569.7	574.8	578.8	585.2	590.3	595.4	599.6
Business services	531.9	544.6	559.3	548.8	555.3	558.0	560.4	563.1	566.4	568.3
Supplies	327.7	348.5	344.8	345.8	349.2	347.0	342.8	339.1	339.1	344.5
Property taxes and insurance	619.7	654.6	691.9	672.6	680.9	687.5	695.1	704.3	711.6	716.9
Interest, short-term	103.7	115.4	61.0	116.0	91.0	64.1	55.0	33.8	32.5	32.6
Total marketing cost index	472.2	491.5	501.9	497.1	499.5	502.1	503.6	502.2	504.7	509.2

Last two quarters preliminary. * Indexes measure changes in employee earnings and benefits and in prices of supplies used in processing, wholesaling, and retailing U.S. farm foods purchased for at-home consumption. *Information contact: Veronica Jones (202) 694-5387*

Livestock & Products

Table 10—U.S. Meat Supply & Use

	Beg. stocks	Production[1]	Imports	Total supply	Exports	Ending stocks	Consumption Total	Consumption Per capita[2]	Conversion factor[3]	Primary market price[4]
	Million lbs.[5]							Lbs.		$/cwt
Beef										
1999	393	26,493	2,873	29,759	2,412	411	26,936	68	0.700	65.56
2000	411	26,888	3,032	30,332	2,468	525	27,338	68	0.700	69.65
2001	525	26,212	3,164	29,901	2,269	606	27,026	66	0.700	72.71
2002	606	26,864	3,232	30,702	2,377	550	27,775	67	0.700	67.44
2003	550	25,330	3,275	29,155	2,440	350	26,365	63	0.700	75.25
Pork										
1999	584	19,308	827	20,720	1,277	489	18,954	53	0.776	34.00
2000	489	18,952	967	20,407	1,287	478	18,643	51	0.776	44.70
2001	478	19,160	951	20,588	1,560	536	18,492	50	0.776	45.81
2002	536	19,801	1,020	21,357	1,472	575	19,310	52	0.776	34.87
2003	575	19,872	1,020	21,467	1,550	600	19,317	51	0.776	35.00
Veal[6]										
1999	5	235	0	240	0	5	235	1	0.83	89.62
2000	5	225	0	230	0	5	225	1	0.83	105.75
2001	5	205	0	210	0	6	204	1	0.83	106.70
2002	6	197	0	203	0	5	198	1	0.83	95.02
2003	5	195	0	200	0	5	195	1	0.83	105.33
Lamb and mutton										
1999	12	248	112	372	5	9	358	1	0.89	75.97
2000	9	234	130	372	5	13	354	1	0.89	79.40
2001	13	227	146	386	7	12	368	1	0.89	72.04
2002	12	222	181	415	4	13	398	1	0.89	64.91
2003	13	213	192	418	5	13	400	1	0.89	65.25
Total red meat										
1999	994	46,284	3,813	51,091	3,694	914	46,483	122	--	--
2000	914	46,299	4,128	51,341	3,760	1,021	46,560	121	--	--
2001	1,021	45,804	4,260	51,085	3,836	1,160	46,089	118	--	--
2002	1,160	47,084	4,433	52,677	3,853	1,143	47,681	121	--	--
2003	1,143	45,610	4,487	51,240	3,995	968	46,277	116	--	--
										¢/lb
Broilers										
1999	711	29,468	4	30,184	4,585	796	24,803	76	0.859	58
2000	796	30,209	6	31,011	4,918	798	25,295	77	0.859	56
2001	798	30,938	14	31,749	5,557	712	25,480	76	0.859	59
2002	712	31,858	10	32,580	4,709	825	27,046	80	0.859	56
2003	825	32,647	12	33,484	5,450	775	27,259	80	0.859	59
Mature chickens										
1999	6	554	0	562	393	8	162	1	1.0	--
2000	8	531	0	540	220	9	311	1	1.0	--
2001	9	515	0	528	182	8	337	1	1.0	--
2002	8	525	0	535	173	8	354	1	1.0	--
2003	8	500	0	509	160	8	341	1	1.0	--
Turkeys										
1999	304	5,230	1	5,535	378	254	4,902	18	1.0	69
2000	254	5,333	1	5,589	445	241	4,902	17	1.0	71
2001	241	5,489	1	5,732	487	241	5,003	18	1.0	66
2002	241	5,582	1	5,824	504	325	4,994	17	1.0	66
2003	325	5,601	1	5,927	490	325	5,111	18	1.0	67
Total poultry										
1999	1,022	35,252	7	36,281	5,356	1,058	29,867	94	--	--
2000	1,058	36,073	9	37,140	5,584	1,048	30,508	95	--	--
2001	1,048	36,942	18	38,008	6,226	961	30,820	95	--	--
2002	961	37,965	13	38,939	5,386	1,158	32,394	99	--	--
2003	1,158	38,747	15	39,920	6,100	1,108	32,711	99	--	--
Red meat and poultry										
1999	2,016	81,537	3,820	87,372	9,050	1,971	76,351	216	--	--
2000	1,971	82,372	4,137	88,481	9,344	2,069	77,069	216	--	--
2001	2,069	82,746	4,278	89,093	10,062	2,121	76,910	213	--	--
2002	2,121	85,049	4,446	91,616	9,239	2,301	80,075	220	--	--
2003	2,301	84,357	4,502	91,160	10,095	2,076	78,988	215	--	--

-- = Not available. Values for the last 2 years are forecasts. 1. Total including farm production for red meat and federally inspected plus nonfederally inspected for poultry. 2. Retail-weight basis. 3. Red meat, carcass to retail conversion; poultry, ready-to-cook production to retail weight. 4. Beef: Medium #1, Nebraska Direct 1,100-1,300 lb.; pork: barrows and gilts, Iowa, Southern Minnesota; veal: farm price of calves; lamb and mutton: choice slaughter lambs, San Angelo; broilers: wholesale 12-city average; turkeys: wholesale NY 8-16 lb. young hens. 5. Carcass weight for red meats and certified ready-to-cook for poultry. 6. Beginning in 1989, veal trade is no longer reported separately. *Information contact: LaVerne Williams (202) 694-5190*

Table 11—U.S. Egg Supply & Use

	Beg. stocks	Production	Imports	Total supply	Exports	Hatching use	Ending stocks	Consumption Total	Consumption Per capita	Primary market price*
	Million doz.								No.	¢/doz.
1996	11.2	6,350.7	5.4	6,367.3	253.1	863.8	8.5	5,241.8	234.6	88.2
1997	8.5	6,473.1	6.9	6,488.5	227.8	894.7	7.4	5,358.6	235.8	81.2
1998	7.4	6,657.9	5.8	6,671.2	218.8	921.8	8.4	5,522.2	240.1	75.8
1999	8.4	6,912.0	7.4	6,927.8	161.9	941.7	7.6	5,816.6	250.0	65.6
2000	7.6	7,033.5	8.4	7,049.5	171.1	940.2	11.4	5,926.8	251.8	68.9
2001	11.4	7,152.0	8.9	7,172.2	190.0	953.0	10.4	6,018.8	252.6	67.2
2002	10.4	7,186.0	11.5	7,207.9	181.2	968.5	12.0	6,046.2	251.0	66.4
2003	12.0	7,210.0	8.0	7,230.0	168.0	1,000.0	12.0	6,050.0	248.7	66.8

Values for the last year are forecasts. Values for previous year are preliminary. * Cartoned grade A large eggs, New York.
Information contact: LaVerne Williams (202) 694-5190

Table 12—U.S. Milk Supply & Use

	Production	Farm use	Commercial Farm marketings	Commercial Beg. stocks	Imports	Total commercial supply	Commercial CCC net removals	Commercial Ending stocks	Commercial Disappearance	Commercial All milk price[1]	CCC net removals Skim solids basis	CCC net removals Total solids basis[2]
	Million lbs. (milkfat basis)									$/cwt	Billion lbs.	
1995	155.3	1.6	153.7	4.3	2.9	160.9	2.1	4.1	154.9	12.74	4.4	3.5
1996	154.0	1.5	153.5	4.1	2.9	159.5	0.1	4.7	154.7	14.74	0.7	0.5
1997	156.1	1.4	154.7	4.7	2.7	162.1	1.1	4.9	156.1	13.34	3.7	2.7
1998	157.4	1.4	156.1	4.9	4.6	165.5	0.4	5.3	159.9	15.42	4.0	2.6
1999	162.7	1.4	161.3	5.3	4.7	171.4	0.3	6.1	164.9	14.36	6.5	4.0
2000	167.6	1.3	166.2	6.1	4.4	176.8	0.8	6.9	169.1	12.40	8.6	5.5
2001	165.3	1.3	164.1	6.8	5.7	176.6	0.2	7.0	169.4	14.93	5.8	3.5
2002	170.0	1.2	168.8	7.0	5.0	180.8	0.3	7.7	172.8	12.20	9.8	6.0
2003	172.0	1.2	170.9	7.7	4.8	183.4	0.7	6.6	176.0	12.40	6.9	4.4

Values for latest year are forecasts. Values for the preceding year are preliminary. 1. Delivered to plants and dealers; does not reflect deductions
2. Arbitrarily weighted average of milkfat basis (40 percent) and solids basis (60 percent) *Information contact: Jim Miller (202) 694-5184*

Table 13—Poultry & Eggs

	Annual 1999	Annual 2000	Annual 2001	2001 Jun	2002 Jan	2002 Feb	2002 Mar	2002 Apr	2002 May	2002 Jun
Broilers										
Federally inspected slaughter certified (mil. lb.)	29,741.4	30,495.2	31,265.8	2,636.6	2,786.5	2,475.1	2,593.6	2,764.9	2,899.1	2559.1
Wholesale price, 12-city (cents/lb.)	58.1	56.2	59.1	59.9	56.9	55.9	55.2	53.5	56.4	58.4
Price of grower feed ($/ton)[1]	103.1	104.7	101.3	98.8	100.0	98.6	101.6	101.7	104.9	110.0
Broiler-feed price ratio[2]	7.2	6.6	7.8	8.3	7.4	6.9	6.3	5.9	6.1	6.0
Stocks beginning of period (mil. lb.)	711.1	795.6	797.6	660.9	711.8	711.3	721.0	802.6	847.1	829.0
Broiler-type chicks hatched (mil.)	8,715.4	8,846.2	9,006.6	766.5	775.7	702.6	790.3	765.0	798.3	776.4
Turkeys										
Federally inspected slaughter certified (mil. lb.)	5,296.5	5,402.2	5,561.7	463.9	484.0	451.6	449.9	494.1	499.7	451.4
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)	69.0	70.5	66.3	65.8	60.9	60.0	59.0	59.5	63.5	65.7
Price of turkey grower feed ($/ton)[1]	95.0	95.9	95.8	92.3	94.7	94.7	96.8	95.9	98.6	102.5
Turkey-feed price ratio[2]	8.6	8.7	8.2	8.3	7.2	7.2	6.8	6.8	7.2	7.2
Stocks beginning of period (mil. lb.)	304.3	254.3	241.3	456.0	240.5	325.2	409.9	456.3	516.0	578.9
Poults placed in U.S. (mil.)	296.1	297.3	301.6	26.1	25.9	24.3	25.7	26.0	25.6	24.4
Eggs										
Farm production (mil.)	82,944.0	84,393.0	85,819.0	6,992.0	7,245.0	6,561.0	7,395.0	7,081.0	7,273.0	7115.0
Average number of layers (mil.)	322.9	328.3	335.4	332.9	338.3	337.0	336.6	335.7	334.9	335.0
Rate of lay (eggs per layer on farms)	256.8	257.1	255.8	21.0	21.4	19.5	22.0	21.1	21.7	21.2
Cartoned price, New York, grade A large (cents/doz.)[3]	65.6	68.9	67.1	57.3	69.7	60.7	76.9	55.8	53.3	66.1
Price of laying feed ($/ton)[1]	124.6	123.6	123.4	129.4	122.2	133.1	118.1	142.2	153.0	133.1
Egg-feed price ratio[2]	9.8	10.6	9.9	8.5	10.2	8.4	11.6	7.3	6.6	9.5
Stocks, first of month Frozen (mil. doz.)	8.4	7.6	11.4	12.1	10.4	10.0	10.6	8.9	7.8	8.4
Replacement chicks hatched (mil.)	451.7	430.4	451.8	42.6	35.5	34.3	36.7	38.2	38.9	35.3

1. Calculated from price ratios that were revised February 1995. 2. Pounds of feed equal in value to 1 dozen eggs or 1 lb. of broiler or turkey liveweight (revised February 1995). 3. Price of cartoned eggs to volume buyers for delivery to retailers.
Information contact: LaVerne Williams (202) 694-5190

Table 14—Dairy

	Annual			2001	2002					
	1999	2000	2001	Jun	Jan	Feb	Mar	Apr	May	Jun
Class III (BFP before 2000) 3.5% fat ($/cwt.)	12.43	9.74	13.10	15.02	11.87	11.63	10.65	10.85	10.82	10.09
Wholesale prices										
Butter, Central States (cents/lb.)[1]	125.2	118.5	167.7	197.4	136.2	126.9	126.4	120.8	109.7	106.3
Am. cheese, Wis. assembly pt. (cents/lb.)	142.3	116.2	144.9	166.8	131.9	123.2	122.2	125.8	122.1	115.1
Nonfat dry milk (cents/lb.)[2]	103.5	101.6	100.8	102.5	94.0	93.6	92.2	90.6	91.7	92.1
USDA net removals										
Total (mil. lb.)[3]	343.5	841.4	151.3	7.7	22.6	26.0	18.6	21.6	25.8	26.7
Butter (mil. lb.)	3.7	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Am. cheese (mil. lb.)	4.6	28.0	4.6	0.0	0.8	0.8	0.0	0.0	0.0	0.0
Nonfat dry milk (mil. lb.)	540.6	692.6	494.4	34.8	67.0	82.7	84.5	98.0	117.3	92.4
Milk										
Milk prod. 20 states (mil. lb.)	140,062	144,535	142,817	12,052	12,272	11,365	12,771	12,555	13,021	12,315
Milk per cow (lb.)	18,109	18,533	18,438	1,555	1,585	1,468	1,649	1,619	1,677	1,583
Number of milk cows (1,000)	7,734	7,799	7,746	7,751	7,745	7,744	7,744	7,754	7,764	7,779
U.S. milk production (mil. lb.)[4]	162,716	167,559	165,336	13,952	14,248	13,190	14,818	14,577	15,112	14,288
Stocks, beginning[3]										
Total (mil. lb.)	5,302	6,186	7,010	9,600	7,259	8,446	9,393	9,866	11,255	12,141
Commercial (mil. lb.)	5,274	6,142	6,871	9,346	7,041	8,229	9,148	9,609	10,968	11,837
Government (mil. lb.)	28	44	139	254	218	216	245	257	287	304
Imports, total (mil. lb.)[3]	4,772	4,445	5,716	727	415	361	421	389	412	457
Commercial disappearance (mil. lb.)[3]	164,947	169,132	169,467	13,959	13,348	12,512	14,655	13,484	14,526	14,161
Butter										
Production (mil. lb.)	1,277.1	1,256.0	1,236.8	86.8	140.7	125.4	129.0	132.4	126.5	97.9
Stocks, beginning (mil. lb.)	25.9	24.9	24.0	137.4	55.5	99.9	129.4	144.4	197.1	224.6
Commercial disappearance (mil. lb.)	1,310.7	1,280.0	1,280.8	87.3	98.5	100.0	117.9	82.3	101.0	84.6
American cheese										
Production (mil. lb.)	3,532.6	3,641.6	3,519.2	304.6	315.2	287.4	318.2	316.8	326.2	309.5
Stocks, beginning (mil. lb.)	407.6	458.0	521.1	495.7	448.3	452.9	484.3	497.4	507.6	530.5
Commercial disappearance (mil. lb.)	3,542.2	3,595.8	3,656.0	288.9	314.2	257.5	308.9	309.1	309.4	311.4
Other cheese										
Production (mil. lb.)	4,361.5	4,616.4	4,609.9	373.9	382.4	359.7	401.3	382.5	397.9	376.2
Stocks, beginning (mil. lb.)	109.5	163.3	185.2	214.7	210.9	234.2	230.6	232.5	246.4	252.1
Commercial disappearance (mil. lb.)	4,672.1	4,959.1	4,952.3	404.6	379.7	391.9	429.5	405.8	424.8	408.4
Nonfat dry milk										
Production (mil. lb.)	1,359.7	1,451.8	1,413.8	131.5	118.9	125.8	147.8	158.3	158.1	148.4
Stocks, beginning (mil. lb.)	56.9	150.9	146.3	134.0	124.5	120.0	142.5	157.8	160.8	165.8
Commercial disappearance (mil. lb.)	737.2	770.6	948.5	64.8	67.7	21.7	48.2	57.8	38.5	54.8
Frozen dessert										
Production (mil. gal.)[5]	1,301.0	1,304.9	1,325.4	134.0	95.9	100.1	113.1	121.4	121.3	125.9

	Annual			2000	2001				2002	
	1999	2000	2001	IV	I	II	III	IV	I	II
Milk production (mil. lb.)	162,716	167,559	165,336	40,644	41,267	42,681	40,570	40,818	42,256	43,977
Milk per cow (lb.)	17,772	18,201	18,139	4,416	4,514	4,683	4,459	4,483	4,639	4,808
No. of milk cows (1,000)	9,156	9,206	9,115	9,203	9,143	9,114	9,098	9,105	9,109	9,147
Milk-feed price ratio	2.03	1.75	--	1.81	--	--	--	--	--	--
Returns over concentrate costs ($/cwt milk)	11.40	9.40	--	9.80	--	--	--	--	--	--

-- = Not available. Quarterly values for latest year are preliminary. 1. Grade AA Chicago before June 1998. 2. Prices paid f.o.b. Central States production area. 3. Milk equivalent, fat basis. 4. Monthly data ERS estimates. 5. Hard ice cream, ice milk, and hard sherbet.
Information contact: LaVerne Williams (202) 694-5190

Table 15—Wool

	Annual			2000	2001				2002	
	1999	2000	2001	IV	I	II	III	IV	I	II
U.S. wool price (¢/lb.)[1]	110	108	121	96	101	130	125	126	190	151
Imported wool price (¢/lb.)[2]	136	137	160	136	151	155	167	168	233	247
U.S. mill consumption, scoured										
Apparel wool (1,000 lb.)	63,535	62,041	52,969	13,914	17,003	13,519	11,584	10,863	10,969	--
Carpet wool (1,000 lb.)	13,950	15,205	13,010	3,886	4,280	3,791	2,919	2,320	1,856	--

-- = Not available. 1. Wool price delivered at U.S. mills, clean basis, Graded Territory 64's (20.60-22.04 microns) staple 2-3/4" and up. 2. Wool price, Charleston, SC warehouse, clean basis, Australian 60/62's, type 64A (24 micron). Duty since 1982 has been 10 cents.
Information contact: Wilma L. Davis (202) 694-5304

Table 16—Meat Animals

	Annual			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
Cattle on feed (7 states, 1000+ head capacity)										
Number on feed (1,000 head)[1]	9,021	9,752	10,076	9,466	9,951	9,905	9,934	9,389	9,449	9,056
Placed on feed (1,000 head)	21,446	21,875	21,145	1,730	1,543	1,654	1,235	1,990	1,422	1,619
Marketings (1,000 head)	20,124	20,674	19,955	1,758	1,537	1,565	1,709	1,864	1,773	1,889
Other disappearance (1,000 head)	676	702	774	51	52	60	71	66	42	36
Market prices ($/cwt)										
Slaughter cattle										
Choice steers, 1,100-1,300 lb.										
Texas	65.89	69.86	71.98	70.71	70.81	71.97	67.63	65.49	63.85	63.57
Neb. direct	65.56	69.65	72.43	71.00	71.15	72.59	67.79	65.32	63.64	62.49
Boning utility cows, Sioux Falls	38.40	41.71	44.49	43.25	41.88	44.06	42.88	42.45	41.50	37.67
Feeder steers										
Medium no. 1, Oklahoma City										
600-650 lb.	82.64	94.31	95.29	97.80	90.12	91.45	92.00	88.53	80.89	82.36
750-800 lb.	76.39	86.14	88.20	91.32	82.04	80.03	77.32	76.74	77.42	77.32
Slaughter hogs										
Barrows and gilts, 51-52 percent lean										
National Base converted to live equal.	34.00	44.70	45.81	53.75	40.65	37.47	32.97	34.64	37.32	40.53
Sows, Iowa, S.MN 1-2 300-400 lb.	19.26	29.79	33.98	40.75	29.45	29.50	24.39	25.41	21.11	21.04
Slaughter sheep and lambs										
Lambs, Choice, San Angelo	75.96	79.40	72.04	69.82	70.00	64.00	65.15	64.06	68.75	75.83
Ewes, Good, San Angelo	42.45	46.23	45.66	44.07	39.19	36.00	40.10	38.00	34.83	35.42
Feeder lambs										
Choice, San Angelo	80.74	95.86	89.38	68.21	84.25	78.00	85.00	76.83	74.75	68.97
Wholesale meat prices, Midwest										
Boxed beef cut-out value										
Choice, 700-800 lb.	110.90	117.45	122.17	118.96	109.59	120.02	116.31	115.60	114.53	109.35
Select, 700-800 lb.	101.91	108.83	114.42	112.77	107.18	117.13	109.77	106.16	107.22	105.14
Canner and cutter cow beef	66.51	72.57	--	--	--	--	--	--	--	--
Pork cutout	53.45	64.07	66.83	74.47	58.59	56.12	50.55	51.90	54.40	58.48
Pork loins, bone-in, 1/4" trim,14-19 lb.	100.38	117.13	116.97	126.41	105.73	100.08	94.13	101.71	104.80	108.64
Pork bellies, 12-14 lb.	57.12	77.46	78.61	102.42	70.75	72.55	63.48	58.85	65.90	81.06
Hams, bone-in, trimmed, 20-23 lb.	45.18	52.02	56.86	64.35	52.56	51.56	35.15	33.10	34.36	42.09
All fresh beef retail price	260.50	275.30	275.30	302.90	307.90	306.30	306.50	309.00	302.30	303.20
Commercial slaughter (1,000 head)[2]										
Cattle	36,150	36,246	35,370	2,943	2,615	2,737	2,948	3,147	3,063	3,187
Steers	17,932	18,063	17,386	1,502	1,256	1,329	1,476	1,640	1,620	1,681
Heifers	11,868	12,039	11,576	943	894	921	964	988	943	976
Cows	5,710	5,520	5,774	445	419	438	255	464	446	479
Bull and stags	639	624	632	53	46	49	53	54	54	51
Calves	1,282	1,132	1,007	83	73	78	82	78	76	96
Sheep and lambs	3,701	3,460	3,222	244	256	325	278	284	230	258
Hogs	101,544	97,976	97,962	7,448	7,500	7,981	8,428	8,326	7,536	8,068
Barrows and gilts	97,732	94,604	94,588	7,180	7,252	7,705	8,144	8,027	7,251	7,750
Commercial production (mil. lb.)										
Beef	26,385	26,776	26,108	2,177	1,987	2,059	2,194	2,336	2,303	2,426
Veal	224	215	194	16	14	15	16	15	15	17
Lamb and mutton	243	232	224	17	18	22	19	20	15	16
Pork	19,278	18,929	19,139	1,435	1,482	1,581	1,673	1,647	1,480	1,557

	Annual			2001				2002		
	1999	2000	2001	I	II	III	IV	I	II	III
Hogs and pigs (U.S.)[3]										
Inventory (1,000 head)[1]	62,206	59,342	59,138	59,138	57,524	58,603	59,777	59,804	58,898	59,837
Breeding (1,000 head)[1]	6,682	6,234	6,270	6,270	6,232	6,186	6,158	6,209	6,236	6,209
Market (1,000 head)[1]	55,523	53,109	52,868	52,868	51,292	52,417	53,619	53,594	52,661	53,627
Farrowings (1,000 head)	11,641	11,462	11,303	2,748	2,870	2,878	2,889	2,832	2,933	2,930
Pig crop (1,000 head)	102,354	101,354	99,473	23,963	25,509	25,539	25,492	24,711	25,851	--
Cattle on Feed, 7 states (1,000 head)[1, 4]										
Steers and steer calves	5,432	5,768	5,936	5,936	5,885	5,521	5,690	6,077	6,180	5,541
Heifers and heifer calves	3,552	3,942	4,081	4,081	3,913	3,894	3,882	3,769	3,718	3,474
Cows and bulls	37	42	59	59	61	51	41	64	36	41

-- = Not available. 1. Beginning of period. 2. Classes estimated. 3. Quarters are Dec. of preceding year to Feb. (I), Mar.-May (II), June-Aug. (III), and Sept.-Nov. (IV). 4. The 7 states include AZ, CA, CO, IA, KS, NE, and TX. *Information contact: Leland Southard (202) 694-5187*

Crops & Products

Table 17—Supply & Utilization[1,2]

	Area										
	Planted	Harvested	Yield	Production	Total supply[4]	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price[5]
	Mil. acres		Bu./acre	Mil. bu.							$/bu.
Wheat											
1998/99	65.8	59.0	43.2	2,547	3,373	391	990	1,046	2,427	946	2.65
1999/00	62.7	53.8	42.7	2,299	3,339	288	1,013	1,089	2,390	950	2.48
2000/01	62.6	53.1	42.0	2,232	3,272	304	1,029	1,062	2,396	876	2.62
2001/02*	59.6	48.7	40.2	1,958	2,941	197	1,011	961	2,169	772	2.78
2002/03*	60.1	47.6	35.4	1,686	2,563	175	1,021	900	2,096	467	3.20-3.80
	Mil. acres		Lb./acre	Mil. cwt (rough equiv)							$/cwt
Rice[6]											
1998/99	3.3	3.3	5,663.0	184.4	223.0	--	6/ 114.0	86.8	200.9	22.1	8.89
1999/00	3.5	3.5	5,866.0	206.0	238.2	--	6/ 121.9	88.8	210.7	27.5	5.93
2000/01	3.1	3.0	6,281.0	190.9	229.2	--	6/ 117.5	83.2	200.7	28.5	5.61
2001/02*	3.3	3.3	6,429.0	213.0	254.8	--	6/ 123.0	95.0	218.0	36.8	4.16
2002/03*	3.3	3.2	6,393.0	206.3	256.6	--	6/ 126.1	92.0	218.1	38.5	4.25-4.75
	Mil. acres		Bu./acre	Mil. bu.							$/bu.
Corn											
1998/99	80.2	72.6	134.4	9,759	11,085	5,468	1,846	1,984	9,298	1,787	1.94
1999/00	77.4	70.5	133.8	9,431	11,232	5,665	1,913	1,937	9,515	1,718	1.82
2000/01	79.6	72.4	136.9	9,915	11,639	5,842	1,957	1,941	9,740	1,899	1.85
2001/02*	75.8	68.8	138.2	9,507	11,416	5,825	2,055	1,900	9,780	1,636	1.93
2002/03*	78.8	71.0	125.2	8,886	10,537	5,600	2,170	2,000	9,770	767	2.30-2.70
	Mil. acres		Bu./acre	Mil. bu.							$/bu.
Sorghum											
1998/99	9.6	7.7	67.3	520	569	262	45	197	504	65	1.66
1999/00	9.3	8.5	69.7	595	660	285	55	255	595	65	1.57
2000/01	9.2	7.7	60.9	471	536	222	35	237	494	42	1.89
2001/02*	10.3	8.6	59.9	515	556	215	45	240	500	56	1.90
2002/03*	9.3	7.5	50.3	380	436	135	45	220	400	36	2.30-2.70
	Mil. acres		Bu./acre	Mil. bu.							$/bu.
Barley											
1998/99	6.3	5.9	60.0	352	501	161	170	29	360	142	1.98
1999/00	5.2	4.7	59.2	280	450	138	172	28	338	111	2.13
2000/01	5.9	5.2	61.1	319	459	123	172	58	353	106	2.11
2001/02*	5.0	4.3	58.2	250	380	88	172	27	287	93	2.23
2002/03*	5.0	4.5	55.9	252	370	100	172	20	292	78	2.40-2.80
	Mil. acres		Bu./acre	Mil. bu.							$/bu.
Oats											
1998/99	4.9	2.8	60.2	166	348	196	69	2	266	81	1.10
1999/00	4.7	2.5	59.6	146	326	180	68	2	250	76	1.12
2000/01	4.5	2.3	64.2	150	332	189	68	2	259	73	1.10
2001/02*	4.4	1.9	61.3	117	286	148	72	3	222	63	1.58
2002/03*	5.1	2.6	54.2	143	306	175	72	2	249	57	1.40-1.80
	Mil. acres		Bu./acre	Mil. bu.							$/bu.
Soybeans[7]											
1998/99	72.0	70.4	38.9	2,741	2,944	201	1,590	805	2,595	348	4.93
1999/00	73.7	72.4	36.6	2,654	3,006	164	1,578	975	2,716	290	4.63
2000/01	74.3	72.4	38.1	2,758	3,052	167	1,641	996	2,804	248	4.54
2001/02*	74.1	73.0	39.6	2,891	3,141	181	1,705	1,060	2,946	195	4.35
2002/03*	73.0	72.0	36.5	2,628	2,829	174	1,680	820	2,674	155	4.15-5.05
				Mil. lbs.							¢/lb.
Soybean oil											
1998/99	--	--	--	18,081	19,546	--	15,655	2,372	18,027	1,520	19.90
1999/00	--	--	--	17,825	19,426	--	16,056	1,375	17,431	1,995	15.60
2000/01	--	--	--	18,434	20,502	--	16,224	1,401	17,625	2,877	14.15
2001/02*	--	--	--	18,920	21,840	--	16,800	2,400	19,200	2,640	16.00
2002/03*	--	--	--	18,985	21,690	--	17,200	2,500	19,700	1,990	18.50-21.50
				1,000 tons							$/ton[8]
Soybean meal											
1998/99	--	--	--	37,792	38,109	--	30,657	7,122	37,779	330	138.5
1999/00	--	--	--	37,591	37,970	--	30,345	7,332	37,678	293	167.7
2000/01	--	--	--	39,389	39,733	--	31,646	7,703	39,349	383	173.6
2001/02*	--	--	--	40,552	41,125	--	33,200	7,650	40,850	275	166.5
2002/03*	--	--	--	39,975	40,450	--	33,450	6,750	40,200	250	170-200

See footnotes at end of table, next page

Table 17—Supply & Utilization (continued)

	Area										
	Planted	Harvested	Yield	Production	Total supply [3]	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price [4]
	Mil. acres		*Lb./acre*	*Mil. bales*							*¢/lb.*
Cotton [8]											
1998/99	13.4	10.7	625	13.9	18.2	--	10.4	4.3	14.7	3.9	60.2
1999/00	14.9	13.4	607	17.0	21.0	--	10.2	6.8	16.9	3.9	45.0
2000/01	15.5	13.1	632	17.2	21.1	--	8.9	6.8	15.6	6.0	49.8
2001/02*	15.8	13.8	705	20.3	26.3	--	7.7	11.0	18.7	7.6	31.3
2002/03*	14.4	13.1	675	18.4	26.1	--	7.9	11.2	19.1	7.0	--

-- = Not available or not applicable. *August 12, 2002 Supply and Demand Estimates. 1. Marketing year beginning June 1 for wheat, barley and oats; August 1 for cotton and rice; September 1 for soybeans, corn, and sorghum; October 1 for soymeal and soyoil. 2. Conversion factors: hectare (ha.) = 2.471 acres, 1 metric ton = 2,204.622 pounds, 36.7437 bushels of wheat or soybeans, 39.3679 bushels of corn or sorghum, 45.9296 bushels of barley, 68.8944 bushels of oats, 22.046 cwt of rice, and 4.59 480-pound bales of cotton. 3. Includes imports. 4. Marketing-year weighted average price received by farmers. Does not include an allowance for loans outstanding and government purchases. 5. Residual included in domestic use. 6. Includes seed. 7. Simple average of 48 percent protein, Decatur. 8. Upland and extra-long staple. Stocks estimates based on Census Bureau data, resulting in an unaccounted difference between supply and use estimates. For 2001/02, cotton price is the average for August 2001-June 2002. USDA is prohibited by law from publishing cotton price projections. *Information contact: Wilma Davis (202) 694-5304*

Table 18—Cash Prices, Selected U.S. Commodities

	Marketing year[1]			2001	2002					
	1998/99	1999/2000	2000/01	Jul	Feb	Mar	Apr	May	Jun	Jul
Wheat, no. 1 HRW, Kansas City ($/bu.)[2]	2.67	2.87	3.30	3.20	3.25	3.23	3.24	3.21	3.55	3.92
Wheat, DNS, Minneapolis ($/bu.)[3]	3.83	3.65	3.62	3.51	3.51	3.51	3.55	3.59	3.64	4.03
Rice, S.W. La. ($/cwt)[4]	16.79	12.99	12.46	12.38	9.88	9.81	9.25	9.15	9.13	9.13
Corn, no. 2 yellow, 30-day, Chicago ($/bu.)	2.06	1.97	1.99	2.07	2.06	2.05	2.03	2.08	2.15	2.33
Sorghum, no. 2 yellow, Kansas City ($/cwt)	3.29	3.10	3.41	3.59	3.55	3.58	3.47	3.44	3.57	3.97
Barley, feed, Duluth ($/bu.)	--	--	--	1.49	1.55	1.55	1.55	1.55	1.55	1.55
Barley, malting Minneapolis ($/bu.)	--	--	--	--	2.48	2.48	2.47	2.45	2.48	2.56
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.)[5]	60.12	52.36	51.56	37.48	31.60	33.23	31.86	31.14	36.36	39.78
Northern Europe prices cotton index (¢/lb.)[6]	72.11	52.85	57.25	45.55	42.59	42.01	41.61	40.01	43.43	46.75
U.S. M 1-3/32 in. (¢/lb.)[7]	74.08	59.64	62.54	50.56	43.56	46.00	45.00	42.55	46.25	49.81
Soybeans, no. 1 yellow, 15-day[8] Central Illinois ($/bu)	4.85	4.76	4.61	5.09	4.35	4.57	4.66	4.82	5.09	5.70
Soybean oil, crude, Decatur (¢/lb.)	19.80	15.59	14.10	16.49	14.15	14.75	15.31	15.99	17.69	19.12
Soybean meal, high protein, Decatur ($/ton)	138.55	167.62	173.62	184.52	153.11	160.49	161.57	164.28	170.33	187.41

-- = Not available. 1. Beginning June 1 for wheat and barley; Aug. 1 for rice and cotton; Sept. 1 for corn, sorghum, and soybeans; Oct. 1 for soymeal and oil. 2. Ordinary protein. 3. 14 percent protein. 4. Long grain, milled basis. 5. Average spot market. 6. Liverpool Cotlook "A" Index; average of 5 lowest priced growth. 7. Cotton, Memphis territory growth. 8. Soybean 30-day price discontinued. *Information contact: Wilma Davis (202) 694-5304*

Table 19—Farm Programs, Price Supports, Participation, & Payment Rates

	Marketing assistance loan rate	Marketing loan benefit [1]	Flexibility contract payment rate	Acres under contract	Contract payment yields
				Mil. acres	*Bu./acre*
Wheat		*$/bu.*			
1997/98	2.58	0.01	0.631	76.7	34.70
1998/99	2.58	0.19	0.663	78.9	34.50
1999/2000	2.58	0.41	0.637	79.0	34.50
2000/2001	2.58	--	0.588	78.9	34.50
2001/2002 [2]	2.58	--	0.474	78.2	34.60
					Cwt/acre
Rice		*$/cwt*			
1997/98	6.50	0.00	2.710	4.2	48.17
1998/99	6.50	0.08	2.921	4.2	48.17
1999/2000	6.50	1.94	2.820	4.2	48.15
2000/2001	6.50	--	2.600	4.1	48.15
2001/2002 [2]	6.50	--	2.100	4.1	48.15
					Bu./acre
Corn		*$/bu.*			
1997/98	1.89	0.01	0.486	80.9	102.80
1998/99	1.89	0.14	0.377	82.0	102.60
1999/2000	1.89	0.26	0.363	81.9	102.60
2000/2001	1.89	--	0.334	81.9	102.60
2001/2002 [2]	1.89	--	0.269	81.5	102.70
					Bu./acre
Sorghum		*$/bu.*			
1997/98	1.76	0.00	0.544	13.1	57.30
1998/99	1.74	0.12	0.452	13.6	56.90
1999/2000	1.74	0.26	0.435	13.7	56.90
2000/2001	1.71	--	0.400	13.6	57.00
2001/2002 [2]	1.71	--	0.324	13.5	57.00
					Bu./acre
Barley		*$/bu.*			
1997/98	1.57	0.01	0.277	10.5	47.20
1998/99	1.56	0.23	0.284	11.2	46.70
1999/2000	1.59	0.14	0.271	11.2	46.60
2000/2001	1.62	--	0.251	11.2	46.60
2001/2002 [2]	1.65	--	0.206	11.0	46.60
					Bu./acre
Oats		*$/bu.*			
1997/98	1.11	0.00	0.031	6.2	50.80
1998/99	1.11	0.18	0.031	6.5	50.70
1999/2000	1.13	0.19	0.030	6.5	50.60
2000/2001	1.16	--	0.028	6.5	50.60
2001/2002 [2]	1.21	--	0.022	6.5	50.60
					Bu./acre
Soybeans [3]		*$/bu.*			
1997/98	5.26	0.01	--	--	--
1998/99	5.26	0.45	--	--	--
1999/2000	5.26	0.88	--	--	--
2000/2001	5.26	--	--	--	--
2001/2002	5.26	--	--	--	--
					Lb./acre
Upland cotton		*¢/lb.*			
1997/98	51.92	0.00	7.625	16.2	608.00
1998/99	51.92	0.09	8.173	16.4	604.00
1999/2000	51.92	0.20	7.880	16.4	604.00
2000/2001	51.92	--	7.330	16.3	604.00
2001/2002 [2]	51.92	--	5.990	16.2	605.80

-- = Not available. 1. Weighted average, based on portions of crop receiving marketing loan gains, loan deficiency payments, and no benefits (calculated by Economic Research Service). 2. Estimated payment rates and acres under contract. 3. There are no flexibility contract payments for soybeans.

Information contact: Brenda Chewning, Farm Service Agency (202) 720-8838

Table 20—Fruit

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Citrus[1]										
Production (1,000 tons)	15,274	14,561	15,799	15,712	17,271	17,770	13,633	17,275	16,317	16,405
Per capita consumpt. (lb.)[2]	26.0	25.0	24.1	25.2	27.5	27.3	21.0	24.5	25.1	--
Noncitrus[3]										
Production (1,000 tons)	16,554	17,339	16,348	16,103	18,363	16,545	17,331	18,923	16,822	--
Per capita consumpt. (lb.)[2]	73.8	75.6	73.6	73.9	76.1	76.5	81.6	78.7	--	--

	2001			2002						
	Jul	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Grower prices										
Apples (¢/pound)[4]	15.20	23.50	23.10	22.10	21.60	22.00	21.80	21.50	22.00	20.60
Pears (¢/pound)[4]	22.00	18.70	18.15	14.10	13.80	13.35	13.35	13.35	16.85	15.60
Oranges ($/box)[5]	4.33	3.19	3.44	3.89	4.42	4.88	4.30	4.82	4.13	3.90
Grapefruit ($/box)[5]	5.01	3.06	2.30	1.98	1.70	1.23	1.02	1.05	4.16	6.36
Stocks, ending										
Fresh apples (mil. lb.)	487	4,975	4,355	3,629	2,958	2,221	1,550	1,043	644	316
Fresh pears (mil. lb.)	18	412	322	239	188	136	80	43	13	30
Frozen fruits (mil. lb.)	1,184	1,156	1,106	1,012	947	862	788	784	895	1,011
Frozen conc.orange juice (mil. single-strength gallons)	781	574	641	704	724	734	768	809	789	771

-- = Not available. 1. Year shown is when harvest concluded. 2. Fresh per capita consumption. 3. Calendar year. 4. Fresh use. 5. U.S. equivalent on-tree returns. *Information contact: Susan Pollack (202) 694-5251*

Table 21—Vegetables

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Production[1]										
Total vegetables (1,000 cwt)	692,022	785,798	751,715	765,645	763,532	732,803	833,622	822,475	780,134	--
Fresh (1,000 cwt)[2,4]	390,528	416,173	397,125	412,010	436,459	420,012	449,683	479,223	477,212	--
Processed (tons)[3,4]	15,074,707	18,481,238	17,729,497	17,681,732	16,353,639	15,639,548	19,196,942	17,162,580	15,146,100	--
Mushrooms (1,000 lbs)[5]	750,799	782,340	777,870	776,677	808,678	847,760	854,394	846,209	837,866	--
Potatoes (1,000 cwt)	430,349	469,425	445,099	499,254	467,091	475,771	478,216	513,621	444,766	--
Sweet potatoes (1,000 cwt)	11,027	13,380	12,821	13,216	13,327	12,382	12,234	13,794	14,565	--
Dry edible beans (1,000 cwt)	21,862	28,950	30,689	27,912	29,370	30,418	33,085	26,409	19,541	27,207

	2001			2002						
	Jul	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Shipments (1,000 cwt)										
Fresh	22,440	20,373	19,855	24,508	20,758	21,353	25,061	37,589	31,401	28,311
Iceberg lettuce	3,424	3,214	2,842	3,381	2,546	2,467	3,642	4,190	3,378	4,054
Tomatoes, all	3,226	3,259	3,831	4,992	4,130	3,743	3,946	4,417	3,047	3,695
Dry-bulb onions	3,808	4,152	3,891	4,291	3,419	3,167	3,529	4,623	3,189	4,283
Others[6]	11,982	9,748	9,291	11,844	10,663	11,976	13,944	24,359	21,787	16,279
Potatoes, all	10,918	12,122	14,294	13,870	11,368	13,965	18,128	18,881	12,152	10,830
Sweet potatoes	166	695	426	287	276	399	227	308	221	263

-- = Not available. 1. Calendar year except mushrooms. 2. Includes fresh production of asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, honeydews, onions, & tomatoes through 1999. In 2000, greens, okra, chile peppers, pumpkins, radishes, and squash were added. 3. Includes processing production of snap beans, sweet corn, green peas, tomatoes, cucumbers (for pickles), asparagus, broccoli, carrots, and cauliflower. 4. Data after 1991 not comparable to previous years because commodity estimates reinstated in 1992 are included. 5. Fresh and processing agaricus mushrooms only. Excludes specialty varieties. Crop year July 1 - June 30. 6. Includes snap beans, broccoli, cabbage, cauliflower, celery, sweet corn, cucumbers, eggplant, bell peppers, honeydews, and watermelons. *Information contact: Gary Lucier (202) 694-5253*

Table 22—Other Commodities

	Annual			1999		2000				2001	
	1998	1999	2000	IV	I	II	III	IV	I	II
Sugar										
Production[1]	7,891	9,083	8,912	4,667	2,681	922	772	4,537	2,660	827
Deliveries[1]	9,851	10,167	10,091	2,609	2,348	2,513	2,641	2,589	2,399	2,524
Stocks, ending[1]	3,423	3,855	4,338	3,855	4,551	3,498	2,219	4,338	5,122	3,720
Coffee										
Composite green price[2] N.Y. (¢/lb.)	114.43	88.49	71.94	91.79	85.66	75.78	66.73	59.63	54.95	51.97

	Annual			2001			2002			
	1999	2000	2001	Mar	Oct	Nov	Dec	Jan	Feb	Mar
Tobacco										
Avg. price to grower[3]										
Flue-cured ($/lb.)	1.74	1.79	1.86	--	1.91	1.85	--	--	--	--
Burley ($/lb.)	1.90	1.96	1.97	--	--	1.98	1.98	1.98	1.97	1.97
Domestic taxable removals										
Cigarettes (bil.)	423.3	406.0	--	35.3	--	--	--	--	--	--
Large cigars (mil.)[4]	3,844	3,833	--	368	--	--	--	--	--	--

-- = Not available. 1. 1,000 short tons, raw value. Quarterly data shown at end of each quarter. 2. Net imports of green and processed coffee. 3. Crop year July-June for flue-cured, October-September for burley. Includes contract sales from 2001 on. 4. Includes imports of large cigars. *Information contacts: sugar and coffee, Fannye Jolly (202) 694-5249; tobacco, Tom Capehart (202) 694-5311*

World Agriculture

Table 23—World Supply & Utilization of Major Crops, Livestock, & Products

	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02 F	2002/03 F
					Million units					
Wheat										
Area (hectares)	221.9	214.5	218.7	230.0	228.0	225.1	216.6	219.5	215.3	217.2
Production (metric tons)	558.6	524.0	538.4	582.0	610.2	589.7	586.2	583.9	579.6	580.7
Exports (metric tons)[1]	101.6	101.5	99.1	100.2	104.3	102.0	112.8	103.5	107.5	103.9
Consumption (metric tons)[2]	556.2	546.9	548.4	573.9	583.2	582.9	589.1	590.6	587.6	594.3
Ending stocks (metric tons)[3]	172.4	149.4	139.5	144.5	171.5	178.3	175.4	168.7	160.6	147.1
Coarse grains										
Area (hectares)	318.7	324.0	313.9	322.7	311.1	307.2	299.6	295.2	299.6	302.0
Production (metric tons)	798.9	871.3	802.9	908.5	883.8	888.9	876.1	858.1	882.8	902.7
Exports (metric tons)[1]	86.3	98.4	87.9	94.1	85.6	96.5	104.5	103.7	101.8	100.4
Consumption (metric tons)[2]	838.6	859.6	841.8	875.1	873.2	869.3	881.8	880.8	899.5	913.2
Ending stocks (metric tons)[3]	179.0	190.6	151.8	185.2	195.7	215.4	209.7	187.0	170.3	159.8
Rice, milled										
Area (hectares)	144.8	147.4	148.0	149.7	151.3	152.2	155.0	151.5	151.0	147.8
Production (metric tons)	355.3	364.5	371.4	380.3	386.8	394.1	409.2	397.4	396.6	394.4
Exports (metric tons)[1]	16.5	20.7	19.7	18.9	27.6	24.9	22.8	24.5	24.9	25.6
Consumption (metric tons)[2]	359.2	366.0	372.0	379.0	379.5	387.3	398.3	396.3	403.9	408.7
Ending stocks (metric tons)[3]	120.0	118.5	117.9	119.2	126.5	133.3	144.2	145.2	137.8	113.6
Total grains										
Area (hectares)	685.4	685.9	680.6	702.4	690.4	684.5	671.2	666.2	665.9	667.0
Production (metric tons)	1,712.8	1,759.8	1,712.7	1,870.8	1,880.8	1,872.7	1,871.5	1,839.4	1,859.0	1,877.8
Exports (metric tons)[1]	204.4	220.6	206.7	213.2	217.5	223.4	240.1	231.7	234.2	229.9
Consumption (metric tons)[2]	1,754.0	1,772.5	1,762.2	1,828.0	1,835.9	1,839.5	1,869.2	1,867.7	1,891.0	1,916.2
Ending stocks (metric tons)[3]	471.4	458.5	409.2	448.9	493.7	527.0	529.3	500.9	468.7	420.5
Oilseeds										
Crush (metric tons)	190.1	208.1	217.5	216.7	226.4	240.5	247.9	254.4	265.5	269.0
Production (metric tons)	229.4	261.9	258.9	261.4	286.6	294.7	303.4	313.4	323.4	319.9
Exports (metric tons)	38.7	44.1	44.3	49.6	54.0	55.1	64.6	71.4	70.2	73.1
Ending stocks (metric tons)	20.3	27.2	22.2	19.1	28.6	32.4	35.0	35.6	34.1	26.3
Meals										
Production (metric tons)	131.7	142.1	147.3	147.8	153.8	164.6	169.0	175.3	183.0	186.5
Exports (metric tons)	44.9	46.7	49.8	50.7	51.8	54.4	56.1	56.8	59.5	60.8
Oils										
Production (metric tons)	63.7	69.6	73.1	73.7	75.2	80.6	86.1	89.0	91.1	92.3
Exports (metric tons)	24.3	27.1	26.0	28.3	29.8	31.3	33.0	35.0	36.5	37.7
Cotton										
Area (hectares)	30.7	32.2	36.0	33.8	33.8	33.0	32.3	32.4	34.1	31.9
Production (bales)	77.5	85.9	93.2	89.8	91.9	85.3	87.5	88.7	98.1	89.4
Exports (bales)	26.8	28.5	27.5	26.8	26.7	23.7	27.3	26.6	29.2	30.8
Consumption (bales)	85.4	84.4	85.6	87.6	87.1	84.7	91.0	92.0	94.4	96.2
Ending stocks (bales)	26.4	29.8	37.2	41.4	45.5	47.8	45.3	42.7	46.6	39.7
	1993	1994	1995	1996	1997	1998	1999	2000	2001 E	2002 F
Beef and Pork[4]										
Production (metric tons)	111.6	116.7	122.1	116.6	122.1	127.1	130.3	131.1	138.9	134.9
Consumption (metric tons)	110.6	115.7	120.7	114.1	120.5	125.5	129.2	129.9	131.4	133.9
Exports (metric tons)[1]	6.6	7.2	7.4	7.7	8.4	8.1	9.0	9.2	9.3	9.7
Poultry[4]										
Production (metric tons)	40.5	43.2	47.5	50.4	53.7	54.6	57.7	59.7	61.9	62.9
Consumption (metric tons)	39.4	42.0	47.0	49.6	53.1	53.7	56.8	58.8	60.4	61.3
Exports (metric tons)[1]	2.8	3.6	4.5	5.1	5.1	5.2	5.5	5.9	6.8	7.1
Dairy										
Milk production (metric tons)[5]	--	--	--	--	370.1	373.7	378.1	382.4	384.4	389.8

-- = Not available. E = Estimated, F = forecast. 1. Excludes intra-EU trade but includes intra-FSU trade. 2. Where stocks data are not available, consumption includes stock changes. 3. Stocks data are based on differing marketing years and do not represent levels at a given date. Data not available for all countries. 4. Calendar year, selected countries. 5. Data prior to 1989 no longer comparable.

Information contacts: Crops, Ed Allen (202) 694-5288; red meat and poultry, Leland Southard (202) 694-5187; dairy, LaVerne Williams (202) 694-5190

U.S. Agricultural Trade

Table 24—Prices of Principal U.S. Agricultural Trade Products

	Annual			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
Export commodities										
Wheat, f.o.b. vessel, Gulf ports ($/bu.)	3.04	3.17	3.50	3.40	3.43	3.40	3.39	3.31	3.63	4.10
Corn, f.o.b. vessel, Gulf ports ($/bu.)	2.29	2.24	2.28	2.30	2.31	2.28	2.21	2.29	2.37	2.53
Grain sorghum, f.o.b. vessel, Gulf ports ($/bu.)	2.14	2.23	2.42	2.39	2.35	2.34	2.26	2.30	2.35	2.56
Soybeans, f.o.b. vessel, Gulf ports ($/bu.)	5.02	5.26	4.93	5.39	4.73	4.85	4.92	5.11	5.39	6.03
Soybean oil, Decatur (¢/lb.)	17.51	15.01	14.49	16.49	14.15	14.75	15.31	15.99	17.69	19.12
Soybean meal, Decatur ($/ton)	141.52	174.69	168.49	184.43	153.11	160.49	161.57	164.28	170.33	187.41
Cotton, 7-market avg. spot (¢/lb.)	52.30	57.47	39.68	37.48	31.60	33.23	31.86	31.14	36.37	39.78
Tobacco, avg. price at auction (¢/lb.)	177.82	182.73	186.21	186.53	187.45	164.45	--	--	--	--
Rice, f.o.b., mill, Houston ($/cwt)	16.99	14.83	14.55	15.00	12.25	11.79	12.33	12.30	11.74	11.93
Inedible tallow, Chicago (¢/lb.)	12.99	9.92	12.50	15.00	10.80	11.28	11.75	11.00	15.00	14.20
Import commodities										
Coffee, N.Y. spot ($/lb.)	1.05	0.92	0.55	0.47	0.43	0.48	0.50	0.45	0.43	0.44
Rubber, N.Y. spot (¢/lb.)	36.66	37.72	33.88	34.80	34.42	36.66	36.38	36.93	43.53	44.26
Cocoa beans, N.Y. ($/lb.)	0.47	0.36	0.47	0.42	0.65	0.69	0.70	0.70	0.70	0.80

-- = Not available. *Information contact: Wilma Davis (202) 694-5304*

Table 25—Trade Balance

	Fiscal year			2001		2002				
	2000	2001	2002 F	May	Dec	Jan	Feb	Mar	Apr	May
				$ million						
Exports										
Agricultural	50,744	52,699	53,500	4,154	4,659	4,686	4,658	4,436	4,035	4,097
Nonagricultural	650,907	639,167	--	54,923	45,398	43,028	44,111	50,973	48,812	50,523
Total[1]	701,651	691,866	--	59,077	50,057	47,714	48,769	55,409	52,847	54,620
Imports										
Agricultural	38,857	39,027	40,000	3,348	3,122	3,406	3,169	3,530	3,726	3,614
Nonagricultural	1,128,911	1,136,640	--	92,518	78,125	81,370	80,227	87,319	91,856	93,416
Total[2]	1,167,768	1,175,667	--	95,866	81,247	84,776	83,396	90,849	95,582	97,030
Trade balance										
Agricultural	11,887	13,672	13,500	806	1,537	1,280	1,489	906	309	483
Nonagricultural	-478,004	-497,473	--	-37,595	-32,727	-38,342	-36,116	-36,346	-43,044	-42,893
Total[3]	-466,117	-483,801	--	-36,789	-31,190	-37,062	-34,627	-35,440	-42,735	-42,410

F = Forecast. -- = Not available. Fiscal year (Oct. 1-Sep. 30). 1. Domestic exports including Department of Defense shipments (f.a.s. value). 2. Imports for consumption (customs value). 3. Preliminary. *Information contact: Mary Fant (202) 694-5272.*

Table 26—Indexes of Real Trade-Weighted Dollar Exchange Rates[1]

	Annual			2002						
	1999	2000	2001	Jan	Feb	Mar	Apr	May	Jun	Jul
				2000 is base year						
Total U.S. Trade	95.8	98.7	105.0	106.6	108.9	108.3	107.0	105.8	104.8	103.8
U.S. markets										
All agricultural trade	96.5	98.6	106.1	108.2	110.7	110.1	108.7	107.4	106.2	105.2
Bulk commodities	95.9	98.6	106.6	109.0	111.2	110.6	109.4	108.3	107.2	106.3
Corn	98.8	98.6	107.6	110.3	114.1	113.6	112.0	110.8	109.6	108.9
Cotton	95.1	98.8	106.6	108.0	110.2	109.6	108.7	108.0	107.9	107.5
Rice	95.2	98.8	105.7	107.7	108.2	107.1	105.4	104.7	104.5	103.6
Soybeans	93.9	98.3	105.6	108.5	109.0	108.3	107.1	105.4	103.3	101.5
Tobacco, raw	91.2	97.9	106.5	110.1	109.9	109.1	107.3	105.3	102.7	100.6
Wheat	94.1	98.7	106.6	108.4	112.0	111.3	110.3	110.0	109.9	109.7
High-value products	97.1	98.7	105.6	107.5	110.2	109.7	108.1	106.7	105.3	104.3
Processed intermediates	95.2	98.6	105.3	107.4	109.0	108.4	107.0	105.8	104.6	103.5
Soymeal	93.7	98.7	102.7	103.4	105.4	103.7	102.8	103.5	104.5	104.6
Soyoil	91.3	99.3	102.5	104.2	107.5	108.0	108.5	109.2	109.9	110.5
Produce and horticulture	95.9	98.5	105.7	107.6	110.5	109.9	108.2	106.2	104.3	102.9
Fruits	98.2	98.7	106.6	108.5	112.1	111.6	109.8	108.1	106.6	105.6
Vegetables	99.8	99.0	105.2	105.6	110.8	110.1	107.9	105.6	104.2	103.3
High-value processed	99.1	98.8	105.8	107.6	111.1	110.8	109.1	107.6	106.2	105.4
Fruit juices	97.0	98.5	106.3	108.3	112.4	112.0	109.8	107.3	105.0	103.5
Poultry	99.1	100.1	99.1	98.1	98.4	98.3	97.9	97.5	97.1	96.8
Red meats	102.1	98.3	110.1	113.8	119.8	119.6	116.5	114.0	111.0	109.8
U.S. competitors										
All agricultural trade	88.3	98.1	104.4	106.9	107.7	107.3	106.3	104.5	102.5	100.3
Bulk commodities	91.7	98.5	104.7	105.7	108.7	108.6	108.0	107.3	107.0	105.6
Corn	88.5	98.1	104.4	106.8	124.0	127.7	128.1	128.1	127.5	123.9
Cotton	90.5	98.3	106.6	109.3	116.4	117.7	118.0	118.9	119.4	118.0
Rice	90.7	98.1	107.4	109.7	110.1	110.2	110.0	108.9	108.0	107.0
Soybeans	94.6	99.4	110.9	116.0	134.6	138.1	139.6	148.4	157.9	158.1
Tobacco, raw	101.6	99.2	107.7	111.0	106.0	104.5	103.2	104.4	106.0	105.0
Wheat	90.4	98.0	105.0	106.8	111.8	112.0	111.1	108.9	107.1	104.7
High-value products	87.6	98.0	104.1	106.9	107.4	106.9	105.9	103.9	101.8	99.3
Processed intermediates	89.2	98.2	104.9	107.4	109.9	109.8	109.1	107.7	106.6	104.6
Soymeal	93.3	99.1	110.1	114.5	129.4	132.5	133.8	140.2	146.1	145.3
Soyoil	92.5	98.9	108.2	111.9	130.4	134.6	135.5	140.6	144.2	142.2
Produce and horticulture	88.0	98.3	102.7	105.1	105.0	104.3	103.4	101.4	99.5	97.2
Fruits	89.9	98.3	105.2	107.5	106.1	105.5	104.7	103.1	101.6	100.2
Vegetables	88.4	98.4	102.8	105.4	105.5	105.3	105.1	103.6	101.8	100.1
High-value processed	86.5	97.8	104.1	107.1	106.7	106.0	104.9	102.3	99.6	96.9
Fruit juices	87.8	98.0	104.1	106.8	107.4	106.8	105.5	103.3	101.7	99.3
Poultry	88.0	98.2	105.8	109.1	108.2	107.5	106.4	105.4	104.3	102.7
Red meats	87.4	97.7	105.4	108.3	111.1	111.1	110.3	108.2	106.4	103.7
U.S. suppliers										
All agricultural trade	93.8	98.8	103.6	104.4	104.9	104.0	103.2	102.5	102.5	101.5
High-value products	93.6	98.8	103.1	104.2	105.2	104.5	103.9	102.9	102.6	101.5
Processed intermediates	93.5	98.6	103.8	104.9	106.5	105.8	104.9	103.3	102.7	101.5
Grains and feeds	95.9	98.8	104.3	105.0	107.4	106.6	105.1	103.0	101.6	100.3
Vegetable oils	92.4	98.3	105.4	107.1	106.6	105.9	104.8	102.8	101.9	100.5
Produce and horticulture	97.0	99.9	99.9	100.0	98.4	97.5	97.8	98.6	100.3	100.4
Fruits	99.0	99.7	103.5	105.7	105.2	104.2	104.1	105.4	108.8	109.4
Vegetables	104.9	100.2	98.0	97.0	95.0	94.4	96.0	97.6	99.7	100.3
High-value processed	92.1	98.4	104.2	105.9	107.7	107.1	106.3	104.7	103.7	102.0
Cocoa and products	89.1	98.6	101.7	101.3	101.0	99.5	97.8	96.0	94.6	93.3
Coffee and products	94.7	99.6	102.3	102.7	99.8	98.1	97.9	99.6	102.0	102.3
Dairy products	86.6	97.7	103.9	106.4	105.4	104.3	102.8	99.5	96.2	93.5
Fruit juices	93.5	99.0	107.5	111.0	120.0	121.7	122.2	125.5	129.4	128.5
Meats	93.4	98.4	104.5	105.5	108.0	107.1	106.0	103.7	102.6	101.1

Real indexes adjust nominal exchange rates for relative rates of inflation among countries. A higher value means the dollar has appreciated. The weights used for "total U.S. trade" index are based on U.S. total merchandise exports to the largest 85 trading partners. Weights are based on relative importance of major U.S. customers, competitors in world markets, and suppliers to the U.S. Indexes are subject to revision for up to 1 year due to delayed reporting by some countries. High-value products are total agricultural products minus bulk commodities.
Source: Nominal exchange rates are obtained from the IMF International Financial Statisitics. Exchange rates for the EU-12 are obtained from the Board of Governors of the Federal Reserve System. Full historical series are available back to January 1970 at http://www.ers.usda.gov/data/exchangerates/

1. A major revision to the weighting scheme and commodity definitions was completed in May 2000. This significantly altered the series from previous versions. Beginning in August 2002, the base of the series has been changed from 1995 to 2000.

Information contact: Mathew Shane (202) 694-5282 or email:mshane@ers.usda.gov.

Table 27—U.S. Agricultural Exports & Imports

	Fiscal year			May		Fiscal year			May	
	2000	2001	2002 F	2001	2002	2000	2001	2002 F	2001	2002
	1,000 units					*$ million*				
Exports										
Animals, live	--	--	--	--	--	609	727	--	28	30
Meats and preps., excl. poultry (mt)[1]	2,439	2,442	1,900	217	232	5,429	5,193	4,800	471	448
Dairy products	--	--	--	--	--	998	1,121	1,100	109	84
Poultry meats (mt)	2,593	2,810	2,400	237	233	1,855	2,084	1,600	186	151
Fats, oils, and greases (mt)	1,207	1,049	1,200	88	90	421	320	--	25	31
Hides and skins, incl. furskins	--	--	--	--	--	1,428	1,933	1,900	171	151
Cattle hides, whole	--	--	--	--	--	1,117	1,437	--	141	90
Mink pelts (no.)	4,352	4,277	--	278	438	111	122	--	6	11
Grains and feeds (mt)[2]	103,653	98,895	--	6,976	7,714	13,789	13,818	14,000	1,040	1,058
Wheat (mt)[3]	27,838	25,275	25,500	1,893	1,587	3,384	3,248	3,400	252	208
Wheat flour (mt)	837	496	500	42	47	134	107	--	9	11
Rice (mt)	3,307	3,058	3,300	187	286	905	754	700	44	54
Feed grains, incl. products (mt)[4]	57,199	55,878	56,000	3,632	4,664	5,483	5,470	5,400	357	452
Feeds and fodders (mt)	12,951	12,720	12,700	1,100	976	2,483	2,768	2,600	253	201
Other grain products (mt)	1,521	1,468	--	124	155	1,400	1,470	--	124	132
Fruits, nuts, and preps. (mt)	3,748	3,970	--	296	295	3,877	4,101	4,800	332	336
Fruit juices, incl. froz. (1,000 hectoliters)	11,899	10,781	--	1,047	1,212	715	680	--	66	72
Vegetables and preps.	--	--	--	--	--	4,440	4,511	3,000	407	418
Tobacco, unmanufactured (mt)	180	177	200	14	15	1,227	1,181	1,300	105	117
Cotton, excl. linters (mt)[5]	1,473	1,654	2,400	152	194	1,809	2,079	2,300	187	179
Seeds (mt)	720	703	--	55	73	772	727	800	41	52
Sugar, cane or beet (mt)	113	97	--	10	6	40	38	--	4	2
Oilseeds and products (mt)	36,053	37,037	38,900	1,856	1,936	8,391	8,699	9,200	499	518
Oilseeds (mt)	--	--	--	--	--	--	--	--	--	--
Soybeans (mt)	26,045	26,569	27,800	1,082	1,240	5,071	5,089	5,100	202	242
Protein meal (mt)	6,867	7,223	--	547	432	1,258	1,427	--	98	80
Vegetable oils (mt)	2,134	2,066	--	169	177	1,349	1,175	--	104	113
Essential oils (mt)	53	55	--	5	6	592	675	--	61	71
Other	--	--	--	--	--	4,351	4,811	--	423	381
Total	--	--	--	--	--	50,744	52,699	53,500	4,154	4,097
Imports										
Animals, live	--	--	--	--	--	1,735	2,198	2,200	166	133
Meats and preps., excl. poultry (mt)	1,555	1,600	1,600	130	157	3,723	4,091	4,200	338	397
Beef and veal (mt)	1,027	1,056	--	89	106	2,405	2,645	--	227	270
Pork (mt)	402	399	--	29	37	958	1,039	--	77	83
Dairy products	--	--	--	--	--	1,653	1,728	1,700	150	161
Poultry and products	--	--	--	--	--	287	258	--	29	28
Fats, oils, and greases (mt)	105	106	--	9	8	69	62	--	6	5
Hides and skins, incl. furskins (mt)	--	--	--	--	--	160	162	--	15	11
Wool, unmanufactured (mt)	25	21	--	2	1	66	53	--	4	3
Grains and feeds	--	--	--	--	--	3,038	3,189	3,800	248	262
Fruits, nuts, and preps., excl. juices (mt)[6]	8,367	8,119	8,500	773	808	4,545	4,610	5,300	388	468
Bananas and plantains (mt)	4,396	4,093	4,100	362	374	1,128	1,156	1,200	108	106
Fruit juices (1,000 hectoliters)	32,226	29,293	29,000	2,585	2,638	783	649	--	57	69
Vegetables and preps.	--	--	--	--	--	4,660	5,183	5,400	445	459
Tobacco, unmanufactured (mt)	220	211	300	21	25	651	648	800	63	74
Cotton, unmanufactured (mt)	34	50	--	3	2	28	27	--	3	2
Seeds (mt)	458	316	--	34	25	503	443	--	35	29
Nursery stock and cut flowers	--	--	--	--	--	1,165	1,156	1,100	137	130
Sugar, cane or beet (mt)	1,368	1,378	--	95	108	484	524	--	35	41
Oilseeds and products (mt)	4,062	4,082	3,400	352	313	1,860	1,680	1,500	132	137
Oilseeds (mt)	1,090	987	--	129	69	298	266	--	27	15
Protein meal (mt)	1,205	1,150	--	82	67	152	152	--	11	10
Vegetable oils (mt)	1,767	1,945	--	140	176	1,410	1,261	--	95	112
Beverages, excl. fruit juices (1,000 hectoliters)	--	--	--	--	--	4,701	4,991	--	463	529
Coffee, tea, cocoa, spices (mt)	2,841	2,491	--	214	218	5,218	3,981	--	348	363
Coffee, incl. products (mt)	1,411	1,214	1,200	109	100	2,906	1,761	1,400	156	151
Cocoa beans and products (mt)	1,045	898	1,000	68	76	1,465	1,391	1,700	108	129
Rubber and allied gums (mt)	1,249	1,059	1,000	83	108	841	668	500	53	66
Other	--	--	--	--	--	2,686	2,725	--	234	246
Total	--	--	--	--	--	38,857	39,027	40,000	3,348	3,614

F = Forecast. -- = Not available. Projections are fiscal years (Dec.1 through Sep. 30) and are from Outlook for U.S. Agricultural Exports. 2000 and 2001 data are from *Foreign Agriculural Trade of the U.S* . 1. Projection includes beef, pork, and variety meat. 2. Projection includes pulses. 3. Value projection includes wheat flour. 4. Projection excludes grain products. 5. Projection includes linters. 6. Value projection includes juice.

Information contact: Mary Fant (202) 694-5272.

Table 28—U.S. Agricultural Exports by Region

	Fiscal year			2001		2002				
	2000	2001	2002 F	May	Dec	Jan	Feb	Mar	Apr	May
					$ million					
Region and country										
Western Europe	6,532	6,761	7,100	459	771	734	814	555	465	449
European Union [1]	6,193	6,249	6,500	396	725	667	710	494	422	404
Belgium-Luxembourg	514	625	--	40	54	59	78	40	52	35
France	348	352	--	20	68	61	36	32	26	28
Germany	910	907	--	72	86	105	91	80	54	55
Italy	559	509	--	28	70	42	92	37	42	31
Netherlands	1,388	1,398	--	75	165	142	156	131	92	98
United Kingdom	1,028	1,048	--	83	108	72	92	77	75	73
Portugal	134	126	--	11	20	40	21	10	8	4
Spain, incl. Canary Islands	641	590	--	26	85	93	88	31	34	38
Other Western Europe	340	512	600	63	46	66	105	60	42	44
Switzerland	250	422	--	54	38	62	99	54	36	39
Eastern Europe	168	201	200	13	34	16	22	14	16	16
Poland	47	83	--	5	12	3	4	3	4	8
Former Yugoslavia	67	44	--	1	13	3	6	2	2	2
Romania	12	24	--	3	4	5	7	2	3	2
Former Soviet Union	921	1,029	900	113	87	105	80	65	21	58
Russia	659	823	700	91	69	91	68	51	14	38
Asia	21,917	22,271	22,100	1,739	1,901	1,989	1,947	1,867	1,665	1,682
West Asia (Mideast)	2,364	2,190	2,600	142	194	203	264	205	217	167
Turkey	701	564	800	41	37	72	81	73	97	72
Iraq	8	8	--	--	--	--	--	--	--	--
Israel, incl. Gaza and W. Bank	459	435	--	28	51	54	47	33	40	32
Saudi Arabia	481	470	400	38	36	18	52	28	26	25
South Asia	415	570	1,100	62	92	66	66	68	70	35
Bangladesh	82	104	--	12	16	8	22	28	10	5
India	185	294	--	32	41	26	24	19	39	19
Pakistan	93	97	--	11	25	28	19	13	20	11
China	1,465	1,875	1,700	73	178	264	220	77	76	92
Japan	9,301	8,942	8,200	816	676	756	666	688	670	717
Southeast Asia	2,580	2,907	2,900	224	246	231	283	274	208	211
Indonesia	675	877	800	86	67	34	96	60	71	72
Philippines	866	836	800	52	56	83	61	85	49	50
Other East Asia	5,791	5,786	5,700	422	515	470	448	555	424	461
Korea, Rep.	2,531	2,541	2,700	180	237	247	238	245	208	209
Hong Kong	1,249	1,252	1,000	91	99	77	83	101	86	93
Taiwan	2,002	1,986	2,000	151	179	146	127	208	129	159
Africa	2,236	2,126	2,300	88	180	186	218	220	210	200
North Africa	1,522	1,464	1,600	49	128	127	159	166	127	139
Morocco	139	120	--	2	17	27	13	11	3	3
Algeria	254	211	--	11	25	19	23	37	10	35
Egypt	1,056	1,004	1,100	34	76	59	111	103	111	97
Sub-Sahara	715	662	700	39	52	60	59	54	83	62
Nigeria	160	233	--	16	23	21	28	17	34	22
S. Africa	165	108	--	8	8	6	11	14	17	15
Latin America and Caribbean	10,614	11,561	11,700	972	972	931	885	981	913	895
Brazil	253	219	300	17	23	18	19	24	16	18
Caribbean Islands	1,463	1,398	1,500	110	117	120	121	133	129	119
Central America	1,132	1,191	1,300	93	99	94	86	111	89	95
Colombia	427	442	500	34	44	48	35	49	38	32
Mexico	6,307	7,277	7,100	618	600	577	544	613	584	548
Peru	200	182	--	24	18	14	19	11	10	30
Venezuela	405	416	300	41	29	22	24	16	16	31
Canada	7,512	7,994	8,500	720	651	682	647	702	703	759
Oceania	487	472	500	39	35	44	43	33	33	35
Total	50,744	52,699	53,500	4,154	4,659	4,686	4,658	4,436	4,035	4,097

F = Forecast. -- = Not available. Based on fiscal year beginning Oct. 1 and ending Sep. 30. 1. Austria, Finland, and Sweden are included in the European Union. Note: Adjusted for transhipments through Canada for 1998 and 1999 through December 1999, transhipments are not distributed by country for 2001 and 2002, but are only included in total. *Information contact: Mary Fant (202) 694-5272.*

Farm Income

Table 29—Value Added to the U.S. Economy by the Agricultural Sector

		1998	1999	2000	2001	08/19/02 2002F	1992-2001 average
				$ billion			
	Final crop output	101.7	92.4	95.0	93.9	96.4	97.8
	Food grains	8.8	7.0	6.8	6.6	6.4	8.7
	Feed crops	22.6	19.6	20.8	23.2	24.9	22.6
	Cotton	6.1	4.6	3.8	5.0	3.9	5.7
	Oil crops	17.4	13.4	13.8	14.3	15.2	15.2
	Tobacco	2.8	2.3	2.3	1.9	1.8	2.6
	Fruits and tree nuts	11.8	12.0	12.6	11.7	11.8	11.5
	Vegetables	15.2	15.1	15.6	15.5	16.3	14.5
	All other crops	17.2	18.0	18.4	18.2	18.5	16.2
	Home consumption	0.1	0.1	0.1	0.1	0.1	0.1
	Value of inventory adjustment [1]	-0.3	0.4	0.8	-2.7	-2.6	0.8
	Final animal output	94.2	95.3	99.3	106.3	97.2	94.1
	Meat animals	43.3	45.6	53.0	53.3	49.5	47.9
	Dairy products	24.1	23.2	20.6	24.7	20.7	21.5
	Poultry and eggs	22.9	22.9	21.8	24.6	22.9	20.7
	Miscellaneous livestock	3.7	3.9	4.2	3.9	3.9	3.5
	Home consumption	0.3	0.4	0.4	0.4	0.4	0.4
	Value of inventory adjustment [1]	-0.3	-0.6	-0.6	-0.5	-0.1	0.0
	Services and forestry	23.8	25.2	24.4	25.5	25.8	21.2
	Machine hire and customwork	2.2	2.0	2.2	2.0	1.9	2.1
	Forest products sold	3.1	2.8	2.9	2.8	2.8	2.7
	Other farm income	8.7	10.2	8.7	10.1	10.4	7.0
	Gross imputed rental value of farm dwellings	9.9	10.2	10.7	10.6	10.8	9.4
	Final agricultural sector output [2]	219.7	212.9	218.8	225.8	219.4	213.1
Minus	Intermediate consumption outlays:	117.6	118.6	121.9	127.5	125.8	112.7
	Farm origin	44.8	45.6	48.1	49.2	49.2	44.0
	Feed purchased	25.0	24.5	24.5	25.2	26.4	23.9
	Livestock and poultry purchased	12.6	13.8	16.1	15.7	13.8	13.7
	Seed purchased	7.2	7.2	7.5	8.3	9.0	6.4
	Manufactured inputs	28.1	27.1	28.7	29.7	28.3	26.8
	Fertilizers and lime	10.6	9.9	10.0	10.3	9.2	9.9
	Pesticides	9.0	8.6	8.5	8.6	8.7	8.0
	Petroleum fuel and oils	5.6	5.6	7.2	7.2	6.9	5.9
	Electricity	2.9	3.0	3.0	3.5	3.6	3.0
	Other intermediate expenses	44.6	45.9	45.1	48.6	48.3	41.9
	Repair and maintenance of capital items	10.4	10.5	10.8	11.2	11.4	10.0
	Machine hire and customwork	4.9	4.8	4.5	4.3	4.3	4.5
	Marketing, storage, and transportation	6.9	7.3	7.5	7.8	7.3	6.8
	Contract labor	2.4	2.5	2.7	3.2	3.4	2.3
	Miscellaneous expenses	20.2	20.9	19.6	22.2	21.9	18.4
Plus	Net government transactions:	4.9	14.3	15.5	13.2	8.6	5.9
	+ Direct government payments	12.4	21.5	22.9	20.7	16.2	13.0
	- Motor vehicle registration and licensing fees	0.5	0.4	0.5	0.5	0.5	0.4
	- Property taxes	7.0	6.8	6.9	7.0	7.1	6.7
	Gross value added	107.0	108.6	112.4	111.4	102.2	106.2
Minus	Capital consumption	19.9	20.1	20.3	20.6	20.9	19.4
	Net value added [2]	87.2	88.4	92.1	90.9	81.3	86.8
Minus	Factor payments:	41.6	42.2	44.0	45.2	46.1	39.9
	Employee compensation (total hired labor)	16.8	17.4	17.9	19.0	19.7	15.6
	Net rent received by nonoperator landlords	11.4	11.3	11.8	12.0	12.7	11.6
	Real estate and non-real estate interest	13.4	13.6	14.3	14.1	13.7	12.7
	Net farm income [2]	45.6	46.2	48.0	45.7	35.2	46.9

F = forecast. P = preliminary. -- = not available. Numbers may not add due to rounding. 1. A positive value of inventory change represents current-year production not sold by December 31. A negative value is an offset to production from prior years included in current-year sales. 2. Final sector output is the gross value of commodities and services produced within a year. Net value added is the sector's contribution to the National economy. Net farm income is farm operators' share of income from the sector's production activities. The concepts presented are consistent with those employed by the Organization for Economic Cooperation and Development (OECD). Information contact: Roger Strickland (202) 694-5592, e-mail rogers@ers.usda.gov.
To confirm that this table contains the current forecast, go to http://www.ers.usda.gov/data/farmincome/finfidmu.htm

Table 30—Farm Income Statistics

	1998	1999	2000	2001	2002F	1992-2001 average
			$ billion			
Cash income statement						
1. Cash receipts	196.0	187.5	193.7	202.8	195.8	190.6
Crops[1]	101.9	91.9	94.1	96.4	98.8	96.9
Livestock	94.1	95.6	99.6	106.4	97.0	93.7
2. Direct Government payments[2]	12.4	21.5	22.9	20.7	16.2	13.0
3. Farm-related income[3]	13.9	15.0	13.8	14.9	15.1	11.7
4. Gross cash income (1+2+3)	222.3	224.0	230.4	238.5	227.1	215.3
5. Cash expenses[4]	165.5	166.9	172.0	178.8	178.1	158.6
6. Net cash income (4-5)[5]	56.8	57.1	58.4	59.7	49.0	56.8
Farm income statement						
7. Gross cash income (1+2+3)	222.3	224.0	230.4	238.5	227.1	215.3
8. Noncash income[6]	10.3	10.7	11.2	11.2	11.3	10.0
9. Value of inventory adjustment	-0.6	-0.3	0.1	-3.2	-2.7	--
10. Gross farm income (7+8+9)	232.1	234.5	241.7	246.5	235.7	226.1
11. Total production expenses	186.5	188.3	193.7	200.8	200.4	179.2
12. Net farm income (10-11)	45.6	46.2	48.0	45.7	35.2	46.9

-- = not available. F = forecast. Numbers may not add due to rounding. 1. Includes commodities placed under CCC loans and profits made on loans redeemed. 2. Direct government payments include only payments made directly to farmers, including realized marketing loan gains. In publications prior to May of 2001, marketing loan gains were included in cash receipts rather than in government payments. 3. Income from custom labor, machine hire, recreational activities, forest product sales, and other farm sources. 4. Excludes depreciation and perquisites to hired labor. 5. Excludes farm operator dwellings. 6. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings.
6. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings.
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The current farm income forecast and historical statistics can always be found at http://www.ers.usda.gov/Briefing/FarmIncome/
To confirm that this table contains the current forecast, go to http://www.ers.usda.gov/data/farmincome/finfidmu.htm

Table 31—Average Income to Farm Operator Households[1]

	1998	1999	2000[2]	2001P	2002F
			Dollars per farm		
Net cash farm business income[3]	14,357	13,194	11,175	14,311	11,137
Less depreciation[4]	7,409	7,027	7,357	7,609	--
Less wages paid to operator[5]	637	499	608	932	--
Less farmland rental income[6]	543	802	757	477	--
Less adjusted farm business income due to other household(s)[7]	1,332	1,262	801	1,083	--
			Dollars per farm operator household		
Equals adjusted farm business income	4,436	3,603	*1652	4,211	--
Plus wages paid to operator	637	499	608	932	--
Plus net income from farmland rental[8]	868	1,312	--	--	--
Equals farm self-employment income	5,941	5,415	*2260	5,143	--
Plus other farm-related earnings[9]	1,165	944	339	396	--
Equals earnings of the operator household from farming activities	7,106	6,359	2,598	5,539	2,622
Plus earnings of the operator household from off-farm sources[10]	52,628	57,988	59,349	58,578	59,235
Equals average farm operator household income comparable to U.S. average household income, as measured by the CPS	59,734	64,347	61,947	64,117	61,858
			Dollars per U.S. household		
U.S. average household income[11]	51,855	54,842	57,045	--	--
			Percent		
Average farm operator household income as percent of U.S. average household income	115.2	117.3	108.6	--	--
Average operator household earnings from farming activities as percent of average operator household income	11.9	9.9	4.2	8.6	4.2

P=preliminary. F = forecast. -- = Not available. * = The relative standard error exceeds 25 percent, but is no more than 50 percent.
1. This table derives farm operator household income estimates from the Agricultural Resource Management Study (ARMS) that are consistent with Current Population Survey (CPS) methodology. The CPS, conducted by the Census Bureau, is the source of official U.S. household income statistics. The CPS defines income to include any income received as cash. The CPS definition departs from a strictly cash concept by including depreciation as an expense that farm operators and other self-employed people subtract from gross receipts when reporting net cash income. 2. Prior to 2000, net cash income from operating another farm and net cash income from farm land rental were included in earnings from farming activities. However, because of a change in the ARMS survey design, net cash income from a farm other than the one being surveyed and net cash income from farm land rental are not separable from total off-farm income. Although there is no effect upon estimates of farm operator household income in 2000, estimates of farm self-employment, other farm related earnings, earnings of the household from farming activities, and earnings of the farm from off-farm sources are not strictly comparable to those from previous years. 3. A component of farm sector income. Excludes incomes of contractors and landlords as well as the income of farms organized as nonfamily corporations or cooperatives and farms run by a hired manager. Includes the income of farms organized as proprietorships, partnerships, and family corporations. 4. Consistent with the CPS definition of self-employment income, reported depreciation expenses are subtracted from net cash income. The ARMS collects farm business depreciation used for tax purposes. 5. Wages paid to the operator are subtracted here because they are not shared among other households that have claims on farm business income. These wages are added to the operator household's adjusted farm business income to obtain farm self-employment income. 6. Gross rental income is subtracted here because net rental income from the farm operation is added below to income received by the household. 7. More than one household may have a claim on the income of a farm business. On average, 1.1 households share the income of a farm business. 8. Includes net rental income from the business. Also includes net rental income from farmland held by household members that is not part of the farm business. Beginning in 2000, net income from farmland rental is considered as part of off-farm income. (See footnote 2.) 9. Wages paid to other operator household members by the farm business and net income from a farm business other than the one being surveyed. In 2000, however, net income from a farm business other than the one being surveyed is included in off-farm earnings. (See footnote 2.) Beginning in 1996, also includes the value of commodities provided to household members for farm work. 10. Wages, salaries, net income from nonfarm businesses, interest, dividends, transfer payments, etc. Beginning in 2000, also includes net cash income from another farm and net cash income from farm rental. (See footnote 2.) 11. From the CPS.
Sources: U.S. Dept. of Agriculture, Economic Research Service, 1998, 1999, and 2000 Agricultural Resource Management Study (ARMS) for farm operator household data. U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey (CPS), for U.S. average household income.
Information contact: Bob Hoppe (202) 694-5572 or rhoppe@ers.usda.gov

Table 32—Balance Sheet of the U.S. Farming Sector

	1998	1999	2000	2001F	2002F
			$ billion		
Farm assets	1,085.3	1,140.8	1,188.3	1,230.4	1,239.5
Real estate	840.4	886.4	929.5	971.3	981.0
Livestock and poultry[1]	63.4	73.2	76.8	76.3	75.9
Machinery and motor vehicles	91.7	92.3	92.0	92.5	93.6
Crops stored[2,3]	29.9	28.3	27.9	28.5	28.4
Purchased inputs	5.0	4.0	4.9	4.6	4.6
Financial assets	54.8	56.6	57.1	57.1	56.0
Total farm debt	172.9	176.4	184.0	192.8	196.5
Real estate debt[3]	89.6	94.2	97.5	103.1	104.6
Non-real estate debt[4]	83.2	82.2	86.5	89.8	91.9
Total farm equity	912.4	964.4	1,004.3	1,037.5	1,042.9
			Percent		
Selected ratios					
Debt to equity	18.9	18.3	18.3	18.6	18.8
Debt to assets	15.9	15.5	15.5	15.7	15.9

F = forecast. P = preliminary. Numbers may not add due to rounding. 1. As of December 31. 2. Non-CCC crops held on farms plus value above loan rates for crops held under CCC. 3. Includes CCC storage and drying facilities loans, but excludes debt on operator dwellings. 4. Excludes debt for nonfarm purposes.

Information contacts: Ken Erickson (202) 694-5565, erickson@ers.usda.gov and Jim Ryan (202) 694-5586, e-mail: jimryan@ers.usda.gov

Note: The current farm income and balance sheet forecasts can always be found at http://www.ers.usda.gov/Briefing/FarmIncome/

Table 33—Cash Receipts from Farming

	Annual			2001		2002				
	1999	2000	2001	May	Dec	Jan	Feb	Mar	Apr	May
					$ million					
Commodity cash receipts[1]	187,481	193,695	202,849	14,669	18,404	17,276	12,627	13,876	14,093	13,928
Livestock and products	95,611	99,559	106,431	8,501	9,331	8,598	7,502	7,775	7,767	7,551
Meat animals	45,614	52,981	53,289	3,959	5,019	4,409	4,035	3,841	4,065	3,670
Dairy products	23,207	20,608	24,695	2,164	2,099	1,914	1,780	1,920	1,814	1,848
Poultry and eggs	22,896	21,816	24,577	2,141	1,976	1,984	1,456	1,766	1,661	1,796
Other	3,893	4,155	3,870	237	237	292	231	248	228	237
Crops	91,870	94,136	96,418	6,168	9,072	8,678	5,125	6,100	6,326	6,376
Food grains	6,969	6,758	6,595	301	411	563	233	285	254	217
Feed crops	19,555	20,775	23,245	1,024	2,399	2,868	1,161	1,233	923	919
Cotton (lint and seed)	4,630	3,840	4,954	144	1,088	665	221	204	54	146
Tobacco	2,273	2,315	1,880	0	226	213	39	6	2	0
Oil-bearing crops	13,355	13,826	14,317	671	1,110	1,617	713	718	584	753
Vegetables and melons	15,127	15,600	15,512	1,576	1,036	1,061	1,157	1,382	1,674	1,810
Fruits and tree nuts	11,953	12,626	11,742	840	998	545	478	622	699	921
Other	18,007	18,396	18,172	1,613	1,805	1,145	1,122	1,651	2,137	1,610
Government payments	21,513	22,896	20,727	--	--	--	--	--	--	--
Total	208,994	216,592	223,577	14,669	18,404	17,276	12,627	13,876	14,093	13,928

-- = Not available. Annual values for the most recent year and monthly values for current year are preliminary and were estimated as of the 20th of the month prior to publication. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period.

Information contact: Larry Traub (202) 694-5593 or ltraub@ers.usda.gov. To receive current monthly cash receipts via e-mail, contact Larry Traub.

Table 34—Cash Receipts from Farm Marketings, by State

Region and State	Livestock and products				Crops[1]				Total[1]			
	2000	2001	Apr 2002	May 2002	2000	2001	Apr 2002	May 2002	2000	2001	Apr 2002	May 2002
	$ million											
North Atlantic												
Maine	260	274	21	20	242	211	30	20	502	485	50	40
New Hampshire	60	66	5	6	91	90	10	8	151	155	16	13
Vermont	432	490	37	35	69	67	9	6	500	557	46	41
Massachusetts	93	94	8	8	295	273	16	16	388	367	23	24
Rhode Island	8	8	1	1	38	40	5	4	46	47	5	4
Connecticut	168	177	13	13	328	299	31	24	496	476	44	37
New York	1,931	2,221	162	167	1,191	1,199	77	55	3,122	3,420	239	222
New Jersey	192	204	8	8	635	617	53	46	826	821	61	55
Pennsylvania	2,766	3,146	239	206	1,297	1,309	106	93	4,063	4,455	345	299
North Central												
Ohio	1,754	1,864	125	129	2,616	2,818	150	143	4,370	4,682	274	272
Indiana	1,701	1,870	116	116	2,883	3,235	148	164	4,584	5,105	264	280
Illinois	1,711	1,843	128	126	5,416	5,704	331	391	7,127	7,547	459	516
Michigan	1,334	1,489	109	108	1,988	1,980	145	125	3,322	3,469	253	232
Wisconsin	3,866	4,464	336	328	1,498	1,432	88	67	5,364	5,896	424	395
Minnesota	3,883	4,288	301	283	3,580	3,813	149	151	7,463	8,102	450	434
Iowa	5,757	5,936	455	353	5,047	5,615	273	251	10,804	11,550	728	604
Missouri	2,680	2,679	138	132	1,933	2,145	71	84	4,614	4,824	209	216
North Dakota	629	720	34	29	2,077	2,259	119	88	2,706	2,979	153	117
South Dakota	2,037	2,255	187	146	1,769	1,852	59	56	3,806	4,108	246	202
Nebraska	5,917	6,086	433	479	3,076	3,402	142	147	8,993	9,489	575	627
Kansas	5,500	5,536	474	427	2,519	2,585	127	90	8,019	8,121	601	517
Southern												
Delaware	558	662	39	45	179	186	9	7	736	848	48	52
Maryland	836	949	72	76	615	647	52	43	1,451	1,596	124	119
Virginia	1,549	1,673	115	115	735	771	36	37	2,285	2,444	150	151
West Virginia	339	348	30	28	58	59	3	2	397	408	32	30
North Carolina	4,300	4,644	290	327	3,040	3,087	178	195	7,340	7,731	468	523
South Carolina	793	882	70	68	728	764	45	44	1,521	1,646	114	112
Georgia	3,107	3,540	236	242	1,991	1,975	60	133	5,099	5,515	296	375
Florida	1,375	1,458	107	89	5,402	4,958	815	694	6,777	6,416	922	783
Kentucky	2,372	2,268	127	118	1,277	1,281	29	32	3,649	3,548	156	151
Tennessee	990	1,127	91	87	1,007	1,034	41	43	1,997	2,161	132	130
Alabama	2,646	2,815	193	205	560	705	35	40	3,205	3,520	229	245
Mississippi	2,036	2,276	148	157	691	871	43	34	2,727	3,147	191	192
Arkansas	3,255	3,507	249	234	1,483	1,625	30	46	4,738	5,132	279	281
Louisiana	652	701	61	56	1,135	1,116	21	31	1,787	1,817	83	87
Oklahoma	3,441	3,153	255	228	853	874	40	38	4,293	4,027	295	266
Texas	9,159	9,339	707	716	4,211	4,456	279	311	13,370	13,796	986	1,027
Western												
Montana	1,106	1,128	71	55	737	657	28	19	1,844	1,785	99	74
Idaho	1,628	2,060	166	155	1,744	1,788	124	151	3,372	3,848	291	306
Wyoming	800	837	40	36	157	145	3	3	957	983	43	39
Colorado	3,330	3,374	284	303	1,281	1,354	87	79	4,612	4,729	371	382
New Mexico	1,613	1,670	127	112	500	545	23	44	2,114	2,215	150	156
Arizona	1,070	1,166	106	106	1,217	1,409	89	116	2,287	2,575	194	222
Utah	772	853	70	65	248	263	24	13	1,020	1,116	94	78
Nevada	237	271	21	24	150	153	8	6	387	425	29	30
Washington	1,709	1,728	126	135	3,408	3,464	272	197	5,117	5,192	398	332
Oregon	829	825	70	59	2,264	2,298	149	122	3,093	3,123	218	181
California	6,252	7,346	560	579	19,431	18,546	1,631	1,834	25,683	25,892	2,191	2,414
Alaska	32	28	2	2	20	24	1	1	52	52	4	4
Hawaii	92	91	8	8	430	419	34	34	522	511	42	42
U.S.	99,559	106,431	7,767	7,551	94,136	96,418	6,326	6,376	193,695	202,849	14,093	13,928

Annual values for the most recent year are preliminary and were estimated as of the 20th of the month prior to publication. Totals may not add because of rounding. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period.

Information contact: Larry Traub (202) 694-5593 or ltraub@ers.usda.gov. To receive current monthly cash receipts via e-mail, contact Larry Traub.

Table 35—CCC Net Outlays by Commodity & Function

	Fiscal year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002[1]	2003[1]
					$ million					
Commodity/Program										
Feed grains:										
Corn	625	2,090	2,021	2,587	2,873	5,402	10,136	6,297	3,237	4,807
Grain sorghum	130	153	261	284	296	502	979	478	237	324
Barley	202	129	114	109	168	224	397	217	165	190
Oats	5	19	8	8	17	41	61	36	61	60
Corn and oat products	10	1	0	0	0	0	6	8	13	0
Total feed grains	972	2,392	2,404	2,988	3,354	6,169	11,579	7,036	3,713	5,381
Wheat and products	1,729	803	1,491	1,332	2,187	3,435	5,321	2,922	1,944	2,864
Rice	836	814	499	459	491	911	1,774	1,423	1,056	1,209
Upland cotton	1,539	99	685	561	1,132	1,882	3,809	1,868	3,685	3,245
Tobacco	693	-298	-496	-156	376	113	657	386	-25	-66
Dairy	158	4	-98	67	291	480	684	1,140	580	2,255
Soybeans	-183	77	-65	5	139	1,289	2,840	3,281	3,600	3,730
Peanuts	37	120	100	6	-11	21	35	136	220	1,239
Sugar	-24	-3	-63	-34	-30	-51	465	31	-154	-118
Honey	0	-9	-14	-2	0	2	7	23	6	0
Wool and mohair	211	108	55	0	0	10	-2	38	26	23
Operating expense[2]	6	6	6	6	5	4	60	5	60	6
Interest expenditure	-17	-1	140	-111	76	210	736	428	240	366
Export programs[3]	1,950	1,361	-422	125	212	165	216	-2,047	185	20
1988-2000 Disaster/tree/ livestock assistance	2,566	660	95	130	3	2,241	1,452	2,326	284	0
Conservation Reserve Program	0	0	2	1,671	1,693	1,462	1,511	1,658	1,821	1,854
Other conservation programs	0	0	7	105	197	292	263	288	286	212
Other	-137	-103	320	104	28	588	858	1,163	1,156	744
Total	10,336	6,030	4,646	7,256	10,143	19,223	32,265	22,105	18,683	22,964
Function										
Price support loans (net)	527	-119	-951	110	1,128	1,455	3,369	3,189	5,220	3,615
Cash direct payments:[4]										
Production flexibility contract	0	0	5,141	6,320	5,672	5,476	5,057	4,105	3,962	0
Direct payment	0	0	0	0	0	0	0	0	0	3,844
Counter-cyclical payment	0	0	0	0	0	0	0	0	0	5,828
Market loss assistance	0	0	0	0	0	3,011	11,046	5,455	221	1,819
Deficiency	4,391	4,008	567	-1,118	-7	-3	1	-1	0	0
Loan deficiency	495	29	0	0	478	3,360	6,419	5,293	6,311	5,178
Oilseed	0	0	0	0	0	0	460	921	0	0
Cotton user marketing	149	88	34	6	416	280	446	237	204	184
Other	22	9	61	1	0	1	461	820	20	906
Conservation Reserve Program	0	0	2	1,671	1,693	1,435	1,476	1,625	1,804	1,854
Other conservation programs	0	0	0	85	156	247	215	229	248	211
Noninsured Assistance (NAP)	0	0	2	52	23	54	38	64	174	192
Total direct payments	5,057	4,134	5,807	7,017	8,431	13,861	25,619	18,748	12,944	20,016
1988-2000 crop disaster	2,461	577	14	2	-2	1,913	1,251	1,848	240	0
Emergency livestock/tree/DRAP livestock indemn./forage assist.	105	83	81	128	5	328	201	478	43	0
Purchases (net)	293	-51	-249	-60	207	668	120	-1,310	-1,031	-1,807
Producer storage payments	12	23	0	0	0	0	0	0	0	0
Processing, storage, and transportation	112	72	51	33	38	62	81	122	134	148
Export donations ocean transportation	156	50	69	34	40	323	370	362	362	17
Operating expense[2]	6	6	6	6	5	4	60	5	60	6
Interest expenditure	-17	-1	140	-111	76	210	736	428	240	366
Export programs[3]	1,950	1,361	-422	125	212	165	216	-2,047	185	20
Other	-326	-105	100	-28	3	234	242	282	286	583
Total	10,336	6,030	4,646	7,256	10,143	19,223	32,265	22,105	18,683	22,964

1. Estimated in FY 2003 Mid Session Review Budget which was released on July 15, 2002 based on May 2002 supply & demand estimates. The CCC outlays shown for 2002-2003 include the impact of the Farm Security and Rural Investment Act of 2002 which was enacted on May 13, 2002.
2. Does not include CCC Transfers to General Sales Manager. 3. Includes Export Guarantee Program, Direct Export Credit Program, CCC Transfers to the General Sales Manager, Market Access (Promotion) Program, starting in FY 1991 and starting in FY 1992 the Export Guarantee Program - Credit Reform, Export Enhancement Program, Dairy Export Incentive Program, and Technical Assistance to Emerging Markets, and starting in FY 2000, Foreign Market Development Cooperative Program and Quality Samples Program. 4. Includes cash payments only. Excludes generic certificates in FY 1986-96. Minus (-) indicates a net receipt (excess of repayments or other receipts over gross outlays of funds).

Information contact: Richard Pazdalski, Farm Service Agency-Budget at (202) 720-3675 or Richard_Pazdalski@wdc.fsa.usda.gov

Food Expenditures

Table 36—Food Sales

	Annual			2002			Year-to-date cumulative		
	1999	2000	2001	May	Jun	Jul	May	Jun	Jul
					$ billion				
Sales[1]									
At home[2]	409.2	424.2	437.0	39.7	38.2	38.3	186.0	224.1	262.5
Away from home[3]	331.0	348.8	366.0	33.7	33.7	34.2	156.4	189.8	223.9
					2001 $ billion				
Sales[1]									
At home[2]	432.1	438.1	437.0	39.2	37.8	38.0	183.2	221.0	259.0
Away from home[3]	348.6	358.9	366.0	33.0	32.6	33.3	153.6	186.2	219.4
					Percent change from year earlier ($ billion)				
Sales[1]									
At home[2]	6.4	3.7	3.0	2.4	0.9	1.6	1.6	1.5	1.5
Away from home[3]	5.0	5.4	4.9	5.4	3.7	7.0	5.4	5.1	5.4
					Percent change from year earlier (2001 $ billion)				
Sales[1]									
At home[2]	4.4	1.4	-0.3	1.2	0.0	0.6	0.1	0.1	0.2
Away from home[3]	2.4	3.0	2.0	3.2	1.2	4.2	3.5	3.1	3.3

-- = Not available. 1. Food only (excludes alcoholic beverages). Not seasonally adjusted. 2. Excludes donations and home production.
3. Excludes donations, child nutrition subsidies, and meals furnished to employees, patients, and inmates.
Information contact: Annette Clauson (202) 694-5389
Note: This table differs from Personal Consumption Expenditures (PCE), table 2, for several reasons: (1) this series includes only food, excluding alcoholic beverages and pet food which are included in PCE; (2) this series is not seasonally adjusted, whereas PCE is seasonally adjusted at annual rates; (3) this series reports sales only, but PCE includes food produced and consumed on farms and food furnished to employees; (4) this series includes all sales of meals and snacks, while PCE includes only purchases using personal funds, excluding business travel and entertainment. For a more complete discussion of the differences, see "Developing an Integrated Information System for the Food Sector," ERS Ag. Econ. Rpt. No. 575, Aug. 1987, available at http://www.ers.usda.gov/publications/aer575/

Transportation

Table 37—Rail Rates; Grain & Fruit-Vegetable Shipments

	Annual			2001	2002					
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
Rail freight rate index[1] (Dec. 1984=100)										
All products	113.0	114.5	116.6	116.1	118.6	118.6	118.4	118.5	119.0	119.1
Farm products	121.7	123.1	124.5	123.9	125.0	124.9	124.2	124.2	124.9	125.0
Grain food products	99.7	100.4	102.8	102.9	103.2	103.2	103.1	103.1	103.5	103.6
Grain shipments										
Rail carloadings (1,000 cars)[2]	24.2	21.8	21.6	20.2	22.5	20.5	19.7	18.3	20.1	21.1
Barge shipments (mil. ton)[3]	3.5	3.1	2.9	4.3	2.0	2.9	3.6	3.4	4.4	4.4
Fresh fruit and vegetable shipments[4]										
Piggy back (mil. cwt)	0.7	0.8	0.8	1.0	0.6	0.7	0.9	1.1	1.0	--
Rail (mil. cwt)	1.1	1.4	1.4	1.2	1.0	1.5	1.2	1.7	2.3	--
Truck (mil. cwt)	45.2	45.0	44.0	43.9	35.9	45.0	48.1	57.0	55.0	--

-- = Not available. 1. Department of Labor, Bureau of Labor Statistics. 2. Weekly average; from Association of American Railroads. 3. Shipments on Illinois and Mississippi waterways, U.S. Corps of Engineers. 4. Annual data are monthly average. Agricultural Marketing Service, USDA.
Information contact: Allen Baker (202) 694-5290

Indicators of Farm Productivity

Table 38—Indexes of Farm Production, Input Use, & Productivity[1]

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
					1992 = 100					
Farm output	88	83	89	94	94	100	94	107	101	106
All livestock products	92	93	94	95	98	100	100	108	110	109
Meat animals	95	97	97	96	99	100	100	102	103	100
Dairy products	94	96	95	98	98	100	99	114	115	115
Poultry and eggs	81	83	86	92	96	100	104	110	114	119
All crops	86	75	86	92	92	100	90	106	96	103
Feed crops	84	62	85	88	86	100	76	102	83	98
Food crops	84	76	83	107	82	100	96	97	90	93
Oil crops	88	72	88	87	94	100	85	115	99	107
Sugar	95	91	91	92	96	100	95	106	98	94
Cotton and cottonseed	92	96	75	96	109	100	100	122	110	117
Vegetables and melons	90	81	85	93	97	100	97	113	108	112
Fruit and nuts	95	102	98	97	96	100	107	111	102	102
Farm input[1]	101	100	100	101	102	100	101	102	101	100
Farm labor	101	103	104	102	106	100	96	96	92	100
Farm real estate	100	100	102	101	100	100	98	99	98	99
Durable equipment	120	113	108	105	103	100	97	94	92	89
Energy	102	102	101	100	101	100	100	103	109	104
Fertilizer	106	97	94	97	98	100	111	109	85	89
Pesticides	92	79	93	90	100	100	97	103	94	106
Feed, seed, and purchased livestock	97	96	91	99	99	100	101	102	109	95
Inventories	102	98	93	97	100	100	104	99	108	104
Farm output per unit of input	87	83	90	93	92	100	94	105	100	106
Output per unit of labor										
Farm[2]	87	81	86	92	89	100	98	111	110	106
Nonfarm[3]	95	95	96	96	97	100	100	101	--	--

-- = Not available. Values for latest year preliminary. 1. Includes miscellaneous items not shown separately. 2. Source: Economic Research Service. 3. Source: Bureau of Labor Statistics. *Information contact: John Jones (202) 694-5614*

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Food Supply & Use

Table 39—Per Capita Consumption of Major Food Commodities[1]

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
					Lbs.					
Red meats [2,3,4]	111.6	113.5	111.3	113.6	113.6	111.1	109.1	113.3	115.1	113.5
Beef	62.9	62.5	61.0	63.0	63.6	64.1	62.7	63.6	64.4	64.4
Veal	0.8	0.8	0.8	0.8	0.8	1.0	0.8	0.7	0.6	0.5
Lamb & mutton	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.9	0.8	0.8
Pork	46.8	49.2	48.5	49.0	48.4	45.2	44.8	48.2	49.4	47.7
Poultry [2,3,4]	58.2	60.5	62.0	62.7	62.1	63.1	63.1	63.7	66.8	66.5
Chicken	44.1	46.5	48.2	48.8	48.2	48.8	49.5	49.8	52.9	52.9
Turkey	14.0	14.0	13.9	13.9	13.9	14.3	13.6	13.9	13.8	13.6
Fish and shellfish [3]	14.8	14.6	14.8	15.0	14.8	14.5	14.3	14.5	14.9	15.2
Eggs [4]	30.0	30.1	30.1	30.3	29.9	29.9	30.2	30.8	32.1	32.2
Dairy products										
Cheese (excluding cottage) [2,5]	25.0	25.9	26.1	26.6	26.9	27.3	27.5	27.8	29.0	29.8
American	11.0	11.3	11.3	11.4	11.7	11.8	11.8	11.9	12.6	--
Italian	9.3	9.9	9.8	10.2	10.3	10.6	10.8	11.1	11.5	--
Other cheeses [6]	4.6	4.7	5.0	5.0	5.0	4.9	4.9	4.7	4.9	--
Cottage cheese	3.3	3.1	2.9	2.8	2.7	2.6	2.6	2.7	2.6	2.6
Beverage milks [2]	220.5	217.2	211.8	211.4	207.2	206.8	203.2	200.5	199.2	194.9
Fluid whole milk [7]	87.1	83.5	79.5	78.0	74.4	73.5	71.4	70.2	70.7	69.8
Fluid lower fat milk [8]	109.6	108.8	105.8	104.9	101.3	100.1	98.1	96.6	96.0	95.1
Fluid skim milk	23.8	24.9	26.5	28.5	31.5	33.2	33.7	33.7	32.5	30.0
Fluid cream products [9]	7.7	8.0	8.0	8.0	8.3	8.6	8.9	9.0	9.5	9.9
Yogurt (excluding frozen)	4.2	4.2	4.2	4.6	5.0	4.8	5.1	5.0	4.9	5.4
Ice cream	16.2	16.2	16.0	16.0	15.5	15.6	16.1	16.3	16.7	16.5
Lowfat ice cream [10]	7.4	7.0	6.9	7.5	7.4	7.5	7.8	8.1	7.5	7.5
Frozen yogurt	3.5	3.1	3.5	3.4	3.4	2.5	2.0	2.1	1.9	1.8
All dairy products, milk equivalent, milkfat basis [11]	564.1	563.0	569.8	580.1	576.6	566.6	567.5	572.8	584.9	593.0
Fats and oils--total fat content	64.6	66.5	69.2	67.3	65.4	64.2	63.7	64.3	67.0	74.5
Butter and margarine (product weight)	14.8	15.2	15.6	14.7	13.6	13.3	12.5	12.6	12.6	12.8
Shortening	22.3	22.3	25.0	23.9	22.2	21.9	20.5	20.5	21.1	23.1
Lard and edible tallow (direct use)	1.8	3.5	3.4	4.2	4.3	4.6	4.0	5.1	5.6	5.9
Salad and cooking oils	26.3	27.1	26.6	25.9	26.5	25.7	28.1	27.3	28.8	33.7
Fruits and vegetables [12]	651.9	677.9	690.1	702.3	690.5	698.1	708.0	699.2	705.4	707.7
Fruit	254.2	282.0	280.8	287.7	282.0	279.0	289.6	284.1	289.8	279.4
Fresh fruits	112.5	122.9	123.6	125.0	122.6	126.1	129.5	128.9	129.5	126.8
Canned fruit	19.7	22.8	20.6	20.7	17.3	18.4	20.1	17.0	19.2	17.4
Dried fruit	12.2	10.7	12.5	12.7	12.7	11.1	10.6	12.1	10.2	10.5
Frozen fruit	3.8	3.9	3.7	3.7	4.2	3.9	3.6	4.1	3.7	3.7
Selected fruit juices	105.5	121.1	120.2	125.1	125.0	119.2	125.2	121.6	126.8	120.6
Vegetables	397.7	395.9	409.3	414.6	408.5	419.1	418.4	415.1	415.6	428.3
Fresh	170.8	174.2	180.8	186.8	180.9	186.0	190.2	186.4	191.9	201.7
Canning	114.0	111.7	112.0	111.2	109.4	107.8	106.0	107.1	103.3	104.7
Freezing	72.4	70.5	75.4	77.6	78.9	83.4	81.6	80.5	81.0	79.7
Dehydrated and chips	32.7	31.4	33.4	30.7	31.0	33.9	32.7	32.5	30.6	33.7
Pulses	7.8	8.1	7.7	8.3	8.3	7.9	7.9	8.7	8.8	8.6
Peanuts (shelled)	6.5	6.2	6.0	5.7	5.6	5.6	5.8	5.8	6.0	5.7
Tree nuts (shelled)	2.2	2.2	2.3	2.3	1.9	1.9	2.1	2.2	2.5	2.5
Flour and cereal products [13]	182.3	184.7	189.3	192.0	190.3	196.3	197.3	196.1	196.9	199.9
Wheat flour	136.6	138.1	142.2	143.0	140.1	146.5	146.9	144.9	144.0	146.3
Rice (milled basis)	16.2	16.7	16.6	18.0	18.7	17.6	18.1	18.3	19.5	19.7
Caloric sweeteners [14]	137.5	140.5	143.4	145.9	148.0	148.5	151.3	152.6	155.0	152.4
Coffee (green bean equiv.)	10.3	10.0	9.0	8.1	7.9	8.7	9.1	9.3	9.8	10.3
Cocoa (chocolate liquor equiv.)	4.6	4.5	4.3	3.8	3.6	4.2	4.0	4.3	4.5	4.7

-- = Not available. 1. In pounds, retail weight unless otherwise stated. Consumption normally represents total supply minus exports, nonfood use, and ending stocks. Calendar-year data, except fresh citrus fruits, peanuts, tree nuts, and rice, which are on crop-year basis. 2. Totals may not add due to rounding. 3. Boneless, trimmed weight. Chicken series revised to exclude amount of ready-to-cook chicken going to pet food as well as some water leakage that occurs when chicken is cut up before packaging. 4. Excludes shipments to the U.S. territories. 5. Whole and part-skim milk cheese. Natural equivalent of cheese and cheese products. 6. Includes Swiss, Brick, Muenster, cream, Neufchatel, Blue, Gorgonzola, Edam, and Gouda. 7. Plain and flavored. 8. Plain and flavored, and buttermilk. 9. Heavy cream, light cream, half and half, eggnog, sour cream, and dip. 10. Formerly known as ice milk. 11. Includes condensed and evaporated milk and dry milk products. 12. Farm weight. 13. Includes rye, corn, oats, and barley products. Excludes quantities used in alcoholic beverages, corn sweeteners, and fuel. 14. Dry weight equivalent.

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