

AGRICULTURAL OUTLOOK



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Cover photo: Hereford sale at the Tennessee Beef Agribition, March 2002. Courtesy CattleToday.com.

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Yearend review . . . Commodity policies . . . The livestock sector . . . Markets in developing countries. . . The next trade round

Yearend Review: U.S. Ag Markets

The tightest grain and oilseed supplies in several years are boosting prices and forcing adjustments for end-users this year. Drought in many regions slashed crop and forage production, stressed cattle operations, and raised costs for livestock producers. Crop markets are focusing on how buyers will adjust and how 2003 plantings will respond to higher prices. For the livestock sector, adjustments due to higher feed costs and tight forage supplies are resulting in abundant meat supplies. Livestock prices are expected to rise in 2003 as total meat and poultry production declines for the first time in 21 years.

Holiday Sales Look Bright For Christmas Trees & Poinsettias

Christmas tree sales depend not only on consumer budgets, but also on competition from artificial trees. In 1989, sales of real and artificial trees were equal, but by 2000 the share of real trees was 39 percent. With estimated retail prices for real trees averaging \$36 per tree in 2002, sales should approach \$1.2 billion, a rise of 3 percent from 2001. Poinsettia sales are expected to continue growing, up 2 percent to \$260 million at wholesale.

Globalization of the Soft Drink Industry

The beverage industry is a bellwether for the food industry, where globalization has affected structure. Soft drink companies produce for domestic and foreign markets, license their products, and invest in plants abroad. U.S. soft drink exports totaled \$232 million in 2001. Major shifts in the business environment since the end of the 1990s include refocusing from national to international, expansion across product lines, and sharpening competition.

Controversies in Livestock Pricing

Some livestock producers allege that aspects of the livestock pricing system contribute to low prices. Vertical coordination, which includes packer/producer con-



tract arrangements, has been accompanied by declining use of spot markets (auction markets and directly negotiated sales). The benefit of spot markets is easy dissemination of price information, but vertical coordination also offers advantages—both for sellers and buyers. There are continuing controversies over the extent to which structural changes and pricing methods have affected producer prices.

Where's the Beef? Small Farms Produce Majority of Cattle

Small operations produce the majority of beef cattle in the U.S., and control 74 percent of the land dedicated to beef cattle production. Small enterprises producing beef cattle can be divided roughly into two groups: full-time operations for which agricultural production is a significant source of income, and part-time operations—and with large ones—in areas like production, marketing, and land stewardship, have implications for farm policy.

Food Safety in the APEC Region

Changing consumption patterns, lengthening of supply chains, and the rising share of perishable food products in trade

are generating food safety concerns in the Asia Pacific Economic Cooperation (APEC) region. Recent outbreaks of food-borne illness in China and the U.S. have heightened concerns. APEC countries are increasingly implementing quality and risk management systems and training programs to make food supplies safer.

Farm Policies of the U.S., EU, & Japan

Commodity policies of the U.S., the European Union, and Japan address some of the same goals, but there have always been key differences in approach and in their policy instruments. In recent years, all three have made significant changes to their commodity policies. Efforts to encourage freer trade in farm commodities have led each toward less trade-distorting programs. Some factors influencing agricultural policy may be pushing their commodity policies in a similar direction.

Global Market for High-Value Foods

The global market for high-value foods is subject to an ever-changing product mix demanded by wealthier, more selective consumers. And as developing countries' income and populations grow, they account for a rising share of global food sales. Multinational food companies are rapidly restructuring their operations to meet evolving world food demand. Global sales of high-value food products were estimated at US\$4 trillion in 2000.

What's at Stake in the Next Trade Round

As the next round of multilateral trade negotiations nears, attention is frequently trained on commodity-by-commodity impacts of trade liberalization. But the most compelling economic story is the potential for trade liberalization to accelerate income growth in developing countries. Income growth increases demand for food and shifts demand to high-value products such as meat. Expansion of demand in developing countries holds opportunities for U.S. producers who face a mature domestic food market.

Agricultural Economy



Dennis Shields

U.S. Crop & Livestock Markets Encounter Turbulence

The Year Behind & a Look Ahead

The tightest grain and oilseed supplies in several years are boosting prices and forcing adjustments for end-users this year. Drought-related problems have affected many regions of the country, slashing crop and forage production, stressing cattle operations, and raising costs for livestock and poultry producers. Growing conditions for crops, as well as for pasture and rangeland, were uneven across the country. Accordingly, there is wide variability in the economic impacts.

Falling crop production and sharp price increases are reviving at least a few memories of 1995/96, when strong demand and limited supplies led to record prices. The situation in 2002/03 is less extreme, but it is a striking departure from the fairly steady market conditions seen in recent years for grain and oilseeds, largely a result of benign weather in the U.S. and rest of the world. With the crop supply situation essentially established, markets are focusing on how buyers—both domestic and abroad—will adjust consumption patterns and how producers will change 2003 plantings in response to higher prices.

For the livestock sector, adjustments due to higher feed costs and tight forage supplies are resulting in abundant meat supplies, as producers incline more toward marketing than building herds. These large supplies will keep livestock and product prices relatively low for the next few months. As producers react to higher costs by slowing expansion plans or even reducing production, livestock and meat prices are expected to increase, and margins could swing from red to black.

U.S. Grains & Oilseeds: Tighter Supplies, Rising Prices

Production and supplies of the major field crops have dropped sharply in 2002, due largely to weather problems. The wheat harvest was the lowest since 1972, and corn and soybeans are expected to be the lowest since 1995 and 1999, respectively, although production estimates will not be finalized until January. Stocks of each crop will decline to very low levels, with use projected to show virtually no decline for corn and wheat, and with a modest contraction for soybeans. (Rice is a notable exception to the supply situation among major grains in 2002.)

Wheat prices have led the upward charge in recent months, and cash prices for some classes of hard wheat have crossed the \$5 threshold this fall. Wheat farm prices are forecast to climb to the highest level in 6 years, and corn and soybeans to the highest in 5. The ratio of global stocks to use for wheat and coarse grains is projected to be similar to the tight 1995/96 period. Yet prices are not expected to jump as high, assuming no more unforeseen demand or supply shocks.

Prices have been lower in recent years relative to historical patterns, consistent with a long-term downward trend. There are a number of likely factors, such as fewer stocks held by governments and thus more available to markets, buyers' tolerance of lower inventories to hold down costs, and better market information. Perhaps most critical to the 2002/03 price outlook is the existence of a significant volume of foreign exportable supplies for each major crop despite the overall tightness: wheat from Europe and the Black Sea region, corn from China, and soybeans from Argentina and Brazil. This global influence may keep a lid on the upward swing in U.S. prices.

At the same time that market conditions have shifted, the policy environment has also changed with the 2002 Farm Act. In contrast to the previous 4 years, there were no market loss assistance payments this fall. This will aggravate cash flow issues for many producers who had poor crops, although crop insurance coverage was widespread and should provide some minimal assistance. The new counter-cyclical payments will not kick in for wheat, corn, or soybeans, because prevailing prices are too high. Likewise, government payments from the commodity loan program (loan deficiency payments and marketing loan gains), continued under the new Act, will be small to nonexistent, given forecast prices.

Producers with normal or above-average crops will see strong gains in revenue, as increasing market receipts outweigh the decline in government payments. However, many producers had poor crops, and they will see market revenue plunge despite the higher prices, because they lack volume to sell.

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Wheat. Wheat has experienced the most pronounced tightening, as a smaller U.S. crop coincided with steep declines in Australia and Canada. These three countries account for the bulk of the world's high-quality wheat exports. For the U.S. and Canada, wheat output will be the lowest in 30 years, and for Australia, the lowest in nearly a decade. Overall, global supplies are not as tight, because of abundant but mostly lower quality wheat in Europe, India, and the "nontraditional" exporters, Russia, Ukraine, and Kazakstan.

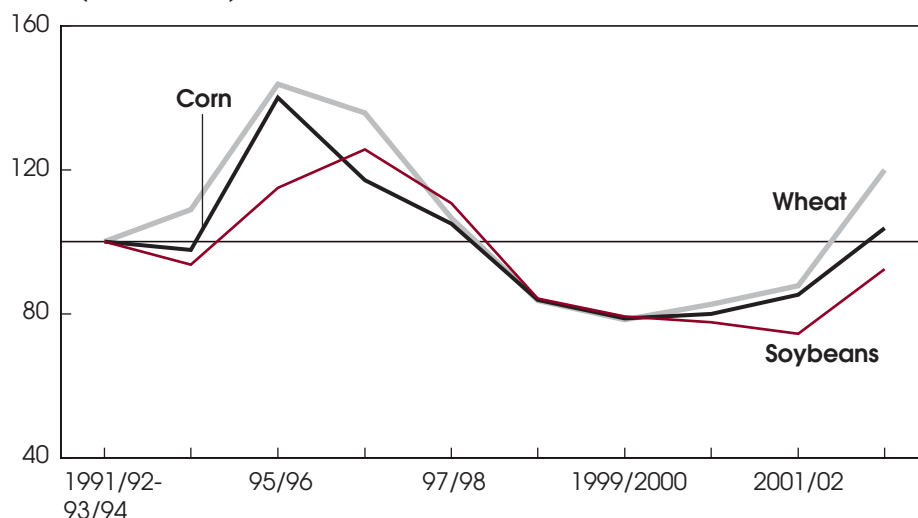
Wheat feeding to livestock is projected to be down 22 percent, accounting for virtually all of the reduction in wheat use in 2002/03. Food use should continue on track, and exports will likely be down slightly. End users in the U.S. and overseas will be forced to make major adjustments, such as blending different qualities of wheat and running down stocks, as they scramble for short supplies of milling quality wheat. Many end users of wheat have bought "hand to mouth" in recent years when markets were relatively sedate and the risk of a runup in prices appeared small.

U.S. and foreign users both will have difficulty buying wheat from Canada because of its severe shortfall. U.S. markets surged when Canada announced that it would not be able to take on new export commitments several weeks ago, and prices have similarly risen as forecasts of Australia's wheat crop have been cut. Limited supplies and higher prices are expected to prevent an increase in U.S. exports, but U.S. share of the world wheat market will increase.

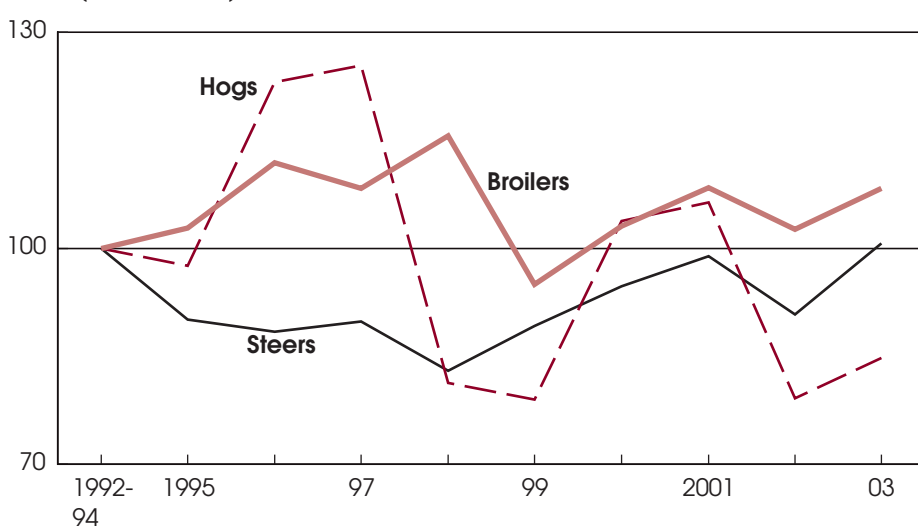
Corn. The drop in corn production was less pronounced than that of wheat. Average yields across the country are below trend, but with tremendous variability. Iowa and Minnesota producers generally had good to excellent crops, with yields forecast at record highs. In contrast, yields were down sharply in many areas of the eastern and western Corn Belt and Plains. Furthermore, there was likely a large increase in corn cut for silage because of pressing needs for livestock feed and because the grain yield would be so low. Yields in some fields were so low that they were probably abandoned, in some cases to collect insurance payoffs.

Farm Prices Turn Upward

Index (1992-94=100)



Index (1992-94=100)



Based on U.S. season-average farm or primary market prices. 2002/03, 2002, and 2003 forecasts. Economic Research Service, USDA

Although the overall supply shock was not that severe, there are indications that many users have had trouble procuring corn this fall, and cash markets have seen strength in some regions. Basis levels (the relationship between cash prices and futures) in some regions of the Corn Belt and Plains were unusually strong. After a sharp runup in late summer, futures prices for corn were fairly flat for most of the fall, reflecting improvements in the crop outlook and slow early-season exports.

For the year, how will the corn sector adjust? Total use is expected to remain high, close to the 2001/02 record (9.8 billion bushels). Gains in industrial use and exports are projected to offset a reduction in feed and residual use. As pressures increase on the livestock sector from higher costs and low product prices caused by large supplies, corn feed and residual is forecast to drop 3 percent. Ending stocks of corn are projected to fall by nearly half to a very low 848 bushels.

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Ethanol is the key driver in the robust demand outlook, despite higher prices. Corn used for ethanol is forecast to increase 15 percent in 2002/03, on top of a 14-percent rise last year, as the industry gears up for the upcoming switchover to ethanol in California. The nation's largest gasoline-consuming state has said it will be phasing out the fuel oxygenate MTBE, because it has polluted groundwater supplies. New ethanol plants are increasing capacity dramatically.

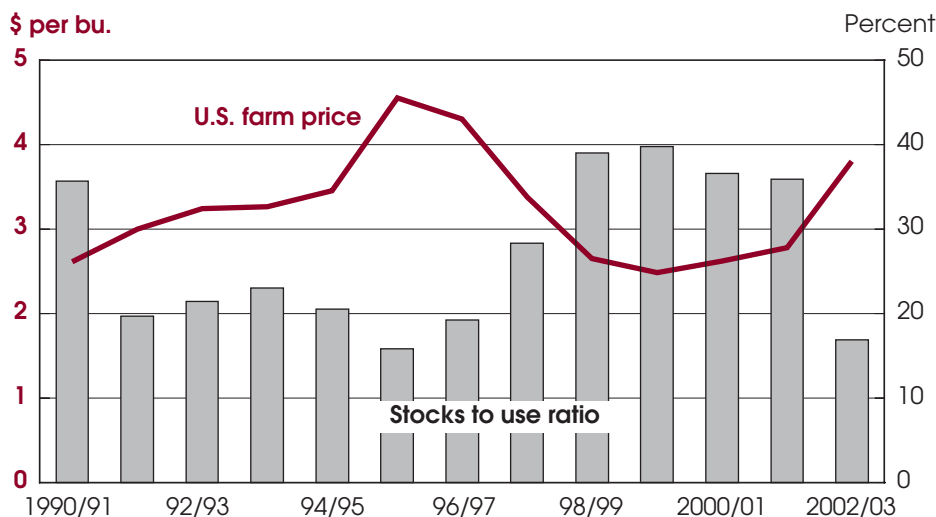
U.S. corn exports are projected to increase slightly, as exports from other countries shrink and world imports show little change. Importers have not indicated any large-scale reaction to rising U.S. prices. Because the supply of corn from competing exports will be down, U.S. market share should increase modestly. Exports from Argentina, Brazil and Eastern Europe will fall because of smaller supplies. However, China, with an excellent crop and large stocks, is exporting fairly aggressively, stimulated by higher prices. China is expected to overtake Argentina as the largest foreign exporter this year.

Soybeans. The fall in the soybean crop will be less dramatic than wheat, and like corn, shows strong variations within growing areas. Many states saw lower yields, but yields were record high in a few states (e.g., Minnesota). Beginning stocks of soybeans were low to start the year, so the reduction in 2002/03 supply will be slightly larger than the drop in production would indicate.

Demand prospects are somewhat more clouded than for wheat and corn, because of some signs of softening demand for soybean meal. An expected reduction in the hog inventory in the next few months and an unusual production slowdown for the poultry sector will limit growth in domestic soybean meal use. Meal exports are projected to decline significantly because of greater competition from South America.

A bright spot in the soybean complex is oil, as a tighter global vegetable oil situation has boosted prices. On balance, the amount of soybeans crushed (for meal and oil) is expected to fall slightly from its record pace of the previous year as crush margins fall. The industry will face soy-

Wheat Prices Have Increased As Stocks Tighten



2002/03 forecasts.
Economic Research Service, USDA

bean prices that are forecast to jump 24 percent, while prices for meal, the principal product, rise only 1 percent.

The international arena presents many uncertainties. On the demand side, soybean imports by China, the world's fastest growing market, are projected to increase to a record 14 million metric tons. However, concerns have emerged about shifting policies on imports of genetically modified soybeans—which constitute the bulk of world trade. Recent import gains by the European Union, the world's largest importer of soybeans and soybean meal, are expected to flatten because of increased feeding of wheat, which has higher protein than other feedgrains.

The biggest story is the specter of enormous production gains continuing in South America, presenting more competition for the U.S. In both Argentina and Brazil, economic and financial problems and weakening currency values against the dollar are reinforcing soybean's dominance. Soybeans are cheaper to produce than corn, the main competing crop, and they are less dependent on imported inputs. A sixth consecutive record crop is forecast for Argentina in 2002, and a fourth for Brazil. Steep depreciation of their currencies also enhances Brazil and Argentina's exports of soybeans and prod-

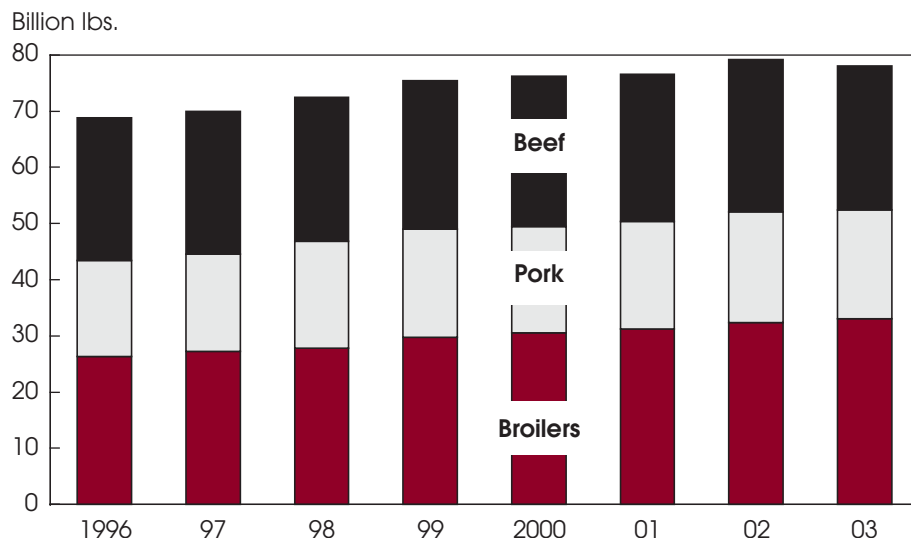
ucts. It is not clear if the newly elected government in Brazil will embark on any policies such as differential export taxes that affect the mix of soybean versus product exports.

How Long Will High Crop Prices Persist?

Crop prices are expected to continue rising for the next several months as they come off harvest lows and rise seasonally. However, when markets are this tight, the seasonal pattern is not easy to predict. How much higher they move will depend on how well end-users are covered, what substitutes are available, and the strength of import demand. Crop prospects for the 2003 crops—both here and abroad—will also affect when prices peak and how fast they fall.

U.S. farmers responded to the stimulus of record prices in 1996 by increasing acreage dramatically. For the eight major field crops (wheat, corn, sorghum, barley, oats, soybeans, cotton, and rice), plantings went up 15 million acres or 6 percent. It is doubtful that the response will be as large in 2003, because price signals are not as extreme and there are questions about how much land is available. Nevertheless, a healthy increase is likely.

Beef and Pork Production to Decline in 2003



2002/03 forecasts.

Economic Research Service, USDA

Another issue is how the crop mix will play out, with tradeoffs among crops. Early expectations are for a drop in soybeans as wheat and corn acres rise based on current market signals. Changes in loan rates under the 2002 Farm Act would reinforce these expectations. The rate for soybeans declined 26 cents per bushel while rates for wheat and corn rose 22 and 9 cents, respectively.

Winter wheat plantings for 2003 harvest will be up sharply. Incentives include higher prices, wheat's relatively low production costs, and improved moisture conditions in much of the Southern Plains. An increase is also in store in the Midwest, mid-South, and Southeast, but excessive moisture may limit the rise. In the Southern Plains, many producers normally use winter wheat for grazing, and incentives are particularly strong this year because of tighter feed and forage supplies. Although corn prices are also up, limited irrigation water in the Western Plains may also lead many producers to turn back to wheat, which requires less water.

Meat Supplies To Moderate in 2003

While U.S. markets for many crops headed higher this year, livestock and meat prices have been under pressure from simultaneous peaks in supplies of beef, pork, and poultry. Cold storage stocks of red meat and poultry at the end of September were 30 percent above a year earlier. As meat and poultry supplies mount, a sharp increase in feed costs is challenging producers of all animal proteins in turning a profit this year.

Record pork production this fall results from a large March-May pig crop and higher imports of feeder pigs. Beef production may hit a record this year as carcass weights continue their long-term growth and as drought and poor pasture conditions in many parts of the U.S. forced continued liquidation of the cattle herd. For poultry, large production is coinciding with a substantial drop in export demand.

For consumers, plentiful supplies have translated into supermarket specials with attractive prices. For much of 2002, retail beef prices have been below year-earlier levels (which were affected by poor feeding conditions and smaller supplies), and the growth in retail prices for all meat and

poultry is only one-third the level of overall food price inflation. Overall, U.S. consumers have a strong appetite for meat and poultry, with per capita consumption forecast at a record 219 pounds (retail basis) in 2002.

The current supply situation has highlighted the growing importance of foreign demand for meat. Between 1992 and 2002, export volume as a share of total use rose from 5 percent to 8 percent for beef, from 2 percent to 8 percent for pork, and from 7 percent to 16 percent for broilers. During this period, global economic growth and reductions in trade barriers, primarily in East Asia and Mexico, have spurred growth in exports.

With exports accounting for a growing portion of the long-term growth in meat production, market participants see export-related issues take on added importance—any change in foreign demand is felt quickly in U.S. livestock and meat markets. In 2002, disease and food safety issues disrupted poultry exports, for example. As for overall export demand, sluggish world economic growth and the strong U.S. currency value this year have limited export growth and producer returns.

U.S. per capita meat and poultry consumption continues its long-term upward trend, fueled by growth in broiler consumption (beef and pork have been relatively flat for the last 10 years). But gains in per capita poultry consumption since the early 1990s have been much lower than in previous years, except for years when exports declined, suggesting a maturing of market demand for poultry products. It does not appear that this year's well-publicized meat recalls related to food safety have adversely affected U.S. demand for meat.

While the market works through large meat supplies, near-term prospects for a downturn in total meat production appear more likely than at any time in the recent past. Producers, particularly in the hog and poultry sectors, are responding to higher feed costs and several months of low market returns by paring back production plans. In the absence of an unforeseen drop in demand, livestock and product prices are expected to turn up in

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Farm Household Income Fares Better Than Farm Business

Substantially weaker markets for livestock and dairy products in 2002 have had a dramatic impact on U.S. net farm income, which is forecast at \$36.2 billion, down about \$10 billion from last year and from the 10-year average. The forecast includes direct government payments of \$17 billion, down 18 percent from the last year. With higher crop prices, payments associated with the loan deficiency program will decline. The first forecasts for farm income in 2003 will be published in January.

Farm households derive more than 90 percent of their earnings, on average, from off-farm sources, which significantly dampens the impact of farm-sector performance on the economic well-being of farm households. Despite a dramatic drop in farm-sector income in 2002, farm households will see their income decline just 1 percent, on average, to \$63,237 per household. Off-farm income is currently hampered by continued slow recovery of the general economy and slow wage growth.

Commercial family farms (147,000 households with farm sales of at least \$250,000) will realize the largest declines in household income, at 18 percent. Household income on these farms averages more than \$100,000. Commercial family farm households derive about 30 percent of their income from off-farm sources.

2003 after languishing for most of this year.

Cattle. Attractive calf prices in recent years have created an annual expectation in the industry that cow-calf operators, assuming normal weather and good forage-growing conditions, would soon begin to retain heifers and expand their herds. But poor forage conditions during the last several years in major cow-calf producing states have resulted in a steady liquidation. The level of cow slaughter and numbers of heifers in feedlots continued at levels that dampened prospects for a rebuilding phase in the national cow herd and for the sharply lower beef supplies that would accompany the process. Record slaughter weights also have contributed to record beef production and put downward pressure on cattle prices for more than a year.

Market prospects appear to be changing, though. Cattle placements in feedlots were down from year-earlier levels in September and October, which signals reduced slaughter levels in 2003. Beef production is forecast down 5 percent in calendar year 2003, although with high slaughter weights preventing a further decline. Fed-cattle prices broke through year-earlier levels in late October, and the seasonal price rally is stronger than in recent years. Prospects for higher cattle prices next year depend to a large extent

on "normal" forage and grazing conditions in spring and summer, which would encourage producers to retain animals for breeding rather than feeding them for slaughter.

Demand for beef is relatively strong. In 2002, the market has seen large volumes of meat pass through domestic and export channels at prices that are above expected levels based on historical relationships. Domestic demand appears to have bounced back from a drop in the last quarter of 2001 (related to reduced travel, restaurant sales, and business spending). Similarly, beef exports this year have exceeded early forecasts, with strong shipments to Korea and Mexico. With some improvement in global economic growth, additional gains are expected in 2003.

Hogs. A few months ago, hog market prospects for the fourth quarter appeared to be almost as grim as in 1998—very low prices and significant financial losses, especially for producers who sold on the spot (cash) market. Rather than face a repeated crisis, producers began making adjustments this summer. In anticipation of higher feed costs and lower hog prices in the fall, sow slaughter increased, helping drop the U.S. breeding herd to 2 percent below a year earlier on September 1. Producers also intend to reduce farrowings in the next 6 months, which will

result in 2 percent lower pork supplies and higher hog prices in 2003.

Two other supply factors related to market and industry structure will also moderate pork supplies next year. First, U.S. imports of Canadian hogs, after increasing nearly tenfold in 10 years, are expected to remain unchanged in 2003. Given poor hog market conditions and high feed costs this year, the Canadian industry is shifting from dramatic growth to more stable inventory levels. Second, growth in the average number of pigs per litter (and pig crops per year), after advancing throughout the 1990s, has halted as the structural shift to larger, more efficient hog operations has been mostly completed.

Pork exports are expected to continue rising next year. General economic gains in the three most important markets—Japan, Mexico, and Canada—will likely enhance U.S. shipments. However, the U.S. faces increasing competition from Canada in the Mexican and Japanese markets, and from the European Union (especially Denmark) and Brazil in other markets.

Broilers. Export difficulties broadsided the poultry industry in 2002. Much lower prices have accompanied large meat and poultry supplies and the drop in export demand. As a result, U.S. per capita consumption of boiler meat is forecast to rise to a record high at nearly 80 pounds (retail weight) after remaining steady at 76-77 pounds since 1999. Whole-bird and leg meat prices in third-quarter 2002 were down 8 and 31 percent, respectively, from a year earlier.

The most publicized factor in this year's 12-percent drop in broiler exports is a major slowdown in shipments to Russia, the largest U.S. market. A trade dispute between the two countries emerged earlier this year involving localized outbreaks of avian influenza, sanitary regulations and reporting requirements. It was eventually resolved in August. Other countries such as Japan, Korea, and Mexico have also imposed restrictions on U.S. poultry products at some point during 2002 due to localized disease outbreaks.

Higher feed costs, uncertain export demand, and lower product prices are affecting the poultry industry. From mid-

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September to early November, the number of broiler-type eggs going into incubators was down 3 percent from a year earlier. Broilers from these eggs will come to market around early December, slowing growth in fourth-quarter broiler production. Broiler production grew 5 percent per year between 1980 and 2000, but has since slowed. Growth in production is forecast at 2 percent in 2003.

Volatile Markets Ahead?

Prospects for a rebound in grain and oilseed production in 2003 will be the key factor driving prices next spring. However, even if the outlook for production gains are favorable, the price path may be bumpy and the timing of price drops uncertain. Low stocks make the markets more skittish and magnify the reaction to weather events or other news. Consequently, buyers and sellers face more price risk.

One of the first indicators of next year's crop supply prospects will be the *Winter Wheat Seedings* report in January. Then, in early spring, USDA will report farmers' planting intentions for all the major crops. But the main focus of markets in the next few months will be consumption, with reports on indicators such as grain stocks, export sales, soybean crush, and livestock inventories also taking on added importance as the market deals with reduced supplies and higher prices.

Exports head the list of demand-side uncertainties for the crop and livestock sectors. Recovery from the world economic slowdown of 2001 continues to be anemic, and the dollar remains strong against the currencies of many important importers and competing exporters. Also, as poultry marketers can attest, world markets for meat and poultry are highly sensitive to animal disease outbreaks and government policies, creating major market opportunities or precipitating declines in export demand, depending upon the level of trade in affected countries and how competing suppliers respond.

For the livestock complex, prospects entering 2003 are for a general upturn in prices as total red meat and poultry production declines for the first time in 21 years. Due to lower returns in 2002, the broiler industry is slowing its growth, and the hog sector is essentially set for lower pork production. Domestic and export demand prospects appear good, although declining U.S. consumer confidence and lower manufacturing activity raise questions about the strength of the U.S. economy and demand for meat.

The perennial challenge in forecasting beef production has been pinpointing when producers will begin retaining heifers for herd expansion. When enough producers see favorable pasture and range conditions and have sufficient forage supplies, the number of cattle for slaughter could drop sharply given the already reduced inventory and as producers retain females for breeding. A strong runup in cattle prices would likely ensue. If total meat production fails to slow as much as expected next year, though, livestock and meat prices will face some downside price risk.

The potential for market volatility may be greatest in the soybean market, where a record South American soybean crop is already factored into current price levels. Any weather problems in Argentina or Brazil could lead to skyrocketing prices, with grain markets likely following. But assuming normal weather next year, higher acreage and improved yields in the U.S. should replenish grain and oilseed supplies and dampen prices. **AO**

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December Releases—National Agricultural Statistics Service

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

www.ers.usda.gov/nass/pubs/pubs.htm

December

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- 4** Broiler Hatchery
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Egg Products
- 5** Dairy Products Prices (8:30 a.m.)
Milkfat Prices (8:30 a.m.)
Poultry Slaughter
- 11** Cotton Ginnings (8:30 a.m.)
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Weather - Crop Summary (noon)
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Potato Stocks
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Agricultural Prices

Briefs

Dairy

Tortoises Triumph: Gradual Changes Transform the Dairy Industry

Today's dairy industry is transformed from the one profiled in the inaugural issue of *Agricultural Outlook* (June 1975). Some of the supply and demand forces that were most important in the transformation operated so gradually and continually that they received scant attention in short-run outlook. But they may continue to be major shapers of the dairy industry in years to come. Among these forces are economies of scale and specialization, more women working outside the home, higher household incomes, and a broadening diet which includes cheese-heavy ethnic foods.

In 1975, 115.4 billion pounds of milk, near the post-World War II low, were produced by 444,000 dairy operations. The 11.1 million milk cows produced an average of 10,360 pounds of milk, record milk per cow at the time. In 2002, operations with milk cows are only a fifth as many as in 1975, but hold four-fifths as many cows. Milk production will be up almost by half from 27 years ago, thanks to an increase in milk per cow of almost 80 percent. The 1975 dairy markets were dominated by fluid milk, absorbing half of all milk marketings. In contrast, cheese now uses half the milk, its share doubling since 1975.

Cheese Becomes the Dairy King

By the mid-1970s, cheese had already become an important part of dairy demand, as sales had grown briskly for about 10 years and per capita consumption had shot over 14 pounds. But, per-person use in 2002 is likely to be more than twice the 1975 level. Cheese is convenient, versatile, and an easy, quick way to add flavor to dishes. These attributes became more highly prized as more women entered the labor force and family incomes rose, particularly in multiple-income households. Ethnic cooking, such as Italian and later Mexican, using substantial amounts of cheese, moved into the mainstream of American eating. A

greater variety of cheeses became available as cheese sales grew, fueling further increases in total sales.

If anything, cheese attributes important to retail customers were even more prized by restaurateurs and food processors. The long-run shift from at-home food preparation to consumption of partially or fully prepared foods has benefited cheese sales. Less than half of all cheese is now sold at retail, excluding that in food products.

The pizza phenomenon contributed greatly to dairy demand. Pizza was well established by the mid-1970s, available to most consumers in restaurants, as take-out or delivery, and in the freezer case. However, pizza grew continuously to become a true staple food, available in tremendous diversity and supplied by numerous competitors. Pizza and similar products may account for as much as one-third of total cheese use and are important contributors to overall demand for dairy products.

Total sales of beverage milk are now virtually the same as in the mid-1970s, in spite of the large increase in population. A number of factors have contributed to declining per capita use, including a smaller share of children in the popula-

tion, more meals eaten away from home, increased control of children over their food consumption, and stronger and more diverse competition from other beverages. Milk has fundamentally lost ground to carbonated soft drinks as consumers' choice of a mealtime beverage.

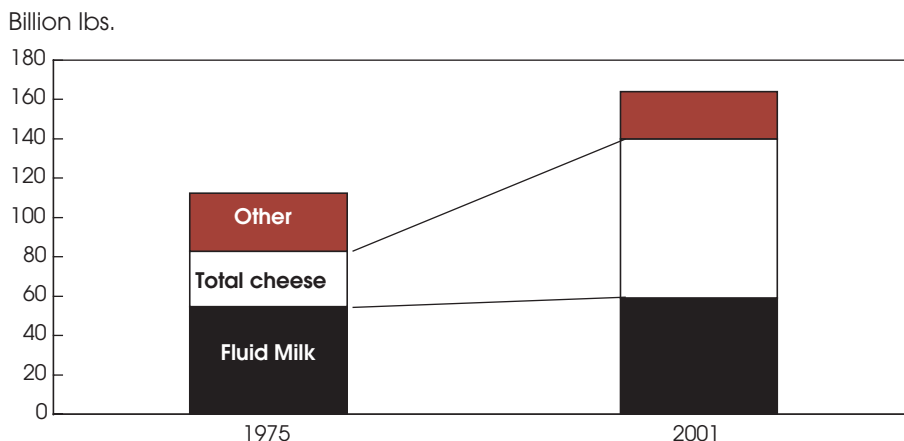
Declines in butter and cream use that reduced dairy demand during the 1950s and 1960s had essentially ended by the mid-1970s. Since then demand for milkfat products has generally been stable to slightly increasing. However, sales of most other dairy products, such as ice cream, cottage cheese, and canned milk, have declined even with mostly favorable prices. Similarly, use of dry and condensed milk as ingredients in processed foods slipped, in part because of increased use of inexpensive whey products.

Milk Output per Cow Has Soared

Grain and other concentrate feeds have remained a cheap input for dairy farmers relative to the capital and labor needed to maintain a cow. Low relative input prices encouraged farmers to boost concentrate feeding to achieve as much milk per cow as possible, in effect substituting milk per cow for milk cow numbers. In addition, milk per cow was boosted by genetic improvement and by improved knowledge and management of feeding.

Optimal feeding of dairy cows has changed over time, even though the basic

U.S. Cheese Use Has Nearly Tripled Since 1975



Economic Research Service, USDA

challenge remains of getting the cow to eat enough of the right nutrients to efficiently produce milk close to her genetic potential. Through most of the 1980s, most dairy farmers boosted milk per cow by increasing the amount of grain fed. More recently, with many dairy herds already getting maximum starch, producers are increasingly relying on feeds, such as whole cottonseed, containing concentrated nutrients other than starch.

Forage quality is now a much more important factor in milk per cow than it was in the mid-1970s. Low quality forage wastes valuable stomach space. Changes in the relative supply of very-high-quality forage are a major source of variation in milk per cow. However, the milk-feed price ratio, long a powerful predictor of growth in milk per cow, has lost some relevance because of modern feeding practices.

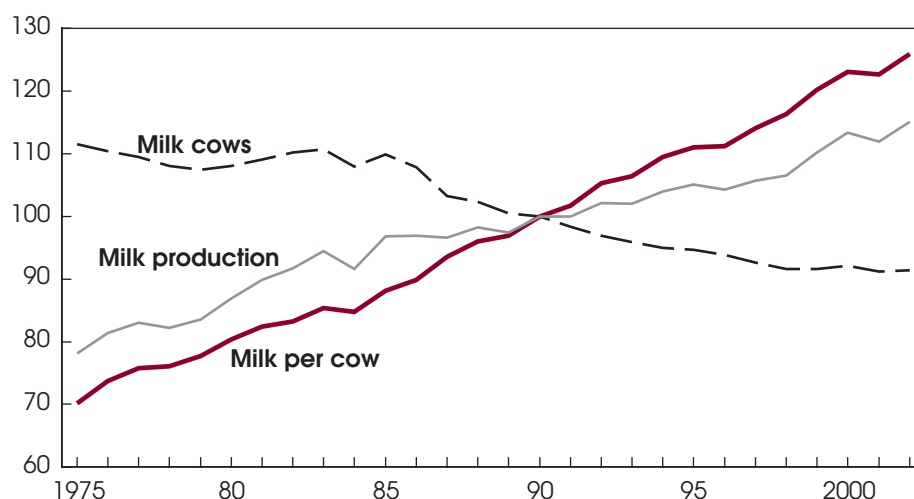
A New Type of Farm

Large dairy farms organized with an industrial-style specialization of labor can substantially reduce both labor and capital costs per cow. In addition, these farms typically are highly specialized in milk production and purchase almost all their inputs. Such operations continue to become more numerous in most major dairy areas. These farms have also proven adept at training dairy managers—employees learn management skills as they climb the career ladder. More than one-third of current milk production comes from farms with 500 or more cows, compared with less than one-tenth in the mid-1970s.

Industrial-style dairy farms were pioneered in the West. Rapid development of the Western dairy industry and stagnation or contraction of the dairy industries in other areas have resulted in dramatic shifts in regional shares of milk produced, often described as “milk production moving west.” However, individual dairy farmers have often moved east, not west. California in particular has long exported dairy farmers, first to other Western states such as Idaho and New Mexico, and more recently to states east of the Rockies.

Milk Cow Numbers Have Declined As Productivity Increased

Index (1990=100)



2002 forecast.

Economic Research Service, USDA

Swings in Supply/Demand Balance

Milk production was generally in balance with demand during the late-1970s. In fact, real milk prices rose slightly. Relatively high returns, and the assurance that the support price would not let returns decline precipitously, unleashed a massive supply shift in the early 1980s. Most dairy farms expanded, Western dairy growth accelerated, and few farmers left dairying. Not until the end of the 1980s did reduced milk prices slow expansion and precipitate enough exit of dairy farmers to restore balance between milk supply and demand.

Since the mid-1990s, milk prices have been erratic. Demand has shown a mild tendency to grow more than supply. Dairy farms appear to fall into two types: those new-style farms generating good returns and growing rapidly, and the majority that are struggling to adjust and produce an adequate family income.

The Future of Demand

Will the demand for cheese continue to grow, or is the American appetite for cheese about satisfied? Sluggish 2002 cheese sales have boosted the question's prominence. However, cheese sales have paused temporarily before, and many

European countries have seen sales grow steadily over recent decades, even though their use was already higher than the current U.S. level. Cheese sales probably will continue to grow, although increases may be proportionally smaller.

Milkfat and skim solids can add flavor and functional quality to many processed foods. Demand for quality enhancing ingredients probably will grow along with markets for pre-prepared foods. However, this may not benefit demand for traditional milk solids. Fractionated milk products used as food ingredients are likely to be more important, and these products may well be whey-based. Undoubtedly, new markets will emerge for milk-based fractions, but these markets may not offset lower demand for milk solids.

Production Growth Likely

Growth in milk per cow may tend to be slower, at least in proportional terms, and probably will be more erratic. Milk per cow might have already slowed in the 1990s if it had not been for adoption of bovine somatotropin, a hormone that stimulates milk output. Growth in milk per cow probably will be even more dependent on forage quality and further advances in feeding knowledge. In addition, the concentration of milk cows in small geographic areas increases the vul-

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nerability of milk production to the effects of abnormal weather.

New-style dairy farms will become much more numerous and widespread, having proven their viability under a variety of circumstances. Development in the West may be slowed by tighter forage supplies and greater environmental and other restrictions, but the Western dairy industry will continue to expand. The number of new-style dairy farms in the Midwest and Northeast may accelerate as new production concepts are adapted to local climates and feed situations. Some of these dairy farms will be smaller operations making the leap to a much larger size and a totally different organization.

For the foreseeable future, most medium-size dairy farms will adapt and survive. Although many of these farms cannot generate enough return for both family living and reinvestment, they will be able to stay in business until the retirement of the current operator or until major new investment is needed. They even are likely to increase their herd size, although expansion probably will be fairly modest.

A majority of the small and some medium dairy farms will exit the industry when current operators retire or give up, and the next generation goes elsewhere. Small-scale dairy farms have been the only feasible land use in a number of marginal agricultural areas. As these farms exit

dairying, much of their land may be converted to nonagricultural uses.

Some downward pressure on real farm milk prices is likely in the years to come, as milk supply is expected to grow a bit faster than demand. However, longrun demand has proven more resilient than often perceived, and falterings in milk output are likely to trigger occasional price surges. Similar unique circumstances that lead to the sharp erosion of milk prices during 1980-95 are unlikely.

AO

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Specialty Crops

Grape Expectations: Abundant Quantity, High Quality

U.S. consumers are finding an abundance of high-quality fresh-market grapes at slightly higher prices this year than a year ago. USDA forecasts the 2002 U.S. grape crop at 14.5 billion pounds, the third-largest crop ever. Production is up in most of the nation's grape-producing states, including California and Washington, the two leading producers.

The grape crop is 11 percent larger than a year ago but 5 percent smaller than the record 15.4 million-pound crop in 2000. Despite this year's increased production, prices received by growers are up from last year due to the higher quality crop. Higher prices will increase the value of the 2002 grape crop above last year's \$2.92 billion, when a 15-percent decline in production more than offset the effects of higher prices. Grower prices for fresh grapes from June through October 2002 averaged \$788 per ton, up 6 percent from the same period a year ago.

At the retail end, January-September prices for Thompson seedless grapes were higher than a year ago for each month except April and June. Grape supplies this past winter, mostly imported from Chile, were up considerably from a year ago, but retail prices averaged higher due to strong

consumer demand and less competition from reduced U.S. production of fall crop apples and California navels in 2002, and lower banana imports. Smaller apple and pear harvests again this fall will likely help keep grape prices strong for the balance of 2002 and into early 2003.

U.S. fresh grape consumption in 2002/03, even with higher prices, is projected to increase over last year to 7.67 pounds per person. However, higher prices are affecting exports, with May-August shipments up only fractionally from the same period a year ago. Exports are down thus far to important markets, including Malaysia, Taiwan, the Philippines, and the United Kingdom. The heaviest export shipments typically occur during September and October, and exports this year for those months may have slowed due to the recent 2-week shutdown of West Coast ports.

On the bright side, California table grapes are finally entering the Australian market after several years of negotiations. The first shipments totaling 132 cartons of flame seedless grapes arrived in Sydney, Melbourne, and Brisbane via airfreight on July 16, 2002. Export growth potential for U.S. grapes to the Australian market appears promising given the country's

large population, high income, and counter-seasonal grape production.

The U.S. grape industry remains a valuable component of the U.S. agricultural sector with farm cash receipts averaging close to \$3 billion per year over the last 5 years. Technological improvements in production and marketing have helped the industry achieve both the quality and volume demanded by foreign customers, and to play a key role in the global grape market. The U.S. is the world's third largest producer of grapes, next to Italy and France, and provides about 10 percent of the world's production. While most of the grape and grape products produced here are sold through domestic channels, foreign markets are increasingly important. Export markets have taken over 20 percent of U.S. grape production since the mid-1990s, up from 12 percent during the early 1980s. U.S. export volumes of fresh grapes and raisins rank third in the world while wine exports rank sixth.

California Dominates Production

California accounts for over 90 percent of U.S. grape production, dominating both the fresh and processing markets and supplying most of the grapes for exports. Except for the heat wave that moved across the state this summer, weather was generally favorable throughout the grape-growing period and production is expected to increase 12 percent from a year ago to 13.3 billion pounds. All varieties are

expected to increase: raisin-type grapes, up 23 percent; table-type grapes, up 8 percent; and wine-type grapes, up 5 percent.

The rapid growth of California's grape vineyards during the 1990s, largely from the state's expanding wine industry, appears to have slowed in recent years. Grape acreage in California actually declined fractionally in 2001 from the previous year, mostly reflecting lower nonbearing acreage of wine grape varieties as some vineyards reached productive stage and growers made no new plantings. Wine varieties accounted for 60 percent of California's grape acreage in 2001, with bearing acreage up 5 percent and nonbearing acreage down 18 percent. Bearing acreage for raisin and table varieties each declined 1 percent.

The 2001 grape crush for California totaled 3.37 million tons, down 15 percent from the 2000 record. Approximately 16 percent of this crushed volume was sold as grape concentrate. Red wine varieties accounted for the largest share of crushed grapes, 51 percent (1.7 million tons), followed by white wine varieties, at 39 percent (1.3 million tons). Raisin and table grape varieties made up the remaining 10 percent of total volume crushed. The farm gate value of crushed grapes averaged \$555 per ton in 2001, up from \$504 in 2000. Grower prices for raisin, table, and white wine varieties averaged lower in 2001 than in 2000, while prices for red wine varieties, mostly higher priced than other varieties, averaged 8 percent higher.

While still far behind California in production, Washington has rapidly increased its grape acreage over the last decade in line with expansion of its wine sector. The state's crop in 2002 is expected to be 640 million pounds, up 13 percent from 2001, with increases in both wine and juice varieties. Grapes are produced in Washington solely for the processing sector, with wine manufacturers taking an increasing share. In 2001, 35 percent of the state's crop went into wine, compared with 26 percent in 1999. The balance went into juice.

Wine Consumption Is Growing

While U.S. grape growers generally receive a higher value for fresh-market grapes, over 65 percent of the U.S. grape

crop value comes from sales of grapes used to make wine. Wine is a high-value finished agricultural product. Retail sales of wine in the U.S. averaged \$18 billion over the last 5 years, almost triple the value during the early 1980s, according to the Wine Institute, an advocacy association of California wineries. The U.S. wine industry also grew rapidly over the last 20 years with the number of commercial wineries tripling to about 1,800. Most of these are family owned and operated and nearly half are located in California where approximately 90 percent of all U.S. wine is produced.

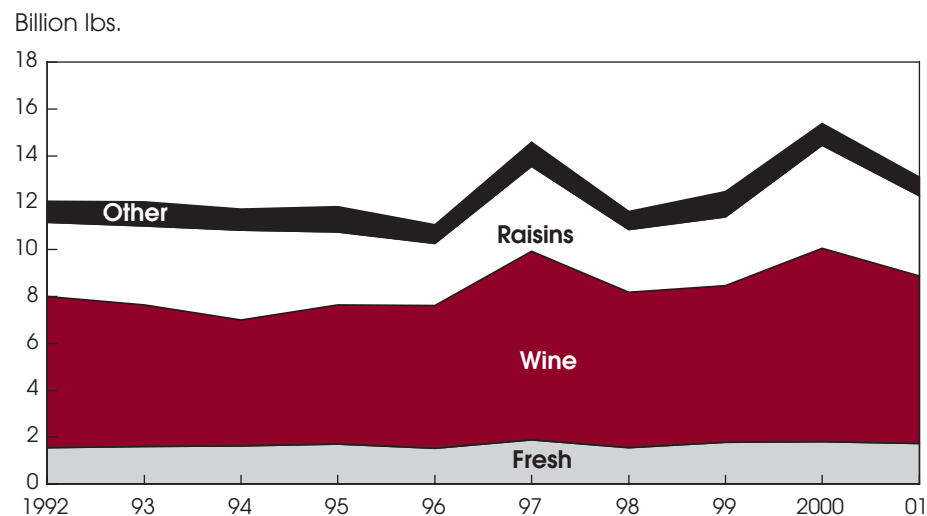
Wine shipments from California totaled 450 million gallons during 2001, with domestic shipments totaling 387 million gallons—70 percent of U.S. wine consumption last year, including wines from other states and foreign countries. Of the estimated \$19.8 billion in retail value of all wines sold in the U.S. last year, sales of California wine generated \$13.4 billion, or about 68 percent.

While the demand for wine, in general, received a boost from the many reports linking moderate wine consumption to good health, demand for U.S. wines grew rapidly during the 1990s as U.S. wineries improved quality. Shifts occurred in the varietal composition of grapes crushed in favor of premium varieties. The top 5 varieties during 2001 were Chardonnay

(17 percent of total crush), Cabernet Sauvignon (12 percent), French Columbard (10 percent), Zinfandel (10 percent), and Merlot (8 percent). Except for French Columbard, crush volumes for each of these varieties were much larger than in 1992 when Thompson seedless was the leading variety crushed for the wine and juice sector, accounting for 24 percent of total crush volume. This share declined to 8 percent in 2001.

Export markets have served as a growing outlet for U.S. wine. U.S. wine exports over the last 3 years averaged 13 percent of domestic production, up from 7 percent during the early-to-mid 1990s and 3 percent during the 1980s. Based on Bureau of the Census data, wine exports set another record during 2001, increasing 4 percent from a year earlier, to 75.4 million gallons. Of the top five markets, shipments were up to the United Kingdom, the Netherlands, and Belgium but were down to Canada and Japan, partly due to the growing competition from other large world producers. Also in Japan, an oversupply situation over the last 2 years also negatively affected that country's demand for U.S. wine. However, the outlook for 2002 is for a drop in U.S. wine exports from the 2001 record due to increased global competition and the continued strength of the U.S. dollar. During the first 8 months of 2002, wine exports were down 13 percent from the same period in 2001, with decreased sales to all the top five markets.

Wine Accounts for Greatest Use of U.S. Grapes

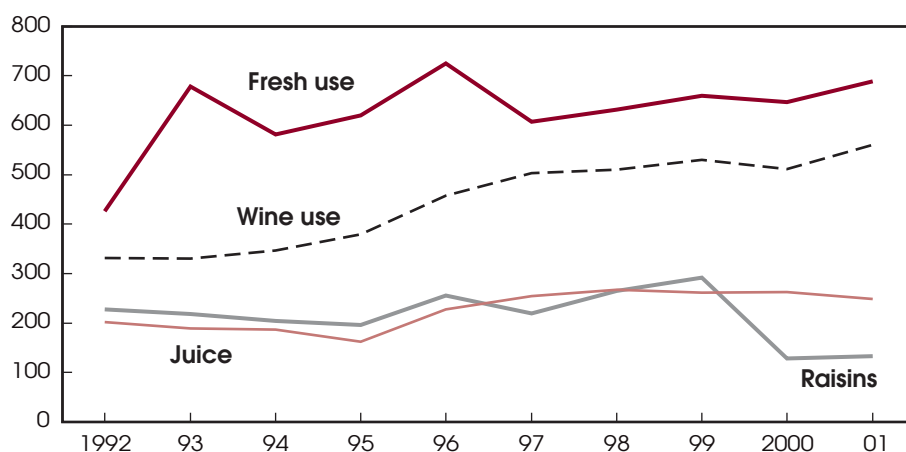


Economic Research Service, USDA

Briefs

Grapes for Fresh and Wine Use Bring Highest Prices

\$ per ton



Economic Research Service, USDA

In 2001, because of the smaller U.S. grape crop and a stronger U.S. dollar, U.S. importation of wine rose 7 percent over 2000. From the main suppliers, shipments were up from Italy, Australia, and Spain but were down from France and Chile. During the first 8 months of 2002, U.S. wine imports continued higher, up 16 percent from the same period a year ago.

Raisin Production & Exports Down

Raisins account for the second-largest use of U.S. grape production. Partly due to the smaller 2001 grape crop, fewer grapes were used for raisin production last year. However, large carryover stocks and increased imports raised domestic raisin supplies during the 2001/02 season, and pressured already low raisin prices.

Imports rose 29 percent, with larger shipments from the leading suppliers—Chile, Mexico, Argentina, and the Republic of South Africa. Even with increased supplies, commercial shipments, as reported by the Raisin Administrative Committee, were down slightly from the previous year and ending stocks remained large. U.S. raisin consumption was estimated at 1.46 pounds per person during 2001/02, down 3 percent from the previous season. However, low domestic prices and decreased world supplies helped boost export demand for U.S. raisins, raising shipments 4 percent. Increased shipments to Japan, Canada, and other important markets in the Asian Pacific Rim more than offset decreased sales to the European Union.

This year's larger U.S. raisin crop and another year of large carryover stocks will likely keep U.S. raisin prices competitive in the world market, but increased world production and a continued large world surplus will likely prevent any significant growth in U.S. exports. Good drying conditions prevailed for sun-dried raisins in September of this year. By early November, harvesting of raisin vineyards in California was complete. **AO**

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Specialty Crops

Smaller 2002/03 Citrus Crop May Boost Grower Prices

The 2002/03 citrus crop is projected to total 15 million short tons, 9 percent smaller than last season, according to USDA's National Agricultural Statistics Service (NASS). The orange, grapefruit, tangerine, and Temple crops are expected to be smaller, while lemon and tangelo crops should be bigger. As a result of the expected smaller crops, growers are likely to receive higher prices for their product. Higher prices could, in turn, improve revenues for some of the citrus industries.

With the Florida crop typically accounting for at least three-quarters of all citrus produced in the U.S., any changes in its crop affects the overall industry. An expected

14-percent decline in Florida's citrus crop is driving overall decline for the 2002/03 season. As a result of the sharp projected decline in Florida's production, its share of the total U.S. citrus crop is likely to be 74 percent, down from 78 percent last season.

A projected 11-percent increase in California's crop is offsetting some of the overall decline in the U.S. citrus crop. Since Florida and California market their citrus differently, one state's crop has little effect on the other state's market. For example, most of California's oranges are sold in the fresh market while most of Florida's oranges go into making juice. Because of the split markets, quality fac-

tors often have more effect on markets, with poor-quality California oranges increasing sales to processing and high-quality Florida oranges increasing its sales to the fresh market. The impact of any change in market, however, is generally very small. Similarly, Florida grapefruit dominate the winter fresh market with California's product taking over from spring through early fall.

More Fresh Oranges Expected in the Markets This Season. California and Arizona orange crops are projected to reach 2.4 million short tons, 13 percent bigger than last season and potentially the largest since 1997/98. The navel orange crop, which is already being marketed, is expected to be 17 percent larger than last season. The Valencia crop, which will not be harvested until February or March, will be 4 percent larger. The significantly larger navel crop is good news for growers since navels are popular both domestically and

internationally, bringing growers strong returns. The navels, however, were reportedly on the small side, which decreases their market value. As the season progresses, and with some rain, the fruit will likely increase in size and improve the prices growers can demand for their fruit.

Texas' orange crop is forecast to be 8 percent smaller than last season and 28 percent smaller than 2 seasons ago, although the 68,000 tons expected to be utilized is higher than any other year since the mid-1980s. According to the industry, f.o.b. prices averaged lower than last season during the third week of October. Prices are likely to be hampered by the large number of small fruit available at the time.

Smaller Florida Orange Crop Could Drop Juice Supplies to 5-Year Low. The first projections of Florida's orange crop is 8.9 million short tons, 14 percent below a season ago. Both the early-to-mid-season orange crop, expected to total 5.1 million tons, and the Valencia orange crop, at 3.8 million tons, are forecast down in 2002/03.

Two major factors affected production this season. First, drought affected the number of blooms and therefore the number of fruit on the trees. Second, several diseases helped decrease the number of bearing acres and trees. Warm, rainy summer weather helped accelerate fruit maturity and size. The bigger fruit relative to recent years at the time of the October forecast likely offset some of the loss in volume.

Many of Florida's juice processors opened their plants by mid-October, with all plants expected to be operating by mid-November. Although the quantity of oranges being processed in October was ahead of last season, there were reports of bitterness in the juice. This problem should dissipate as the season progresses and temperatures decline, sweetening the fruit.

According to industry data, processors were paying an average 20 percent more for oranges as of the third week of October. Anticipated tightness in this year's market should improve growers' prices after several years of low prices.

USDA's Economic Research Service estimates that 1.2 billion single-strength

equivalent (SSE) gallons of orange juice will be produced from this year's crop. If realized, production would be the lowest since 1993/94. Although beginning juice stocks are the third highest on record and imports are forecast to be significantly higher than last season, the overall supply available for marketing this season is projected to be 2.2 billion SSE gallons, the lowest in 5 years.

The smaller supply will likely drive down ending stocks as processors continue to compete for market share, especially in the not-from-concentrate (NFC) orange juice market. Consumers could benefit from this competition and see low retail prices for NFC this season. Low prices and an expected improvement in the U.S. economy should push consumption slightly higher than last season to an average 5.2 gallons per person for 2002/03.

Brazil's orange juice production, the largest in the world and the major source of U.S. imports, is projected higher this season. The bigger supply should lower the world price and provide for sufficient juice available to U.S. processors and reconstituting plants, mostly located in the Northeast. With more Brazilian orange juice in the world market, U.S. exports will probably drop, as domestic processors push more juice into the U.S. market.

Grapefruit Production Declining.

According to NASS's October estimates, grapefruit production for 2002/03 will only reach about 2.2 million tons, the smallest crop since the freeze in 1989/90. Crop size has been declining over the past 3 years as trees and bearing acreage were removed in Florida due to disease and low grower returns. Both Florida's colored and white grapefruit crops are anticipated to be 10 percent lower than last season. Since Florida's expected 1.8 million-ton grapefruit crop is less than the average utilization over the past 5 years, competition from both the domestic and international markets should be strong, boosting grower prices. Prices should also benefit from this season's large fruit, a strong selling factor for some international markets.

California Expects More Lemons This Season. The forecast for the 2002/03 lemon crop is 904,000 tons, 9 percent above last season. California's crop is

expected to be 11 percent larger than last season at 798,000 tons, 88 percent of the total. Arizona's lemon crop comprises the remaining 106,000 tons, the same as last season. California's lemons, like its oranges, are smaller so far this season. Without some rain, fruit size could dampen prices. Arizona's lemons are reported to be of good size and quality. Without much import competition this season, and with the ban still in effect for Argentine lemons, there should be sufficient demand throughout the year to keep prices firm for growers and at the retail level.

Smaller Tangerine Crop Forecast in Florida. Florida's tangerine crop accounts for 71 percent of total production this season. The crop is projected to decline 21 percent from last year's large crop, to 314,000 tons. The early-variety tangerine crop is expected to drop 29 percent from last year, due to a decline in the number of trees, and the number of fruit per tree.

Beginning in 2002/03, the early varieties include only Fallglo and Sunburst tangerines. The Sunburst variety is the major early variety. The number of trees also declined for the late Honey tangerine, but the number of fruit per tree is higher this season than last. Therefore, the estimate for Honey tangerines declined only 7 percent. Elimination of forecasts for Robinson and Dancy tangerines may alter the forecast slightly. However, these crops have become so small (being replaced by more popular varieties), that the overall effect on the forecast is likely minimal.

With fewer tangerines available in the market, prices may climb above last season. A price increase, however, would be tempered by the return of Spanish clementine imports that will again be available this fall and winter. Under new regulations by USDA's Animal and Plant Health Inspection Service, clementines cannot be marketed in any citrus-producing States. Since the strongest demand for clementines is in the Northeast, the restrictions should have little effect on demand. They might, however, increase competition for domestic citrus. Consumers may benefit from such competition, should the industries decide to include price discounts in their promotions. **AO**

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Commodity Spotlight



Photo courtesy of USDA NRCs

Holiday Sales Look Bright for Christmas Trees & Poinsettias

Christmas tree sales depend not only on consumer holiday budgets, but also on competition from artificial trees. In 1989, sales of real Christmas trees and artificial trees were equal. Since then, purchases of artificial trees have steadily climbed. By 2000, the share of real Christmas trees had fallen to 39 percent as artificial trees reached 61 percent. Demand for real Christmas trees is also sensitive to tree prices, which have inched up over the past 6 years. However, since the housing market—residential construction and home resales—was strong in 2002 despite slower consumer spending, modest gains in Christmas tree sales are anticipated.

The holiday season's sales of real Christmas trees are expected to be at least 32 million trees, slightly larger than in 2000, but below 1999's 35 million. At estimated retail prices ranging from \$4.30 to \$7.80 per foot, or an average \$36 per tree, total retail sales will be close to \$1.2 billion in 2002. These sales are up from \$1.1 billion in 2000 and \$900 million in 1998.

Poinsettia sales are expected to continue growing, up to \$260 million at wholesale in 2002 from \$256 million in 2001, a 2-percent rise. While poinsettia sales equal only a quarter of Christmas tree sales, the quantity sold has grown steadily over the

past decade. The number of Christmas trees sold, in contrast, has seen a gradual decline after reaching 35 million trees sold in 1999 and 37 million in 1995.

Poinsettia consumption patterns are much less dependent on price or competing ornamental plants. In recent years, many mass marketers have increasingly used poinsettias as loss leaders—selling them at or below cost to attract customers into

their stores. Poinsettias, like Christmas trees decked with trimmings and lights, decorate store windows and displays. As the first items customers usually notice in stores, poinsettias in effect advertise themselves. Thus, demand for poinsettias is very much related to where and how they are displayed.

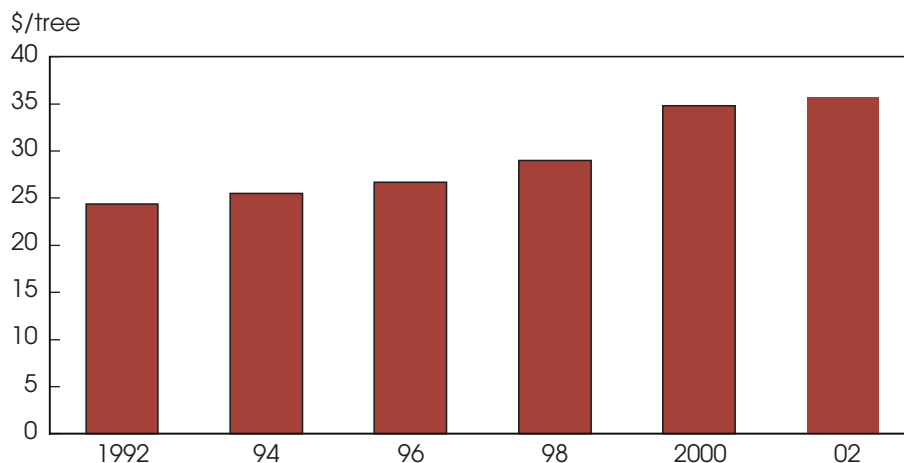
Christmas Trees A-Plenty

Natural Christmas trees are grown and sold in all 50 states, with the bulk of production located in the northern half of the country. Most commercial Christmas trees begin life from seed in a nursery. Two-year old seedlings are then replanted in tree farms. Sold commercially since 1850 in the U.S., Christmas trees originally were cut from evergreen forests. Christmas tree farming started only in the 1950s as demand grew. The top-producing states by sales rank in 2000 were Oregon, North Carolina, Michigan, Pennsylvania, and Washington.

The three major Christmas tree species are all conifers—fir, spruce, and pine. The best selling varieties are the noble, Douglas, Fraser, and grand firs, blue spruce, and scotch and white pines. Recent trends show increasing demand for firs over pine trees, as well as more spruce and exotic fir trees at the higher price range. These trees are considered more attractive and look fresh longer.

An average 2,000-2,100 trees are planted per acre on as many as 1 million acres in

Christmas Tree Prices Growing Steadily



Source: National Christmas Tree Association.
Economic Research Service, USDA

Commodity Spotlight

the U.S. The more than 15,000 tree farms in North America (U.S. and Canada) employ about 100,000 full- and part-time workers. Annual tree harvests range from 1,000-1,500 per acre. It takes 5-12 years before trees are ready for harvest, depending on tree species, geographic location, and weather conditions during growth. The average growing time from seedlings is 7 years. More than 70 million seedlings are planted each year, at least 2 new seedlings for every harvested tree.

About 25 percent of consumers who purchase real trees do so at a Christmas tree farm, 25 percent buy trees from a retail lot, and 30 percent buy from chain stores and nonprofit groups (Boy Scouts, churches, and other fundraisers). Internet and mail orders number about 300,000. Of the approximately 108 million U.S. households, 30 percent are expected to buy a natural tree, about 50 percent have or will purchase an artificial tree, and 20 percent have no trees. Artificial trees normally cost more than a natural tree, but can be disassembled, stored, and reused. The higher-priced artificial trees are increasingly natural-looking and lifelike, and are fireproof. Some newer models already come with built-in lights ("pre-lighted" or "pre-lit"). Since most artificial trees are manufactured in China, Taiwan, or Hong Kong, fewer natural Christmas trees sold means more imports.

In 2000, the average wholesale price of real Christmas trees sold by U.S. producers was \$16, half the retail price. Of the 32 million trees sold that year, 2.5 million were imported from Canada, the bulk of which were Douglas firs. Real tree imports from other countries are negligible. The average cost of Canadian Christmas trees was \$10 per tree in 2000 and 2001. Since the Canadian dollar's exchange rate is still low relative to the U.S. dollar, the market share of Christmas trees from Canada should continue rising. The import value of Canadian Christmas trees exceeded \$26 million in 2001, up from \$17 million in 1993, but still less than 3 percent of U.S. production.

Christmas tree retail prices are expected to average \$36 per tree in 2002, up from \$35 in 2000. This compares with \$29 per tree in 1998 and \$25 in 1994. Christmas tree prices have roughly matched con-

Number of Christmas Trees Sold Levels Off While Poinsettias Rise

	1992	1994	1996	1998	2000	2002
Sales value						
	\$ million					
Real Christmas trees	838.0	842.2	845.8	933.8	1,113.6	1,150.4
Poinsettias, in pots ¹	193.5	207.6	215.2	224.4	246.3	260.0
Quantity sold						
	Million					
Real Christmas trees	34.4	33.0	31.7	32.2	32.0	32.3
Poinsettias, in pots ¹	55.6	57.9	59.7	61.9	66.4	68.0
Average price per tree/pot						
	\$					
Real Christmas trees	24.36	25.52	26.68	29.00	34.80	35.67
Poinsettias, in pots ²	3.48	3.59	3.61	3.63	3.71	3.82

2002 forecast. Christmas trees are retail value. Poinsettias are wholesale value.

1. Wholesale value and quantity sold are from survey of growers with at least \$100,000 in floriculture sales.

The growers are located in 36 states. 2. Average price per poinsettia pot is computed as wholesale sales value divided by quantity sold.

Sources: National Christmas Tree Association (realchristmastrees.org); Floriculture Crops, National Agricultural Statistics Service, USDA.

Economic Research Service, USDA

sumer price inflation from 1997 to 2000. Nevertheless prices of the most popular species increased 8-10 percent per year during this period. Since 2000, increases in Christmas tree price have slowed due to competition from imported artificial trees and outdoor and indoor Christmas lights. The strong U.S. dollar, generally cheaper imports of natural trees from Canada, and current lackluster U.S. economic conditions, should keep downward pressure on prices of domestically grown Christmas trees.

Poinsettia Sales Point Upward

Native to Mexico and South America, poinsettias were named after the U.S. ambassador to Mexico (Joel Poinsett) who introduced the plant in the U.S. in 1825. Potted poinsettias are typically grown in greenhouses for the Christmas holiday market. Their leaves are predominantly red in color, although white, pink, and color combinations are gaining in popularity. While most poinsettias are discarded after the holidays, they are also used as landscape shrubs, houseplants, and cut flowers. In their native habitat, poinsettias are perennial flowering shrubs that can grow to 10 feet in height.

Over 85 percent of potted poinsettia sales occur during the Christmas holiday season. Poinsettias are grown in all 50 states by about 1,750 growers, with California the top producer. U.S. production of potted poinsettias amounted to 67.4 million pots in 2001, which were worth \$256 million at wholesale. The average wholesale price of a 5-inch poinsettia pot was \$4.37 last year. Although the average wholesale price of

potted poinsettias increased by only 32 cents from 1992 to 2001—from \$3.48 to \$3.80 per pot—the number of pots sold jumped by 21 percent, from 55.5 million in 1992 to 67.4 million in 2001.

Over the past decade, the wholesale value of poinsettias expanded by more than 32 percent from \$194 million in 1992 to \$256 million in 2001. Sales per U.S. household in 2001 totaled \$2.40, the highest among major flowering plants in pots. Led by California, Western states purchased \$2.90 worth of poinsettias per household on average in 2001, more than the rest of the country. U.S. imports of poinsettias totaled 4.5 million pots last year, worth \$9.2 million. Like real Christmas trees, U.S. poinsettia imports came almost exclusively from Canada since only Canada is allowed to export finished plants or plants with soil to the U.S. While these imports are still a fraction of domestic production, the number of imported poinsettia pots has shot up by more than 200 percent since 1995.

Poinsettia growers' wholesale receipts in 2002 are projected to climb 2 percent to \$260 million. Christmas tree farmers are expected to net \$510 million at wholesale, up 3 percent from 2001. This represents a \$20 million gain—or 2.7 percent—from \$750 million in 2001. Considered against a slower projected growth pace for the rest of the nursery and greenhouse industry, Christmas tree and poinsettia growers may have a well-planted reason for holiday cheer. **AO**

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The Livestock Sector



Jack Harrison

Controversies in Livestock Pricing

Livestock prices fluctuate daily. Viewed over time and corrected for inflation, the longrun trend in livestock prices, like prices in the rest of the sector, is downward. Growth in productivity and economic competition have driven the longrun decline in the number of U.S. producers of most agricultural commodities. Declining real prices cause serious financial problems, leading to a decline in the number of producers.

Some producers allege that the livestock pricing system is one of the causes of declining prices. Many of the producers who are concerned about price discrimination or corporate farming have complained about concentration and captive supplies, and have called for Government action. This pressure has produced results, with several state legislatures enacting anti-price-discrimination and anti-corporate-farming laws. And the U.S. Congress enacted new mandatory livestock price reporting legislation in 1999.

Can declining livestock prices be attributed to structural changes in the industry? The U.S. livestock pricing and coordination system has been a topic of debate and a focus of public policy for well over a century. An excerpt from an 1890 report

of the Senate Select Committee on the Transportation and Sale of Meat Products illustrates.

In place of the old system when shippers and butchers went from one cattle raiser to another, competing in the purchase of cattle, there is now a concentration of the market at a few points... So far has this centralizing process continued that for all practical purposes the [Chicago] market... dominates absolutely the price of beef cattle in the whole country.

Concerns about industry practices continued into the 1900s. President Theodore Roosevelt ordered an investigation of the meatpacking industry after reading Upton Sinclair's novel *The Jungle*, which dramatized unsanitary processing plant conditions and manipulative business practices. When Roosevelt met Sinclair, he indicated that while he disapproved of the book's socialist leanings, he agreed that regulation of the industry was needed.

Federal action on the issue of concentration was seen in the Packers' Consent Decree of 1920 and the Packers and

Stockyards Act of 1921. Packers consented to divest themselves of stockyard real estate, railroads, and market newspapers, and to refrain from selling at retail. USDA was given power to govern against unfair or deceptive practices in the buying and selling of livestock. This, like other early legislation, worked to the benefit of producers—protecting sellers from dishonest scales and financial insolvency of marketing firms, and ensuring fair charges for yardage and services.

Changes in the business relationships between livestock producers and packers may have implications for the internal organization of livestock production. The importance of terminal and smaller auction markets declined significantly in the latter half of the 20th century. It became common again for packer-buyers to go directly to larger farms bidding on cattle—akin to the system the 1890 testimony lamented as having passed. Auction markets and directly negotiated sales between producer and packer—still operating but declining in importance—are part of what is called the “spot” market. Spot market transactions refer to livestock that are ready for immediate delivery at the time the agreement is entered. Spot-market sales include liveweight and carcass-merit pricing. Sales through auctions are on a liveweight basis.

Information flow is key to the efficient performance of an economic system, and livestock prices are the key information that coordinates producer and packer behavior. An advantage of centralized auction markets is the ease with which livestock price information is collected and disseminated. Government and private sources have been able to collect and disseminate price and other market information from many livestock and wholesale meat market areas. The rules under which transactions take place and the dissemination of information on prices and other terms of trade are considered vital to a well-functioning price discovery system.

This system has provided a trusted public outlet for an independent farmer's product at relevant times and locations. In most cases, producers could assess how their price and quality experience compared with other sellers and other locations. The decline of auction markets in relation to

The Livestock Sector

other methods of procurement has led to new pricing controversies.

Vertical Coordination Overtakes Spot Markets...

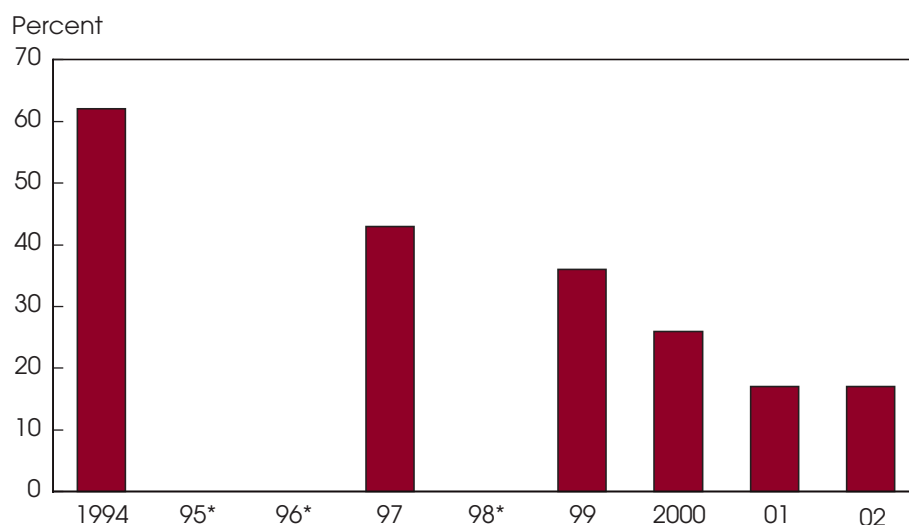
Current pricing controversies arise over the growing importance of various forms of vertical coordination between packers and livestock producers and the declining use of spot markets. Vertical coordination takes many forms, ranging from informal marketing agreements to packer ownership of feedlots and hog farms (and the livestock in them). Forms of coordination where packers take early ownership interest in livestock have proven particularly controversial. Cattle that are committed to or owned by a packer before they are ready for slaughter are termed "captive supply." Congress has debated several measures to prohibit or restrict these practices, but none have passed.

The cattle and hog industries differ in the degree and types of vertical linkages being used. The pork industry has shifted dramatically toward long-term contract coordination and packer ownership of production facilities, while cattle producers still rely more heavily on spot market or short-term arrangements with packers.

The situation has changed dramatically for hog production. About 87 percent of U.S. hogs were sold in the spot market in 1993, 2 percent owned by packers, and the remaining 11 percent bought on contract. By 2000 the share of spot-market hogs had dropped below 20 percent, while packer ownership climbed to 18 percent, and marketing contracts (or agreements) grew rapidly to over 60 percent. Spot-market sales of barrows and gilts were relatively stable since mid-2001.

For cattle, even though a majority are still sold through negotiated sales, spot-market fed-cattle deliveries as a percentage of market volume have decreased over the last decade in major cattle feeding states. In Colorado, Kansas, and Texas, for example, nonspot fed-cattle deliveries (additional movements) during the early 1990s typically represented less than 30 percent of fed-cattle weekly volume, while often exceeding 60 percent in the late 1990s. While the extent of formal ownership or contract integration has

Share of U.S. Hogs Sold to Packers on the Negotiated Market Has Dropped Dramatically



*Not available.

Negotiated market is comparable to the spot or cash market.

Source: Hog Marketing Contract Study, University of Missouri and National Pork Board, January 2002, <http://agebb.missouri.edu/mkt/vertstud.htm>.

Economic Research Service, USDA

remained stable near 20 percent of fed-cattle slaughter, the volume of negotiated spot-market transactions declined.

What factors have driven the decline in spot-market sales? The strength of the spot market is the easy dissemination of price information and ready access to buyers for producers. The weakness is its poor transmission of other relevant information. Government and private sources have collected and disseminated price and other market information from many livestock and wholesale meat market areas. Mandatory reporting of livestock prices has been the law since mid-2001 for certain categories of sales.

Spot-market livestock are priced based on readily observable animal characteristics. The problem is that these characteristics translate poorly into those that packers, and ultimately consumers, actually want. The apparent drop in demand for beef has often been blamed on lack of consistent beef quality that consumers demand.

Vertical coordination gives packers a mechanism for obtaining a consistent supply of higher quality animals. Some livestock producers also see advantages to

vertical coordination. Surveys showed that pork producers who entered marketing arrangements with packers identified higher prices and lower price risk as the two greatest advantages of having a marketing contract. Beef producers identified the advantages as higher carcass premiums, access to carcass data, and less time spent marketing cattle. Researchers reported that reduced risk and enhanced financing opportunities were benefits to feedlots from marketing agreements. One study reported that feedlots saw less advantage from risk reduction or financing options, but noted that feedlots did not feel pressured by packers to enter contracts. Thus there appear to be incentives for both parties—seller and buyer—to enter market contracts.

...& Obscures Prices

A potential problem with vertical coordination is that it weakens or disperses the availability of price information. In many types of coordination, the task of livestock pricing is solved by what is called "formula pricing." The packer pays the producer using a formula that includes quality premiums and discounts around some "base" price. The "base" price is usually some selected spot-market or futures-mar-

The Livestock Sector

Livestock Industry: Some Marketing Milestones

1812	"Uncle Sam" is modeled after Sam Wilson, a meatpacker from Troy, New York. During the War of 1812, the meat he shipped to the government was stamped "U.S. Beef." Soldiers began to call it Uncle Sam's beef.
1850s	Cincinnati accounts for more than half the pork packed.
1861	Chicago surpasses Cincinnati in meat packing.
1866-80	Era of the cattle drives from Texas to Missouri and Kansas stockyards.
1890-1920	Series of Anti-trust and Unfair Trade Acts (Sherman Anti-trust, Meat Inspection Act, Clayton Anti-trust Act, Federal Trade Commission Act, Packers' Consent Decree).
1921	Packers and Stockyards Act passed. Provides financial protection to producers and promotes fair and competitive markets for livestock, meat, and poultry. Administered by USDA's Grain Inspection, Packers and Stockyards Administration.
1954	Census of Agriculture conducts special survey on poultry contracting.
1955	Omaha replaces Chicago as nation's largest livestock market and meat-packing center.
1960-70	Independent meat packers establish plants in the countryside near livestock supplies.
1980-90	Mergers and acquisitions of independents into modern large national packers, several owned by even larger firms.
1996	For first time, purchases on carcass basis accounted for more than half the hogs sold. Price animal brings is unknown until animal is dead, skinned, graded, etc., and out of farmers' control.
1999	For first time, purchases on carcass basis accounted for more than half the cattle sold. Price animal brings is unknown until animal is dead, skinned, graded, etc., and out of farmers' control.
1999	Mandatory Livestock Reporting Act is signed into law.
2000	Senate (but not House) passed amendment to the Farm Bill to limit packer ownership and control of livestock production.
2001	USDA launched the mandatory price reporting system in April.

ket price. Various types of formula-based pricing methods have dominated sales of hogs by producers.

There is some concern that spot markets for cattle and hogs might disappear, as has essentially happened in poultry markets—and with it the public availability of price

information. As spot markets disappear, fewer price signals are available to convey messages to producers and consumers concerning available quantities, qualities, cost and value. Formula pricing in contracts also becomes problematic as too few animals are traded in public transactions to generate confidence in the prices. This leads to concerns about packers using vertical arrangements to artificially suppress the spot-market price. Market participants typically turn to other price series (e.g., meat or grain markets) when a market becomes too thin.

At the USDA Forum on Captive Supplies in 2000, economist and attorney Neil Harl gave a summary of objections to packer control of livestock production in 2000.

On the face of it, captive supplies are discriminatory in effect... It is also reasonable to conclude that captive supplies are "unfair" to independent producers and that some features of captive supplies are "deceptive" in the operation and functioning of markets for cattle destined for slaughter. ...there is general agreement that increasing levels of concentration correlate with lower price levels.

In fact, economic studies of the effects of increasing packer concentration and "captive supplies" on livestock prices, despite Harl's contention, produce mixed results and often show little or no price-depressing effects of captive supplies or packer concentration.

In the early 1990s, Congress directed USDA's Grain Inspection, Packer, and Stockyards Administration (GIPSA) to study concentration in the red meatpacking industry. The agency responded by contracting with universities and ERS for several research projects and developing a data set of cattle purchase transactions by 43 steer and heifer plants operated by all firms that slaughtered more than 75,000 steers and heifers annually (accounting for over 92 percent of total U.S. slaughter) in 1992-93.

In one of the projects, a team from the Texas Agricultural Markets Research Cen-

The Livestock Sector

Use of Cash Markets Is More Common for Cattle Than for Hog Procurement

Procurement method	Fed cattle	Hogs
	<i>Percent</i>	
Cash or spot market purchase, live basis	36	8
Cash or spot market purchase, carcass basis	29	19
Formula-priced contract based on cash market	20	32
Fixed-price contract based on futures	4	8
Fixed agreement based on feed price	--	6
Risk-sharing contract purchases	3	8
Other purchase methods	4	1
Self production	5	18

May not total 100 due to rounding.

Source: "Meat Packer Vertical Integration And Contract Linkages in the Beef and Pork Industries: An Economic Perspective," special report for the American Meat Institute, May 22, 2000.

Economic Research Service, USDA

ter analyzed the determinants of differences in prices paid for individual lots of cattle. The team measured the effects of regional market concentration while controlling for characteristics of the transaction (such as lot size and pricing method), cattle quality indicators (weight, cattle type, and yield grade), and overall market trends (national daily cattle prices). Controlling for those other sale characteristics, larger price effects of concentration were found than previous research indicated. Cattle prices in regions with a single buyer were estimated to be 2 percent lower (on average) than prices in regions with two equal-sized buyers, and 2.7 percent lower than prices in regions with four equal-sized buyers.

Another study used monthly cost and revenue data for individual plants for 1992-

93. The cost data were used to assess the ability of packers to raise beef prices above competitive levels or to reduce cattle prices below competitive levels. While the research found a small amount of packer market power in product (beef) markets, no statistically or substantively significant departures from competitive prices in the input (cattle) market were present. In the highly concentrated cattle market of the period, cattle prices did not fall below competitive levels.

In a report by USDA's Economic Research Service (ERS), researchers investigated the relationships between farm, wholesale, and retail prices over the cattle cycle. Part of this study used monthly data from 1980 to 1997. ERS found that cattle prices in the early 1990s were slightly higher than would have been

expected, based on experience with previous cycles. Farm-to-retail price spreads also fell slightly as concentration trended upward during the 1980s and 1990s.

A fourth study designed a test for competition in packer purchases of fed cattle, and found that prices were pushed below competitive levels as packer concentration rose. However, the divergence was extremely small, and prices were quite close to perfectly competitive levels. Moreover, this research found that slaughter costs fell as concentration increased. The cost decline induced packers to purchase more cattle, and to drive cattle prices up—the price effect more than offset the direct effect of concentration on packer bids.

If the vertically integrated livestock marketing system appears to have, at worst, only minor effects in depressing livestock prices, what is the source of the longrun decline in real prices? While increasing supply will dampen price, the most important source of declining livestock prices is technical innovations which have led to increasing productivity. Increasing productivity means that livestock can be produced at lower costs or that more can be produced at the same cost. Economic competition among producers pushes livestock prices toward production costs.



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Further reading

U.S. Beef Industry: Cattle Cycles, Price Spreads, and Packer Concentration, April 1999
www.ers.usda.gov/publications/tb1874/

Briefing rooms and data on the Economic Research Service website:
www.ers.usda.gov/briefing/cattle/
www.ers.usda.gov/briefing/hogs/
www.ers.usda.gov/briefing/poultry/
www.ers.usda.gov/data/Meatscanner/

Hogs and Pigs (various issues). National Agricultural Statistics Service, USDA.

"Meat Packer Vertical Integration and Contract Linkages in the Beef and Pork Industries: An Economic Perspective," special report for the American Meat Institute, May 22, 2000.
<http://usda.mannlib.cornell.edu/reports/nassr/livestock/php-bb/2002/>

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Price Spreads & Marketing System Performance

Price spreads are one way of measuring performance of the meat marketing sector. The increasing spread between farm and retail prices has been cited as evidence that changes in market structure have lowered prices to farmers. Meat price spreads show how the value of an animal and the resulting meat products change as the animal (carcass) moves from the farm, to the packer, and finally, to the grocery store.

While price spreads are not particularly useful as measures of industry profits (other cost data are needed), longrun spread changes reflect longrun developments in industry efficiency. As firms become more efficient, their costs decline, and they can earn the same profits with lower spreads. If industries become more competitive or more economically efficient, spreads can also decline as excess profits are eliminated.

What effects would contracting and captive supplies have on price spreads? First, if captive supplies allow meat packers to run their plants more efficiently, contracts would lower the costs of meatpacking, which would tend to lower the farm-to-wholesale spread. Second, if captive supplies allow meat packers to exert market power, they would tend to widen the farm-to-wholesale spread. While farm-to-wholesale spreads have not kept pace with inflation over the past 30 years, the spreads for beef and pork have risen faster than inflation since the mid-1990s.

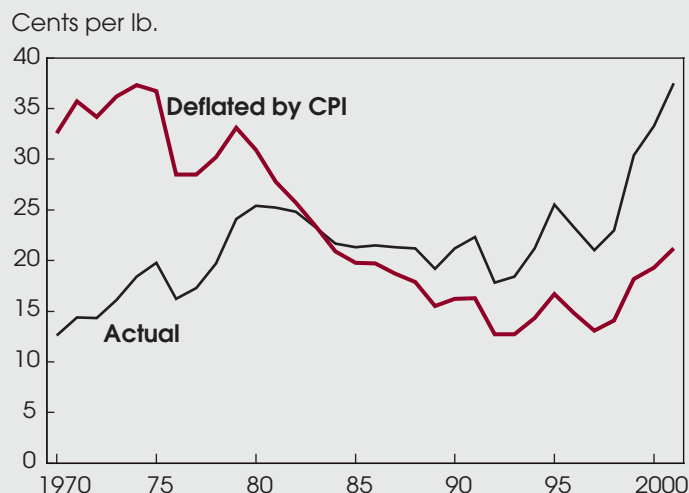
The effects of changes in government regulation such as mandatory price reporting and food-safety rules depend on which supply effect is most prevalent, and on compliance costs. Compliance costs borne by packers tend to be shifted forward to consumers and/or backward to producers.

The share of cost shifted depends on relative responsiveness of consumers and producers to price changes. Cost shifting lowers producer prices and raises consumer prices. Lower producer prices tend to reduce livestock supply, while higher consumer prices reduce meat demand. The less responsive side of the market bears the larger part of the costs. Since livestock supply is unresponsive to price changes in the short run, part of the compliance cost will be borne by livestock producers.

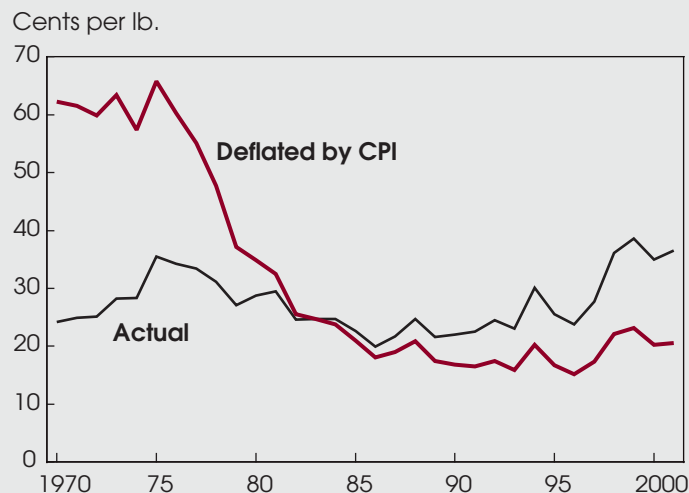
The costs of complying with new government interventions will increase the farm-to-wholesale spread. If packers currently exert significant market power, spreads could drop if the new regulations lead to sufficient decreases in any abuses.

The largest component of the total price spread for beef and pork is the wholesale-retail component, which mainly reflects costs and profits of meat retailing. USDA's wholesale-retail spreads are less useful as a measure of costs and profits than the farm-wholesale spreads. The USDA retail value is the cost of buying an animal's meat parts at the grocery store. It is generally believed that grocery stores sell mostly lower and medium-priced cuts of the animal, while higher valued cuts go to the hotel and restaurant trade, and to exports.

Farm-to-Wholesale Price Spreads Have Been Rising More Rapidly Than Inflation for Beef. . .



. . .but Not for Pork



Retail pound basis.

Economic Research Service, USDA

ERS' new retail scanner meat price database will give a better measure of what some grocery stores sell. Current USDA price spreads are based on retail prices reported by the Bureau of Labor Statistics (BLS), which in turn are based on average consumer prices. The scanner data weight prices by sales volume. Since lower prices are associated with higher sales, the scanner data's average Choice-grade prices tend to be lower than BLS's average prices. The wholesale-retail price spread has increased more rapidly than inflation over the past 30 years. There is evidence of declining productivity in grocery stores' overall operations. That translates into higher costs, which increases price spreads. **AO**

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The Livestock Sector



USDA photo

Where's the Beef? Small Farms Produce Majority of Cattle

It may come as a surprise to many that small operations produce the majority of beef cattle in the U.S., and control 74 percent of the land dedicated to beef cattle production. Three quarters of the nation's beef cattle spend at least some portion of their life on a small farm.

Small beef operations vary substantially in size and in their access to labor and other inputs. Some operators are full-time farmers, while others rely largely on off-farm income. As a result, the needs of these operations may differ—among themselves and compared with large operations—in areas like production, marketing, and land stewardship. Their contributions to the beef industry warrant an effort to better understand the similarities and differences.

How U.S. Beef Cattle Are Produced

Beef cattle operations take three basic forms: cow-calf, stocker, and fed cattle. All three of these production systems may occur on small farms. On a cow-calf operation, a breeding herd is managed with a small number of bulls, while steer calves (young neutered males), a portion of heifer calves (young females), and non-produc-

tive cows are sold each year to generate income. Traditionally, cow-calf operations have been small-farm operations.

Stocker operations purchase calves from cow-calf operators, and put the animals out to pasture for part of the year to gain weight. Stocker operations then either 1) feed the animals on grain (finishing) and sell them directly to slaughterhouses when they have reached full size, or 2) sell them as yearlings to fed-cattle operations.

Fed-cattle operations place long and short yearlings (14-24 months old and 10-14 months old) on feedlots, where they are fed grain and specially formulated concentrates until they reach optimal slaughter weight and grade. The next step is to sell the cattle to beef packers for processing. Fed-cattle operations are usually larger farms or full-time small farms.

Half of all farms in the U.S. have beef cattle on their operations, including farms classified as feedlots. Beef cattle production is compatible with, and often occurs in conjunction with, other agricultural production such as cash grains. A crop and beef cattle operation is a logical combination, as cattle can graze on residual acreage not suitable for higher value production and can consume post-harvest vegetation

(such as corn stalks) that otherwise has little value. Such a mix also lowers producers' price and other risks that are common to single-commodity operations.

However, on many small farms beef cattle production is the primary enterprise. This is particularly true for those located in areas that are less well suited to crop production and for those run by part-time operators. These farmers can more easily combine off-farm employment with the farm tasks required to raise beef cattle, which are less labor-intensive than crop production.

Cattle lend themselves quite nicely to a low-input production process, which is well suited to many small farms. Except in winter, or other periods of adverse weather conditions when forage may be unavailable, cattle are fairly self-sufficient. Unlike hogs or chickens, cattle can roam freely with little direct supervision except during calving season. Thus, beef cattle require a much smaller labor input than many other competing agricultural products.

Moreover, cattle production, especially on a small operation, is a relatively low-cost pursuit. Variable costs associated with beef cattle (e.g., feed, medicine) are generally lower than those associated with field crops. Fixed costs such as for land, access to water, fencing, and corrals, while constituting the largest costs of cattle operations, nevertheless have a relatively long life. For example, once the investment is made in fencing and corrals, only regular maintenance and repair is required to keep them usable.

Small Beef Operations: A Range of Characteristics

Analysts from USDA's Economic Research Service (ERS) grouped data from the Agricultural Resource Management Survey (ARMS) using the ERS farm typology, to study the characteristics of small beef cattle operations within each farm category. The analysis provides a picture of the average farm in each category, with some clues to likely needs of these producers.

Small enterprises producing beef cattle in the U.S. can be roughly divided into two

The Livestock Sector

Characteristics of Small Operations Raising Beef Cattle

	Limited resource	Retirement	Residential/ lifestyle	Farming occupation Lower sales	Higher sales
Farms with beef cattle (1,000)	96	150	451	216	64
	<i>Number</i>				
Average					
Acres operated	130	350	203	746	2,047
Beef cattle and calves	24	49	34	81	172
Beef cows	13	30	18	46	96
	<i>Percent</i>				
Tenure*					
Acreage owned	48	84	61	65	55
Acreage cash leased	29	14	27	32	36
Acreage share leased	11	2	4	4	13
	<i>Number</i>				
Average sold					
Calves under 500 pounds	6	10	7	12	16
Cattle over 500 pounds	3	13	7	24	84
	<i>Percent</i>				
Percent of sales					
Calves under 500 pounds	6	16	31	26	10
Cattle over 500 pounds	1	7	12	19	20
Share of total value of beef cattle production	1	6	12	15	14

*May not add to 100 due to acreage owned but not operated, or acreage used rent-free.

Source: 1997 Agricultural Resource Management Survey, USDA.

Economic Research Service, USDA

groups: full-time operations for which agricultural production is a significant source of income, and part-time operations for which it is not.

Full-Time Farms with Beef Cattle

Operations. Producers on small beef cattle farms who identify themselves as “full time” (farm typology categories farming occupation/low sales, and farming occupation/high sales) hold more than half of all cattle and calves on small farms. Their average herd size is substantially larger than on part-time operations, and includes a higher ratio of cattle to calves. Among small beef cattle operations, full-time farmers and ranchers also sell the largest share of cattle over 500 pounds.

These characteristics reflect the full-time status of the operators who have the time, labor, feed, and land inputs necessary to grow out calves to long yearlings and heavier weights before selling them to feedlots for finishing. The full-time operations control much larger acreage than their part-time counterparts, including a larger share of leased land.

At the same time, the average full-time farmer raising beef cattle receives a larger share of income from crop production than from beef production. On average, less than 50 percent of the total value of production on their operations comes from raising beef.

For the full-time small farmer, beef cattle provide a supplemental income source in the traditional mixed-output agricultural enterprise—these operators generate 29 percent of total value of U.S. beef production. The beef cattle enterprise also provides a hedge against falling crop prices. For example, if market prices of field crops decline, a beef cattle producer can feed cattle with a portion of the harvest instead of selling directly at low prices.

Part-Time Farms with Beef Cattle

Operations. The most numerous group of beef cattle producers is not actually in the business of farming. This “part-time” group includes small farmers who derive most of their income from other sources (typology categories retirement and residential/lifestyle) and small farmers who have very low incomes and assets overall (limited-resource). These three types of

Farm Typology & ARMS Shed Light on Small Beef Farms

The farm typology developed by USDA’s Economic Research Service (ERS) provides a useful tool for characterizing the differences among small beef operations. The typology captures differences in both size and organizational structure.

Nonfamily owned farms constitute one category in the typology, and large family farms fall into two categories—*very large* farms (sales of \$500,000 or more), and *large* (sales from \$250,000-\$499,999).

Small family farms are divided into five categories, providing analysts with the opportunity to examine their characteristics more closely. Two categories account for family farms on which the operators work primarily on the farm—*higher sales* (sales of \$100,000-\$249,999) and *lower sales* (sales under \$100,000). Two other categories—*residential/lifestyle* and *retirement*—include farms on which the operators report either that they are retired or that they have primary occupations other than farming. The last category—*limited-resource*—include farms with sales below \$100,000, farm assets of less than \$150,000, and household income under \$20,000.

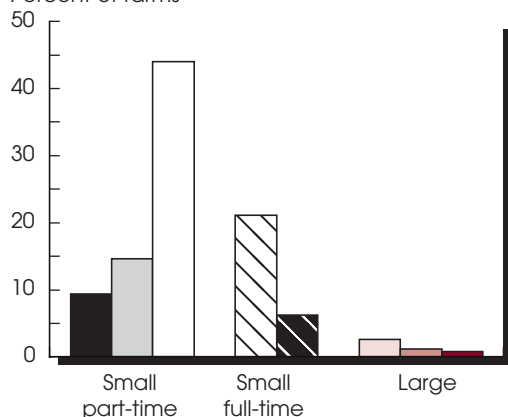
Using the typology to stratify the data, the Agricultural Resource Management Survey (ARMS) yield a wealth of information on the characteristics of small beef operations. The ARMS, developed jointly by ERS and the National Agricultural Statistics Service, gathers data on production and financial characteristics of all types of operations in an annual sample of U.S. farms. Data here are from the 1997 ARMS.

The Livestock Sector

Among the Farms Raising Beef Cattle. . .

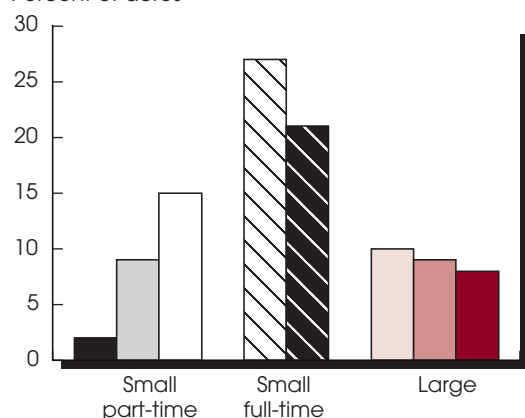
. . .Most are part-time

Percent of farms



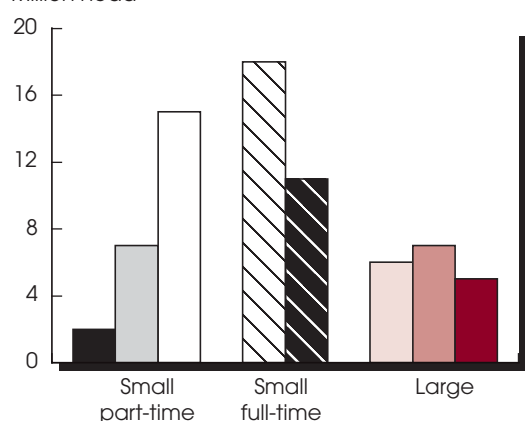
Small Operations Control Most of the Land. . .

Percent of acres



. . .and Account for the Largest Number of Cattle

Million head



Source: 1997 Agricultural Resource Management Survey, USDA.
Economic Research Service, USDA

small “part-time” operations together account for 68 percent of all operations producing beef cattle. And although agricultural production is not the primary source of income for these farms, in aggregate they produce 34 percent of all beef cattle and calves in the U.S., despite smaller average herd sizes and acreage devoted to beef production.

Retirement and residential/lifestyle producers may operate farms because they enjoy a rural lifestyle, or they may view their operations as an investment and place to spend time. Retired farmers’ part-time operations may be a final stage in a life of agricultural production. For these small farmers, beef cattle production is a logical choice since it requires lower inputs of time and labor for a steady (if smaller) income stream than labor-intensive agriculture such as field crop production. In fact, for both these categories of part-time beef cattle operations, well over half the value of agricultural production comes from cattle: 58 percent for residential/lifestyle farms and 66 percent for retirement farms.

Lower use of inputs needed to raise beef cattle also likely accounts for the relatively large number (96,000) of *limited-resource* farms that produce beef cattle. These operations still generally derive a larger share of their value of production from crops (54 percent), however.

Implications for Policy

The characteristics of the various types of beef operations suggest several likely areas in which program or policy needs may vary among small operations or differ from those of large operations. Full-time operations produce a significant number of cattle, accounting for nearly 30 percent of the value of total beef cattle production, and nearly 60 percent of the value of beef cattle production on small farms. These full-time operations also sold more cattle than calves, at a ratio of over 2 to 1, indicating they are concentrating their production on heavier yearling cattle, rather than on providing calves for stocker enterprises. These operations, on which the owners devote the bulk of their time to farming, might be helped by production and marketing assistance tailored to smaller operations, to help them

The Livestock Sector

improve their competitiveness as cattle producers.

Full-time operations also receive a higher percentage of the value of their farm's production from crops, in part because they have the time and labor necessary to devote to field crop production. These operators may benefit from assistance with crop production, to help them diversify risk, increase their own production of feed needs for their cattle, and balance downturns in the beef cattle market.

Part-time operations, on the other hand, produce a much lower proportion of the value of beef cattle. Their sales of cattle and calves are about equal, indicating they may be focusing on production of calves for sale, rather than growing out stocker calves or feeding cattle themselves. Part-time operations generally have limited access to labor and other inputs, making concentration on producing calves a good choice, since cow-calf pairs are essentially self sufficient and require little outside monitoring or labor input. These operations provide an important input for large stocker operations that concentrate on the grow-out phase of cattle production.

Full-time farmers and ranchers, because their livelihoods are dependent on agricultural production, may benefit most from programs that provide production-related assistance. Both full- and part-time operations, however, may benefit from programs and policies focused on land use. In aggregate, small beef operations control 74 percent of all acreage on which U.S. beef cattle are produced, making them de facto pasture and rangeland managers.

Even though many small farms and ranches with beef cattle are on environmentally fragile land, only 2 percent of this land, a total of 10.9 million acres, is enrolled in either of the major Federal land retirement programs—the Conservation Reserve and Wetland Reserve Programs. But small beef operators might benefit from *working lands* conservation programs tailored to pasture and rangeland use. Given the sizable combined landholdings of these beef producers, the effects of such tailored land use and conservation policies could be quite large on a national scale. **AO**

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Upcoming Reports—USDA's Economic Research Service

The following reports are issued electronically at 4 p.m. (ET) unless otherwise indicated.

www.ers.usda.gov

December

- 2** *Outlook for U.S. Agricultural Trade***
- 10** *World Agricultural Supply and Demand Estimates (8:30 a.m.)*
- 11** *Oil Crops Outlook***
*Cotton and Wool Outlook***
*Rice Outlook***
- 12** *Feed Outlook (9 a.m.)***
*Wheat Outlook (9 a.m.)***
- 13** *Livestock, Dairy, and Poultry Situation and Outlook***
- 16** *Vegetables and Melons Outlook***
- 18** *Tobacco Yearbook**
- 19** *U.S. Agricultural Trade Update***

*Release of summary.

**Electronic newsletter.

2002
CENSUS OF
AGRICULTURE

The Census of Agriculture is Coming

The 2002 Census of Agriculture will appear in farmers' and ranchers' mailboxes in late December. Response is due February 3, 2003.

The census will provide the official facts representing all U.S. producers and commodities.

Data will be released at www.usda.gov/nass/ on February 3, 2004.

AGRICULTURE COUNTS!



United States Department of Agriculture



National Agricultural Statistics Service

Food & Marketing



Globalization of the Soft Drink Industry

The beverage industry is a bellwether in the food industry, where globalization has affected structure. Soft drink companies produce for domestic and foreign markets, license their products, and invest in plants in other countries through foreign direct investments (FDI). Names such as Coca-Cola and Pepsi are recognized worldwide, and foreign brands are being consumed in record amounts in the U.S. Consequently, national brand association can be confusing or even meaningless.

For example, the Dannon brand is produced in the U.S., while Poland Springs water is owned by Nestle (based in Switzerland). Moreover, national ownership of brands may change overnight, slanting consumers' perceptions of national brands. The Schweppes brand, for example, is owned by Coca-Cola in 155 countries.

U.S. soft drink companies trade under some of the most widely recognized names around the globe. About half of Coca-Cola and Pepsi sales are abroad, and PepsiCo ranks sixth among the largest global food and beverage companies, with sales of \$27 billion. Coca-Cola, with sales of nearly \$20 billion, is eighth. Coca-Cola controls about a quarter of the world's

\$393-billion dollar global soft drink industry (defined by Euromonitor as carbonated beverages, fruit/vegetable juices, and bottled water), Pepsi controls about 11 percent, Nestle 4 percent, and Philip Morris 3 percent.

Among global soft drink sales, carbonated beverages are the largest market segment, with \$193 billion in sales. Fruit and vegetable drinks and bottled water shared second place with roughly \$69 billion each in sales in 2001. The overall trend is one of increasing the variety of soft drinks produced by multinationals. Improved infrastructure and packaging expand market potential.

Three major shifts have occurred in the business environment of these manufacturers since the end of the 1980s:

- refocusing the business view from national to international;
- expanding firms' activities across business lines; and
- growing competition in the global soft drink industry.

Beverage companies' international ventures clearly show the role U.S. firms play

in generating economic growth that is based on a global rather than a national view of the market, and tied to specific companies.

Beyond the trends in composition and level of FDI, two questions come to mind from the U.S. standpoint:

- What is the tradeoff between trade and sales resulting from U.S. FDI?
- What is the effect of trade liberalization on FDI?

U.S. Firms Search for Global Market Gains

Competition for market share in the U.S. is keen, and U.S. per capita consumption of soft drinks is already the highest in the world, at 161 liters. So, U.S. beverage companies have expanded abroad, particularly to the high-income countries of Western Europe and more recently to middle-income countries where populations and opportunities for increasing incomes are expanding.

The U.S., Japan, Mexico, Germany, China, and Brazil are the largest soft drink markets, and per capita consumption has increased by double digits since 1997. While total U.S. consumption grew by 6 percent, consumption in most other countries increased faster. The dollar volume, however, declined in several major countries (including Brazil) as the dollar strengthened relative to their currencies.

Beverages lend themselves to FDI, particularly those that are easily replicated through a standardized process and set of ingredients. Because of the high cost of shipping and handling liquids, beverage companies find it less costly to invest in foreign affiliates than to export. U.S. companies directed most of their FDI to Mexico, the United Kingdom, France, Canada, and Brazil. The bulk of the \$15 billion of U.S. beverage FDI is in soft drinks.

Licensing also plays a major role in the global beverage industry, where name recognition is vital. Licensing existing plants and distribution systems to handle products is often more profitable than building plants and establishing distribution systems.

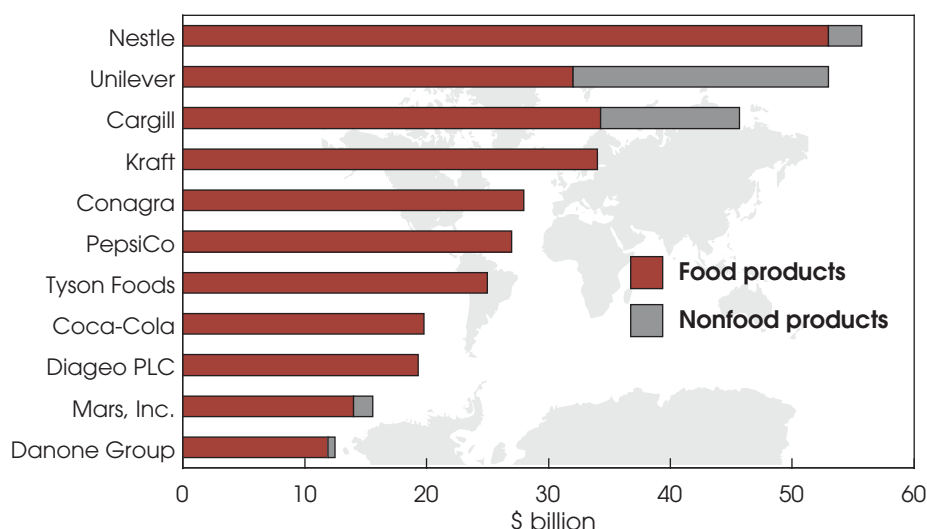
Food & Marketing

A Case of Foreign Investment

Coca-Cola's relationship with Coca-Cola Amatil is an illustration of the complexity of foreign investment in the soft drink industry. In 1977, Amatil (then part of British Tobacco Company) purchased the Coca-Cola bottling companies in Vienna and Graz, Austria, and in 1989, purchased bottling companies in New Zealand and Fiji. By 1989, the Coca-Cola parent company became the majority stockholder of Amatil, after it was spun off from the original tobacco business.

Amatil then became Coca-Cola Amatil, which then expanded to New Guinea, Central and Eastern Europe, and the Philippines. The European segment of Coca-Cola became Coca-Cola Beverages in the same year. Much of this was achieved through licensing of the Coca-Cola brand. Foreign affiliates of the U.S. soft drink sector generate billions of dollars in sales compared with U.S. exports, which are in the millions.

Leading Food and Beverage Companies Worldwide, 2001



Sources: *Global Supermarket*, Department of Foreign Affairs and Trade, Austrade, Australia; selected company income statements.

Economic Research Service, USDA

A typical licensing agreement allows a beverage company to produce and market the branded beverage of another company by paying a royalty fee to that company. In exchange, the licensing company insists that consistent quality be maintained. The licensor is selling its knowledge of producing the specific beverage and the right to use that trademark (and the name recognition built into that trademark) in exchange for the royalty payment. U.S. beverage companies currently have licensing agreements with companies in Canada, Japan, and China.

Market Segmentation Is Less Clear

Beverage companies have also consolidated to include multiple beverage categories—soft drinks, beer, bottled water, flavored drinks, wine, and distilled liquors—so that it is now difficult to segment the trillion-dollar global beverage industry. Companies that were solely beverage manufacturers have expanded far beyond their original product lines.

Segment crossing has occurred throughout the industry as companies seek ways to cut marketing and transportation expenses, handle increased competition, and utilize existing capacity more effi-

ciently. As beverage companies recognized the increased market power of retailers, they began offering a bundle of products to large-scale retailers and food service corporations as one way of accomplishing those objectives.

The two leading soft drink companies—Coca-Cola and PepsiCo—viewed the market in different ways, and have chosen different paths for expansion.

- Coca-Cola stayed in soft drinks, fruit juice, sports drinks, and bottled water, while PepsiCo ventured beyond beverages into snack foods and breakfast cereals.
- PepsiCo invested in fast-food restaurants that have since spun off. Quaker Oats (with its subsidiary Gatorade) is part of the PepsiCo domain. PepsiCo also expanded into other marketing channels—particularly restaurants.
- Both PepsiCo and Coca-Cola relied on licensing and special bottling agreements to establish markets abroad. PepsiCo, for instance, bottles for Dole juice, Starbucks coffee drinks, and canned Lipton iced tea.

Investments are often tied to fast-food franchises, global hotel chains, entertainment venues, and other institutional channels. Licensing and other exclusive use of product brands are often combined with FDI as a means of reaching an even broader local consumer base. PepsiCo was perhaps the farthest reaching in this approach when it also owned fast-food enterprises such as Pizza Hut, Kentucky Fried Chicken, and Taco Bell, where its product was sold exclusively. FritoLay, the snack food division of PepsiCo and the world's fourth-largest snack food provider, has global sales rivaling PepsiCo's soft drink division.

Competition Keen in the Soft Drink Market

The soft drink industry found new competition as it expanded. The bottled-water phenomenon marked a new opportunity in the beverage industry, where local companies supplied local markets and had little brand recognition beyond their respective areas. As health concerns captured the interest of the American public and U.S.

consumers developed brand recognition for European bottled spring water brands such as Perrier and San Pellegrino, a booming market for water arose.

Japanese companies consolidated bottled-water companies during the 1980s, keeping the already recognized regional brand names. Coca-Cola and PepsiCo developed brands of their own, which could flow through their already established marketing and distribution systems, to meet this new consumer demand. Competition came from several segments of the food industry—Nestle (Switzerland), Danone (France), and Suntory (Japan) invested heavily in major U.S. bottled-water companies.

The call for health-oriented drinks by U.S. consumers led PepsiCo to purchase Tropicana orange juice, and Coca-Cola to purchase Minute Maid. These purchases put the soft drink companies into competition with yet another group—fruit juice processors.

Does FDI Complement Exports?

A comparison of U.S. FDI sales with U.S. exports illustrates the magnitude of FDI beverage sales. Sales from U.S. FDI in the global soft drink industry were well above \$30 billion in 1999 in a global market of \$393 billion. U.S. soft drink exports totaled \$232 million in 2001, compared with \$105 million in 1990.

FDI can potentially expand U.S. syrup and flavoring exports since these ingredients are necessary inputs for soft drink production. Increased foreign production of soft drinks by U.S. affiliates has caused a boom in exports of syrups and flavorings. Syrup and flavoring exports doubled to \$981 million from 1990 to 2001, far exceeding soft drink exports.

Beverage production location also impacts international sugar and grain markets, since soft drink producers utilize large quantities of sugar, corn sweeteners, and fruit/vegetable juices. But soft drinks that are not agriculturally based at all (such as

Tang) are important branded products in the food sector.

The experiences of Coca-Cola and PepsiCo demonstrate that a firm that starts as a soft drink manufacturer does not necessarily expand by producing more soft drinks, but can expand into varying product lines.

Other segments of the beverage industry offer myriad examples of diversification. Allied Domecq, a large British-based liquor multinational, owns companies as diverse as Dunkin' Donuts and Baskin and Robbins ice cream stores. Allied Domecq and Diageo (another large British-based liquor multinational) have also purchased wineries. Integration of economies and industries has affected firms' decisions on how to deal with larger markets and keener competition. **AO**

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Season's Greetings

From the staff of *Agricultural Outlook*

This month marks the final issue of *Agricultural Outlook*.

Beginning in February, USDA's Economic Research will begin publishing a new magazine. It will cover the broad range of issues addressed by the agency's information and analysis—production agriculture, trade, food safety and nutrition, rural development, and the environment. Each issue will provide a sampling of ERS reports and ongoing research.

For details, turn to page 46.

World Agriculture & Trade



USDA Photo

Enhancing Food Safety In the APEC Region

Changing consumption patterns, longer shipping distances, and the rising share of perishable food products in trade are all generating concerns about food safety in the Asia Pacific Economic Cooperation (APEC) region. Recent outbreaks of foodborne illness in China (contamination by rat poison in Nanjing) and the U.S. (*Listeria* in the Northeast) have heightened that concern. Such incidents result in added health care costs to society, lost productivity, and changes in consumer behavior that can adversely affect a firm or an entire industry.

However, lack of data, underreporting of cases, and epidemiological difficulties in tying disease to food consumption hamper understanding of the risk and trends of foodborne illness in the APEC region. Although underreporting is most serious in regions with limited public resources, even researchers using data on the U.S. make large adjustments to foodborne morbidity and mortality data to account for underreporting.

Researchers in some APEC economies, such as China, Chinese Taipei, Korea, and New Zealand, report rising incidence of foodborne illness. Yet investigators in Malaysia found fewer food poisoning,

cholera, and typhoid cases. Data-related difficulties prevented making judgments in Australia and the Philippines. According to the U.S. Centers for Disease Control and Prevention (CDC), the incidence of seven common foodborne bacterial diseases in the U.S. dropped 23 percent between 1996 and 2001. But new pathogens, such as *E. coli* O-157 and *Cyclospora*, are always emerging. The lack of consistent and comprehensive data makes it difficult to establish trends about the regional incidence of foodborne illness over time.

Compared with other causes of death, the best estimates suggest that foodborne illness ranks low. World Health Organization (WHO) statistics show infectious diseases, of which many foodborne diseases are a subset, rank well below heart disease, cancer, and accidents as a cause of

death worldwide, even in less developed regions.

The CDC estimates 5,000 people die each year from microbial pathogens in the U.S. While the number of deaths from foodborne pathogens is relatively small, the incidence of illness and hospitalization appears quite significant. The CDC calculates 76 million cases of foodborne illnesses (one case for every four in the population) occur each year in the U.S., with 325,000 associated hospitalizations. The young, the elderly, and those with autoimmune deficiencies are the most prone.

In addition to acute illness caused by pathogens, other widely recognized food safety risks include:

- *sequelae* or longer-term aftereffects (e.g., neurological, cardiac, kidney disease, or rheumatoid syndrome) associated with most acute foodborne illnesses;
- environmental toxins (e.g., lead and mercury) and persistent organic pollutants (e.g., dioxin);
- prions associated with bovine spongiform encephalopathy (BSE, also known as “mad cow” disease); and
- transmission of disease through food from animals to humans (e.g., tuberculosis).

Some perceived food safety risks are more controversial:

- pesticide residues and food additives; and
- irradiated foods or animal products produced with growth hormones and antibiotics.

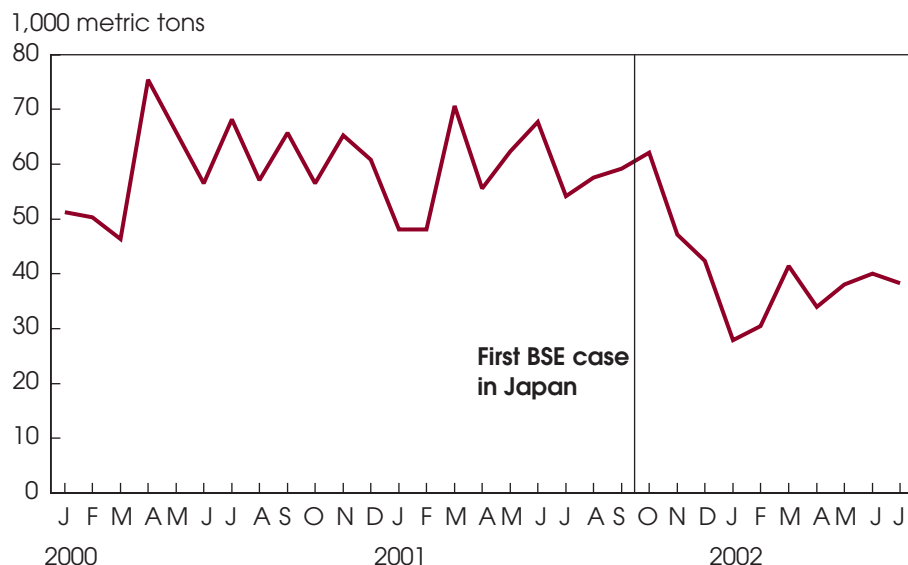
Food safety concerns can also hinder international food trade and are intertwined with questions about the health

This article is a summarized version of *Making the Region's Food Supplies Safer*, a report released at the 14th APEC Ministerial Meeting in Los Cabos, Mexico, October 23-25, 2002. USDA's Economic Research Service collaborated in the report along with economists from 15 Pacific Rim economies. Dr. Jinap Selamat, Professor, Department of Food Science, Universiti Putra Malaysia, provided leadership in developing the report's outline.

The complete report and economy-by-economy profiles of participating countries are available on the web at www.pecc.org/food.

World Agriculture & Trade

Japan's Beef Imports Drop in Aftermath of First Domestic BSE Case



BSE= bovine spongiform encephalopathy, also known as "mad cow" disease.

Source: World Trade Atlas.

Economic Research Service, USDA

consequences of food containing genetically modified organisms, the labeling of these foods, and the uncertainty of their long-term impact on the environment.

Ranking Food Pathogens

Although cultures and diets across the APEC region are highly diverse and levels of development vary, some commonality surfaces when ranking specific pathogens found in food. Ten of the 11 APEC economies reporting information on foodborne illness indicate *Salmonella* as a leading cause. The ubiquity of *Salmonella* is associated with the widespread rise in consumption of many perishable products across the region. *Vibrios* and Norwalk-type viruses are important hazards associated with fish and shellfish consumption, common in Korea and Chinese Taipei.

While *Salmonella*, *Staphylococcus*, *Campylobacter*, and *E. coli* appear to be the more common causes of foodborne illnesses in the region, other pathogens such as *Listeria* and *botulism* are less common but more deadly. Most commonly involved in disease outbreaks and contamination are processed foods, fresh horticultural products, and meats—those foods that are enjoying increased popularity consistent with income and urban

growth. Although most outbreaks affect few people and are localized, some affect hundreds and even thousands: for example, the *E. coli* infection of radish sprouts in 1996 and dairy products contaminated by *Staphylococcus* in 2000 in Japan; and the *Salmonella*-ice cream (1994) and *Cyclospora*-raspberry (1996) cases in the U.S.

Estimating Economic Costs

In general, foodborne illness entails costs to:

- individuals/households (e.g., medical care, loss of work, and premature death);

- industry (e.g., lost business and trade, product liability suits, additional cost from applying systems/techniques to boost food safety); and
- the regulatory and public health sectors (e.g., disease surveillance, outbreak investigations).

Estimating these costs is difficult. Most calculations are partial, focusing on the direct cost of healthcare and losses to individual productivity, not the costs to business and the public sector. In Australia, researchers estimated the costs of foodborne illness at \$1.7 billion in 1999. In South Korea, researchers recently appraised the direct cost of food poisoning from meats alone to be \$16-\$28 million per year. And in the U.S., five foodborne pathogens cause \$6.9 billion each year in health care costs and lost productivity. These costs are low relative to each economy's gross domestic product and reflect their partial nature and the relatively low incidence of serious sickness and death from foodborne causes.

Since consumers usually have many choices about the foods they consume and where they consume them, news of tainted food can induce strong changes in consumer behavior, sometimes out of proportion to the real risk of adverse health consequences. Such response can have a devastating impact on a food industry firm and its employees or even more broadly on an entire industry's reputation, sales revenue, and trade.

A company involved in the spread of a foodborne pathogen can also face costs imposed by courts or government agencies, including fines, product recalls, and

APEC Goals & Membership

APEC, the Asia Pacific Economic Cooperation Forum, is an informal grouping of market-oriented Asia-Pacific economies sharing goals of managing the growing interdependence in the Pacific region and sustaining its economic growth. Started in 1989, APEC provides a forum for ministerial-level discussions and cooperation on a range of economic issues, including trade promotion and liberalization, investment and technology transfer, human resource development, energy, telecommunications, transportation, and others.

Members are Australia, Brunei, Canada, Chile, China, Hong Kong-China, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, Chinese Taipei, Thailand, the U.S., and Vietnam.

World Agriculture & Trade

Examples of Foodborne Disease and Contamination in the APEC Region

Disease/contaminant	Countries reporting outbreaks	Source or vector
<i>Listeria monocytogenes</i>	Australia, Canada, U.S.	Fruit salad, smoked salmon cream cheese, hot dogs, deli meats
<i>Salmonella</i>	Australia, Chile, Korea, New Zealand, U.S.	Pork rolls, unpasteurized orange juice, mayonnaise, meat, raw eggs, fruit
<i>E. coli</i> bacteria O-157	Chile, Japan, Korea, U.S.	Fast food, radish sprouts, meat, unpasteurized juice, lettuce
<i>Staphylococcus aureus</i>	Japan	Unhygienic production-line valve at dairy company
<i>Cyclospora cayetanensis</i>	U.S.	Imported raspberries
Norwalk-like virus	Australia, New Zealand	Sick food handler, oysters
Creutzfeldt-Jakob	Canada (Saskatchewan)	Meat likely consumed in UK from cattle infected with BSE
BSE	Japan	Five cases confirmed since Sept. 2001
Chloramphenicol	Canada	Imported honey and honey products
Cyanide	Chile	Several grapes shipped to U.S. thought to be contaminated
Antibiotics	China	Exports of prawns, shrimp, poultry and rabbit meat
Unreported	China	Soybean drink consumed by students
Rat poison	China	Deliberate poisoning of food in food shop
Cadmium or mercury	Chinese Taipei (central region)	Rice
Polluted storm water	Chinese Taipei (Taipei city)	Prepared box lunches
High levels of pesticide	Japan	Imported green soybeans
Vibrio	Korea	Seafood (clams)
Dioxin	Malaysia	Imported dairy and meat products
3-MCPD, gravy genotoxic carcinogen	Malaysia	Imported savory foods; soups, prepared meals, snacks, and mixes
Hepatitis A	U.S. (Michigan)	Imported strawberries; point of contamination unknown

List is not all-inclusive.

Sources: Pacific Food System Outlook papers from April 16-18, 2002 meeting in Santiago, Chile; various other Internet and newspaper sources.

Economic Research Service, USDA

temporary or permanent plant closures as well as large liability settlements and associated legal costs. Potential market and liability losses are strong incentives for food firms to ensure the food supply is as safe as possible.

Two cases from APEC economies illustrate the strong consumer reaction to events related to the food industry. In September 2001, BSE was detected in a 5-year old Holstein cow in Japan's Chiba Prefecture, the first case discovered in Asia. Authorities discovered four more infected animals during the next 12 months. BSE is a brain-wasting disease caused by prions and is linked to a human variant, Creutzfeldt-Jakobs disease, which killed one person in Canada in August 2002 and approximately 100 people in Great Britain, where BSE is most often found.

In the 3 months following the first BSE case, consumers in Japan reduced beef consumption 40-60 percent, with an equally dramatic decline in beef imports. Sales at 3,800 McDonald's outlets in Japan dropped sharply, despite reassurances that only beef imported from three BSE-free economies (U.S., Australia, and Canada) were being used. Sales of meat products at other chains also fell. In 2002, beef consumption is anticipated to be lower in Japan than last year, causing economic losses for both beef cattle and dairy producers. Consumption is likely to recover over time.

In a rapid response to the sharp public reaction, Japan's Ministry of Agriculture, Forestry, and Fisheries (MAFF) established a system in October 2001 to restrict the movement of cattle at risk of BSE. The MAFF also introduced a ban on the

use of all livestock feed containing meat and bone meal, the suspected carrier of the disease.

Another example of sharp reaction to a food supply problem occurred in the U.S. with negative outcomes for both the Chilean and U.S. food industries. In March 1989, an anonymous caller to the U.S. Embassy in Santiago, Chile claimed that Chilean fruit bound for the U.S. was injected with cyanide. A U.S. Food and Drug Administration (FDA) inspector in Philadelphia, where most Chilean fruit enters the U.S., discovered in a shipment two grapes that were punctured and a third that appeared slit. After testing positive for a non-lethal dose of cyanide, the FDA issued an order banning entry of Chilean fruit into the U.S. and requiring the destruction of all Chilean fruit then in U.S. marketing channels.

Four days later, after Chile adopted certain safety measures and no further contamination was discovered, the U.S. lifted the ban on Chilean grapes. But in the meantime, the incident affected half of Chile's grape production that season, including the loss of more than 20,000 jobs. The ban adversely affected not only producers, but all commercial points along the supply chain of the Chilean fruit export industry, with losses estimated at more than \$400 million.

Setting Standards— Public & Private Roles

Because of limited public resources and strong private sector incentives for promoting food safety, some APEC governments are implementing risk management systems that grant businesses flexibility in their performance of operations as long as the required food safety outcomes are achieved. These systems rely on a model that delineates the following sector roles and implementation activities:

- government acting as the regulator, setting appropriate sanitary standards;
- industry taking full responsibility for producing food products that conform to those standards, using risk-based management plans; and
- objective auditors verifying compliance with standards.

Consistent with this model, Hazard Analysis and Critical Control Points (HACCP) is a system increasingly adopted by governments and the food industry that identifies potential sources of food safety hazards and establishes procedures to prevent, eliminate, or reduce these hazards. The HACCP system builds on Good Agricultural Practices that ensure a clean and safe working environment for employees while eliminating the potential for food contamination and are often integrated with ISO 9000 practices oriented toward meeting customer requirements. HACCP is mandatory in several APEC economies for certain perishable products, some of which are important to export trade:

- processed fish in Canada;
- seafood in Malaysia destined for export to the European Union and the U.S.;

- meat and poultry processors and slaughterhouses in the U.S.;
- all slaughterhouses in South Korea (by 2003); and
- seafood and dairy products in New Zealand.

In other APEC economies and food sectors, HACCP is encouraged but voluntary. In some instances, food industry organizations may mandate use of a HACCP system by their members, such as the Frozen Seafood Union in Chinese Taipei and the Meat Industry Council in New Zealand. Some export-dependent industries have adopted HACCP voluntarily, including Chile's fruit and Peru's asparagus industries, in an effort to differentiate their products as being safe and to meet the demands of importers. Demands by foreign buyers regarding certification and such requirements as traceability can be costly and variable, particularly for small and medium-sized firms in less developed economies. For example, regulations imposed by Europe may not be the same as those imposed by the U.S. or Japan.

The use of internationally recognized quality management systems is particularly prevalent in New Zealand's primary agricultural industries, such as kiwifruit and apple growing, and sheep, beef, and dairy farming along with their related processing industries.

In Canada, 327 establishments are certified as HACCP-compliant, and another 337 plants, mostly meat processing establishments, operate under HACCP principles and are awaiting recognition. Non-meat industries are encouraged to begin incorporating HACCP principles into processing and food preparation practices in anticipation that compliance will become mandatory.

In Malaysia, 85 food firms have applied for certification under the HACCP system, and 55 have successfully obtained certification. The majority of these are from the seafood industry.

The public sector in the APEC region supports a range of food safety training and education programs, including training on HACCP systems, food safety education

for handlers in the food service sector, and programs for consumers on how to reduce their risks of foodborne illness in the home.

Training in food hygiene and handling, for example, has increased substantially in Chile during the past few years. The agency channeling public resources to this area reported 403 training courses and 14,000 students in 2000. Since 1996, Malaysia's Ministry of Health has administered mandatory training programs for food handlers, and has since established the Food Handlers Training Institute, which conducts a compulsory food safety program for all operators of food stalls and restaurants.

In a consolidated effort to reduce foodborne illness, provincial governments across Canada worked with industry associations and consumer, environmental, and health groups to create the "Canadian Partnership for Consumer Food Safety Education." The partnership informs Canadians about safe food-handling techniques to reduce the risk of microbial contamination. The "Thermometer" program in the U.S. is an example of a public campaign to encourage proper meat cooking at home. And New Zealand's Food Safety Partnership promotes four safety actions for consumers: clean hands and utensils, thorough cooking of meats, adequate covering of food before and after cooking, and storage of perishables at low temperatures.

International and regional efforts to harmonize food safety standards have helped to facilitate trade and instill consumer confidence in the safety of imports. The need for economies to align with international food safety standards has grown with trade. Codex Alimentarius (CODEX), created 40 years ago by the WHO and the Food and Agricultural Organization, has helped this process. CODEX is used as a global reference for food standards by many regional trade organizations in which APEC members participate. These organizations acknowledge the importance of food safety and common standards to facilitate trade.

The Association of Southeast Asian Nations subcommittee on Food Science and Technology facilitates collaborative

World Agriculture & Trade

research and development on food safety and quality assurance systems, including nutritional quality, improvement of existing technologies, and the development and strengthening of the scientific basis for technology development and innovation. The leading harmonization agreement in the APEC region is the Australia New Zealand Food Authority (ANZFA) which develops food standards for both countries.

The North American Free Trade Agreement created a committee on sanitary and phytosanitary measures (SPS) to facilitate improvement in food safety and sanitary conditions and to align SPS measures across Mexico, Canada, and the U.S.

Sharing Information— Cooperating on Research

Sharing data is an important part of disease surveillance, and several organizations are cooperating in the tracking of foodborne illness, facilitated by use of the Internet. APEC's Emerging Infections Network is intended to address containment of infectious diseases, including some foodborne diseases, regionally and globally. WHO, with the participation of 113 countries, has a global surveillance system for some foodborne diseases. PulseNet is a U.S. laboratory-based surveillance system using DNA fingerprinting for several foodborne pathogens,

including *E. coli* O-157:H7, *Salmonella*, *Shigella*, *Listeria*, *Campylobacter*, *C. perfringens*, and cholera. The system facilitates prompt identification of outbreaks and timely food product recalls when necessary. PulseNet has an international dimension: Canada joined in 2000, and scientists from Japan, Hong Kong China, and Chinese Taipei have been trained to use the system. FoodNet is another U.S. government surveillance system for foodborne illness, tracking population-based incidence rates, epidemiological trends, hospitalizations, and deaths by selected pathogens.

APEC needs a strong commitment to generate more comprehensive data on the incidence of foodborne illness and its causes and to share this information around the region. Better data will reduce uncertainties and enhance risk analysis to enable more rapid identification, mitigation, and elimination of the threat from an outbreak. Pinning down specific pathogens and locating them in the food supply chain will reduce the human toll and help reduce uncertainty faced by food suppliers. Responsible government agencies will be able to mobilize a more robust and rapid response to prevent pathogens or contain their spread.

International cooperation is a necessary dimension in data and information development and sharing because of the sub-

stantial role of trade in disease outbreaks and in other food safety issues. Similarly, better data and research will inspire public confidence in the ability to assess the risk of foodborne illness with any given outbreak and to respond accordingly. Better information should make the consumer response to foodborne events more consistent with actual risks. Uncertainty about food safety is the enemy of both rational behavior and business investment in the APEC region's food system.

The public and private sectors are working cooperatively to harmonize science-based standards and implement practices aligned with HACCP in food processing and food service. These practices are proven to be effective in reducing the incidence of some foodborne pathogens in the U.S. Adoption of HACCP has been voluntary in many export sectors in APEC because of the strong incentive for these businesses to differentiate their product as being "beyond reproach" from the standpoint of food safety and to establish credibility with buyers. The high cost of implementation of HACCP by mid- and small-sized firms may require public support.



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Commodity Policies Of the U.S., EU, & Japan— How Similar?

Commodity policies of the U.S., the European Union, and Japan address some of the same goals, but there have always been key differences in approach and in their policy instruments. In recent years, all three have made significant changes to their commodity policies. Efforts to encourage freer trade in agricultural commodities, particularly the disciplines agreed to under the Uruguay Round Agreement on Agriculture (URAA), have led each to move toward programs that are less trade-distorting. Although differences certainly remain, some of the factors influencing development of agricultural policy may be pushing their commodity policies in a similar direction.

Similarities: Shifts from Price To Income Support

Most commodity policies can be categorized as either income support or price support. A key trend in commodity policy in the last decade has been the move from primary reliance on price support to increased use of income support, which is less trade-distorting. All three have

reduced the use of price support for several commodities, replacing at least a part of their price support with income support through direct payments to producers. The European Union (EU) and Japan remain more reliant on market price support than the U.S.

The U.S. provides a number of income support measures. Direct payments (similar to production flexibility contract payments) and counter-cyclical payments both provide support to producers based on historical production. Direct payments are decoupled from current production and prices, while counter-cyclical payments are decoupled from current production but linked to current prices. Marketing loan benefits provide payments to producers based on current production and prices. Ad hoc disaster assistance and subsidized crop and revenue insurance support income by reducing risk and losses from weather and other disasters. Planting flexibility, a companion reform to decoupled payments, allows producers to plant almost any crop or leave land fallow without losing eligibility for direct payments.

Price support programs have declined in importance in U.S. farm policy, continuing only for sugar, tobacco, and dairy.

In the EU, income support measures include compensatory payments, which compensate for reduced price supports with direct payments to crop producers based on historical production, and livestock headage payments to beef cattle and sheep producers based on number of animals. Livestock payments will be expanded to include dairy producers beginning in 2005. Neither of these measures is related to current prices, but they are linked to current area planted and livestock numbers, subject to area caps and ceilings on number of eligible animals. EU producers have a limited form of flexibility that allows them to receive payments as long as they continue to plant some type of arable crop or put land in set-aside.

EU price support programs include intervention purchasing and product withdrawal, production and marketing quotas, import protection, and export subsidies. Prices for major commodities such as grains, oilseeds, protein crops, dairy products, beef and veal, and sugar depend on the EU price support system, although with recent reforms, price support has become less important for grains, oilseeds, and beef. Other mechanisms, such as subsidies to assist with temporary storage of surpluses, as well as consumer subsidies paid to encourage domestic consumption of products like butter and skimmed milk powder, supplement the direct price-support instruments.

Japan maintains two kinds of income support programs. Commodity-specific income stabilization programs, introduced since 1998, compensate farmers when current market prices fall below a moving average of previous years. The government provides the bulk of funds for these payments, but participating farmers also contribute based on their output. Traditional deficiency payment programs pay producers of certain commodities the difference between current market prices and a fixed reference price, rather than a moving average as with income stabilization. Both deficiency payments and income stabilization payments allow market prices to be freely determined, similar to U.S. marketing assistance loans and loan deficiency

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cy payments. As in the U.S., subsidized crop and livestock insurance reduces risk for Japan's farmers.

Price support programs, though less prevalent than in the past, continue in Japan. Production limits for a few key commodities, including rice, are designed to keep market prices high by controlling supply. Government corporations continue to manage prices in sweetener, wheat, and dairy markets, chiefly through import control. Most importantly, high tariffs raise the price of imported products and reduce competition with domestic products that might pressure prices.

Differences: Supply Control & Border Measures

In contrast to the shared trend toward substituting income support for price support, approaches to supply control, surplus disposal, and border measures (including export subsidies, tariffs, and tariff-rate quotas) illustrate continuing policy differences.

The U.S. eliminated its use of land set-asides as supply control measures in 1996; its remaining land retirement programs—the Conservation Reserve, Wetland Reserve, and Grassland Reserve programs—are based on an environmental protection rationale. The EU, which previously had supply control programs only for dairy and sugar, extended supply control to arable crops with a voluntary set-aside program in 1988 and a mandatory set-aside in 1992. It applied a weaker form of supply restrictions to the livestock sector, imposing limits on the number of beef cattle and sheep eligible for payments. Japan uses supply control programs for rice and milk.

U.S. use of export subsidies has been limited in recent years to dairy products and poultry. The EU continues to use export subsidies for many price-supported commodities, although World Trade Organization (WTO) obligations have required reductions in subsidy levels. Japan, an importing country, does not use export subsidies, although it donates some of its rice imports and production to other countries as food aid rather than releasing them into the domestic market.

The three differ in their reliance on import tariffs and tariff-rate quotas to support domestic prices. Although all maintain tariffs, EU and Japan tariffs are higher, on average, and include a greater number of megatariffs (tariffs over 100 percent).

A key trend in commodity policy in the last decade has been the move from primary reliance on price support to increased use of income support, which is less trade-distorting.

While all three provide moderately high support to their agricultural sectors, the EU and Japan maintain higher overall support, and provide more support that is coupled or partially coupled to production than the U.S. A common measure of government support to domestic agriculture—the OECD Producer Support Estimate (PSE)—indicates the U.S., EU, and Japan provide support to their farmers at 21, 35, and 59 percent of the value of their agricultural production.

The Burdens of History, Trade Agreements, & Budget

Many factors shape agricultural policy formation, but among the most significant for these three have been historical differences in policy context and constraints from budget limits and trade agreements (including planned enlargement of the EU).

Current commodity policies in the U.S., the EU, and Japan are the result of developments and policy changes during the last century. U.S. commodity policy is rooted in price support programs established in the 1930s in response to the Depression-era collapse of farm prices. Chronic surpluses, steadily increasing government stocks, and rising agricultural spending resulting from these programs, however, led to growing pressure for change.

The 1996 Farm Act introduced nearly complete planting flexibility and promised continued government efforts to enhance access to international markets.

Redesigned support programs encouraged greater market orientation, along with fixed income support payments that were no longer tied to production. The 2002 Farm Act, while introducing new counter-cyclical payments, continued planting flexibility and basing program payments on historical production.

The EU's Common Agricultural Policy (CAP) arose in response to post-World War II concerns about food security, poor productivity, and low farm incomes in an agricultural sector characterized by small, fragmented farms. Since the inception of the CAP in the 1960s, however, managing surpluses has replaced food security as a major preoccupation of EU agricultural policymakers. The EU has shifted from being a net food importer to one of the world's largest exporters of wheat, sugar, meat, and dairy products.

Japan, which also experienced food shortages after World War II, is increasingly reliant on imports for its food supply. Today, about 60 percent of Japan's aggregate calorie intake comes from imports. Japan has argued that goals of self-sufficiency in agriculture are needed to maintain a significant production base in the event trade becomes difficult. However, another major focus of Japan's agricultural protection has been a desire to support farm incomes and rural economies. Japan's postwar land reform created a very small-scale farm structure, and small farmers' incomes have been maintained principally through very high price support, chiefly by border measures.

For all three, fiscal constraints have figured prominently in commodity policy changes. The need to reduce U.S. government expenditures in the face of persistent fiscal deficits made it difficult for legislators to increase spending on agricultural programs in the 1990s. Budget surpluses by the end of the decade permitted significant increases in funding commitments for agricultural programs in preparation for the 2002 Farm Act. With the return of deficits, however, pressure may again develop to reduce spending on agricultural programs.

In the EU, supporting agriculture has also required large outlays, and as EU support has shifted toward producer support poli-

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Farm Policies in the U.S., EU, and Japan—Key Similarities and Differences

Similarities	Differences		
	U.S.	European Union (EU)	Japan
Price support			
All have reduced their use of direct price supports in recent years	Direct price support maintained only for dairy, sugar and tobacco; marketing loan rates, which determine marketing loan gains and loan deficiency payments, do not act as market floor prices	Direct price support maintained for many commodities; intervention price acts as market floor price	Relies heavily on price support, provided partly through producer quotas and state trading, but primarily through border barriers
Income support			
All have increased their reliance on income support through direct producer payments	Direct payments program is decoupled from current production (based on historical entitlements); counter-cyclical payments are decoupled from current production, but linked to current market prices; marketing loan program is coupled to current production and prices	Compensatory payments are partially decoupled (based on current area planted or livestock numbers, but subject to limits)	Income stabilization and deficiency payments compensate for price declines through direct payments to farmers, without raising market prices
Border measures			
The U.S. and EU continue some use of export subsidies	Provide export subsidies primarily for dairy and poultry	Provide export subsidies across a wide range of commodities, accounting for 90 percent of all WTO-notified export subsidies; may also impose export tax (infrequently used) to stabilize domestic market prices	Provide no export subsidies, although rice is donated as food aid to developing countries
All maintain tariffs on agricultural products	Agricultural tariffs average 12 percent	Agricultural tariffs average 30 percent	Agricultural tariffs, averaging less than 50 percent, are hard to measure because of widespread use of compound tariffs and temporary rates
All have some tariffs greater than 100 percent (megatariffs)	24 megatariffs maintained	142 megatariffs maintained	An estimated 73 megatariffs maintained
Total support			
All three maintain moderately high to high support levels for agriculture (measured by OECD's Producer Support Estimate (PSE) as percent of value of production)	Lowest support of the three (21.2 percent of value of production); significantly greater reliance on income support	Support higher than U.S. but lower than Japan (35 percent of value of production); significantly greater reliance on price support	Highest support of the three (59.4 percent of value of production); heaviest reliance on price support through border measures
All countries devote significant budget outlays to supporting agriculture (in US\$)	Budget outlays lower since 1987	Budget outlays higher since 1987	Budget outlays higher in 1990s for structural adjustment
All have been shifting basic policies away from production-linked (coupled) price support toward less directly linked programs, but continue to provide substantial coupled support to parts of agricultural sector (as measured by 1998 WTO notifications)	Most decoupled (green box) support of the three	Most coupled or partially coupled (amber or blue box) support of the three	Coupled or partially coupled (amber or blue box) support matches that of the U.S.

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cies funded by taxpayers rather than consumers, the capacity of the budget to provide that support may be further strained. The EU also faces a unique circumstance in the anticipated budget effects of its impending enlargement. Unlimited price support with the entry of several new agricultural producing members will place an even greater burden on the EU budget.

Japan's government deficit has soared to worrisome levels at the same time agricultural commodity policy moves toward income support. Unlike current market price support, which is paid mostly by consumers through high tariffs on imports, a program of income support relies on tax money that is in increasingly short supply. Replacing market price support with income support could require much higher government expenditures and place a greater strain on government resources.

Trade is important to all three. As increases in agricultural output have outpaced the growth of domestic demand in the U.S. and the EU, the share of production that is exported has risen. With continued growth in productivity, both these countries will have to find outlets for additional production if they are to maintain strong agricultural sectors. Japan's situation as a net food importer is fundamentally different—and its government policy is aimed at increasing the scale and efficiency of farms in order to help them survive and provide a greater share of Japan's needs.

The URAA was the first meaningful multilateral agreement covering agricultural trade. Although URAA disciplines did not require major changes in U.S. policies in the early years of the agreement, the 2002 Farm Act explicitly acknowledged URAA constraints on future U.S. farm support. The Act requires the Secretary of Agriculture to reduce expenditures on commodity programs to ensure they do not exceed allowable levels.

The EU's Agenda 2000 reforms explicitly acknowledged the importance of the URAA, citing the need to reduce support prices to comply with Uruguay Round commitments to cut domestic support to agriculture (AO October 2002). Constraints on subsidies imposed by the URAA have led to increasing concern

among policy makers about the competitiveness of EU agriculture. This concern underlies the additional support price cuts of the Agenda 2000 program.

Japan passed a new Basic Law on agriculture in 1999, which outlined goals for Japan's agriculture, including greater attention to multifunctional aspects of farming, such as preserving rural landscapes and supporting rural economies. Traditional support for commodity production now must share the agriculture budget with such non-commodity specific goals. The new legislation also emphasized the need to reduce Japan's reliance on food imports by strengthening the competitiveness of its agriculture.

New issues, including environmental concerns, food safety and quality, rural development, and changing farm structure, are increasingly shaping commodity policy.

As the three continue to provide support for their farm sectors while complying with tightening limits on trade-distorting support, they may seek to work increasingly through policies such as environmental or rural development programs, which may qualify for exemption from WTO reduction commitments. Additional trade agreement disciplines that limit the potential differences among countries in level and type of trade-distorting programs may lead to convergence in commodity policy approaches and could contribute to less contentious trade relationships and negotiations.

New Issues Shaping Policies

New issues, including environmental concerns, food safety and quality, rural development, and changing farm structure, are increasingly shaping or promising to shape commodity policy of all three.

In the U.S., the 2002 Farm Act increased support for conservation programs by about 80 percent. U.S. attention to biosecurity issues and recent outbreaks of foodborne illnesses and animal disease

may generate changes in policy that affect production practices. Policymakers have also begun to look beyond traditional commodity support programs to encourage rural development, as nonfarm activities increasingly dominate the economic life of many U.S. rural communities.

Public pressure regarding these new issues is perhaps most fully developed in the EU, where the Berlin European Council of 1999, which adopted the Agenda 2000 reform program, endorsed policies aimed at producing a "multifunctional, sustainable and competitive agriculture." The EU Agenda 2000 policy reforms strengthened links between producer support payments and environmental protection requirements.

Concerns related to the safety and quality of food have occupied EU officials for the last several years, as "mad cow disease," outbreaks of foodborne illnesses, and the foot-and-mouth disease crisis shook Europeans' confidence. Policy changes aimed at promoting less intensive livestock production, combined with stricter standards on animal feeds and meat hygiene, have been instituted to address these concerns.

Through its policy of "modulation," the EU allows member countries to shift some funding from commodity support to rural development programs, including agri-environmental programs and programs aimed at promoting increased diversification.

Japan has begun to subsidize environmental improvements made by livestock farmers and has launched policies to preserve farming in hilly and mountainous areas that have difficulty competing even within Japan's protected markets. While these policies support some commodity production, their larger aim is the elimination of externalities of production, such as odor and water pollution, as well as the preservation of societal benefits such as landscapes and rural welfare. Food safety has also become a pressing issue, leading to the creation of a new food safety commission and to government pledges to focus more attention on consumer needs.

Traditional domestic support and trade concerns will undoubtedly continue to play a primary role in commodity policy

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direction for all three, and trade goals and constraints will likely have the greatest influence on whether commodity policies become more similar. However, the pressure of public demands for attention to such issues as environmental impacts and food safety will likely gain influence.

The U.S., EU, and Japan have in some cases moved toward similar approaches to meet the goals of commodity policies in recent years. Their policies still differ, however, in significant ways—particularly in the extent of their reliance on income versus price support, reliance on border measures, and use of surplus disposal and supply control. They face similar pressures from tight budgets, trade constraints, and increasing public connection of agricultural policy with issues beyond traditional goals for supporting production agriculture. Whether these pressures will lead to similar policy responses remains to be seen. So far, they have not done so consistently, in part because the level of public interest and pressure they face has differed, reflecting differences in current conditions and recent experiences.

In the U.S., debate on the impacts of the 2002 Farm Act will continue to influence

the future of U.S. farm policy as budget outlays, trade negotiations, environmental and consumer concerns, and production issues fuel discussions of appropriate and effective agricultural programs. In the EU, a reform proposal arising from the 2002-03 mid-term review of the CAP is spurring a similar debate, offering the prospect of comprehensive reform or, if Member States reject the Commission's proposal, the possibility of further marginal change. In Japan, the government continues to introduce new measures to speed consolidation of farming into more efficient, lower cost operations.

In the midst of these debates, the future direction of farm policy is unclear. But while significant differences will undoubtedly remain, some of the discussion suggests that the U.S., the EU, and Japan could be headed in a similar direction.

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For further information on U.S. and EU commodity policy, see the following briefing rooms on the ERS website:

U.S. policy

www.ers.usda.gov/briefing/farmpolicy/programprovisions.htm

EU policy

www.ers.usda.gov/briefing/EuropeanUnion/policy.htm

For further information on Japan's commodity policies, see:

Sweetener Policies in Japan

[www.ers.usda.gov/publications/so/view.asp?f=specialty/sss-bb/\(9/10/02 supplement\)](http://www.ers.usda.gov/publications/so/view.asp?f=specialty/sss-bb/(9/10/02%20supplement))

Vegetable Policies in Japan

www.ers.usda.gov/publications/vgs/oct02/vgs293-01/

For an initial assessment of the 2002 Farm Act...

THE 2002 FARM ACT PROVISIONS AND IMPLICATIONS FOR COMMODITY MARKETS

A new report on the Economic Research Service website

- An evaluation of effects on agricultural commodity markets
- A discussion of major commodity programs (Title I of the Act)
- An overview of provisions on commodities, conservation, and trade

Available at www.ers.usda.gov/publications/aib778/

Further information on farm policy at www.ers.usda.gov/briefing/FarmPolicy

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ARS photo

Shaping the Global Market For High-Value Foods

The global market for high-value foods is complex, and subject to an ever-changing product mix demanded by wealthier and more selective consumers. While consumers in industrialized countries are the primary customers for high-value foods, developing countries are a growing market. As income and population levels grow, these countries account for a growing share of global food sales. In response, multinational food companies are rapidly restructuring their manufacturing and retail operations to better serve evolving world food demand. The resulting coordination between retail and supply chains has implications for both food producers and exporters.

The size of the global food market is difficult to measure precisely given varying national definitions of the food sector and the range of venues in which food is sold. From street-side stalls in developing countries to supermarkets in highly developed countries, the market may also be defined by its stage in the distribution channel (wholesale, manufacture, retail, or food service). This article focuses on the retail level of the food market where virtually all products sold are high-value products. These products are either com-

modity-based—such as meat, fruits and vegetables—or manufactured—such as beverages, and bakery products. Global sales of high-value food products including food sold through food service were estimated at US\$4 trillion in 2000 with beverages representing more than a fourth of total retail sales.

Much of the growth in the global food market can be accounted for by increased “value-added” rather than volume. Value is added at various stages along the food marketing chain. At the manufacturing level, raw commodities are transformed into palatable products and packaged for the retail market. Further value may be added to products destined for the food-service sector, one of faster growing segments of the food market, and accounting for about one-third of global food sales.

Who Buys What?

Developed countries account for most of the about US\$2.2 trillion worth of food products that move through global retail outlets. European Union countries, the U.S. and Japan together accounted for over 60 percent of processed food (packaged food and beverages) retail sales. Retail sales of processed food account for

about half of total food expenditures in developed countries, but only a quarter or less in most developing countries. In most countries, packaged food products account for about two-thirds of all retail processed food products with alcoholic, soft and hot drinks comprising the remainder.

The value of total packaged food retail sales varies among countries based on per capita income levels. For example, in 2001, per capita retail sales of packaged food averaged about \$1,190 among high-income countries, \$491 among upper-middle-income countries, \$209 among low-middle-income countries, and \$107 among low-income countries. Japan spent \$1,255 per capita on packaged food, the U.S. \$912, and Mexico \$334, compared with \$33 per capita for China and \$10 for India.

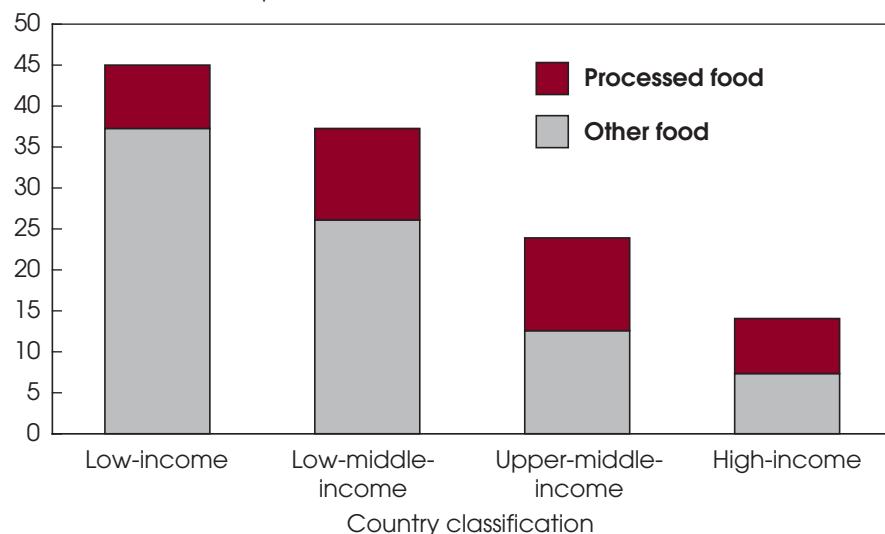
While market size as measured in retail sales is much larger in high-income countries, market growth has generally been faster among developing countries, where oils and fats, dried food, and dairy products have sizable retail markets with strong growth trends. Although a smaller market, breakfast cereal sales have skyrocketed, registering double- and triple-digit growth in many developing countries.

Processed food retail sales are generally growing at a slower pace in high-income countries than in developing countries. Ready-to-eat meals is the fastest growing sector, with the exception of markets where cultural values may tend to discourage purchases (e.g., France and Singapore). Growth in retail sales of items used in meal preparations such as oils and fats and dried food have slowed or decreased in many high-income countries. Breakfast cereal sales, which increased in Europe and Asia during the past 5 years, have declined in the U.S. The decline in the U.S. may be due to increased competition from other items such as frozen breakfast food, bagels, and other bakery products.

The global market for soft drinks is expanding rapidly with large growth in sales in Eastern Europe, Asia, and Latin America (see related story, page 25). Growth in the soft drink market in the

Processed Food Accounts for a Larger Share of Total Food Expenditures In High-Income Countries

Percent of income expenditures



Low-income countries have per capita GNI (Gross National Income) below \$756; low-middle, \$756-\$2,995; upper-middle, \$2,966-\$9,266, and high-income, above \$9,266. Source: Euromonitor, 2002. World Bank classification of countries based on 2000 per capita GNI. Economic Research Service, USDA

U.S. has slowed with average annual growth under 2 percent, but continues strong with 3-4 percent growth in other high-income countries. Growth rates in developing countries are much higher, with Asian markets ranging from almost 13 percent in the Philippines to 19 percent in Indonesia. In the U.S., Latin America, India, the Philippines, and South Africa, most soft drinks sold in retail stores are carbonate based, but in other countries a larger share is accounted for by fruit juices and various ethnic drinks. However, carbonate-based drinks register higher growth rates in these countries.

Reflecting the increased demand for variety as incomes increase, the number of products purchased at retail outlets is greater for wealthier countries. For example, the top 5 product categories account for 71 percent of the entire processed food retail sales for Mexico and 74 percent for India, but only 48 percent for the U.S. and 47 percent for the United Kingdom (UK). In many countries, the top 5 categories are bakery, dairy, confectionery, snack foods, and dried foods. As the demand for processed food products is also driven by the demand for quality and labor-saving products, the items con-

sumed by different income groups reflect different levels of services embodied in the products. For example, ready-to-eat meals account for about 4 percent of total retail sales in the U.S. and the UK, but only 0.06 percent in Mexico, 0.55 percent in China, and none in India. In contrast, products such as fats and oils, which account for over 7 percent of total processed food retail sales in India, 13 percent in Indonesia, and 5 percent or more in many developing countries, account for less than 2 percent in high-income countries (0.79 percent in the U.S.).

As Consumer Demands Change...

Consumer's diets have changed worldwide due to income growth, lifestyle changes brought about by urbanization, and increased availability of a wide variety of food products. Either because of increases in purchasing power or the increased opportunity cost of time required for preparing food, the demand for higher value and processed food products has expanded globally. Consumers in developing countries, who have traditionally consumed low-value carbohydrate-rich cereals, have increased their con-

sumption of higher value meats, fruits, and vegetables. Similarly, consumers in wealthier countries are increasingly substituting semi-processed products for relatively higher value prepared meals. Although the quantity and nutrient value of the foods consumed may not have changed, the increased value of the products consumed may reflect value-added services embodied in the products, which reduce preparation time required before consumption.

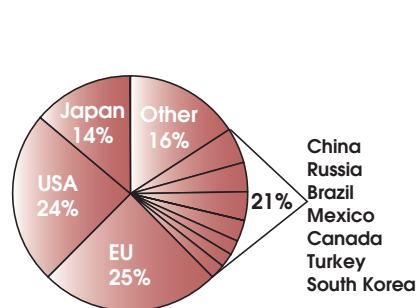
Although consumers with higher income levels spend more money on food, the food share of total household expenditures is low for wealthier consumers who typically spend a larger share of their income on more expensive items such as health care, energy, and recreation. During the last decade, consumers in high-income countries spent an average of 14 percent of their total household expenditures on food, while consumers in low-income countries spent an average of 45 percent. In 2001, this share ranged from a high of 56 percent of total household expenditures in Indonesia to 35 percent in Morocco, 26 percent in Mexico, 11 percent in Japan, and 7 percent in the U.S. About half of the total household food expenditure in high-income countries is for processed food products.

Shares of food expenditures spent on high-value products have generally risen during the last decade in most countries. The increased share of total food expenditures for high-value food products not only reflects greater consumer purchasing power but also changes in lifestyle afforded by increased prevalence of household amenities.

For example, having refrigerators may lead households to purchase perishable food products, while increases in microwave ovens may boost purchases of ready-to-eat food items that require minimal preparation before consumption. Most developing countries have significantly increased the number of households with refrigerators. Between 1990 and 2001, the share of households with refrigerators in India increased from 4.6 to 12.6 percent, in China from 1 to 6.4 percent, in Indonesia from 13.4 to 25.1 percent, in Morocco from 27.1 to 42.6

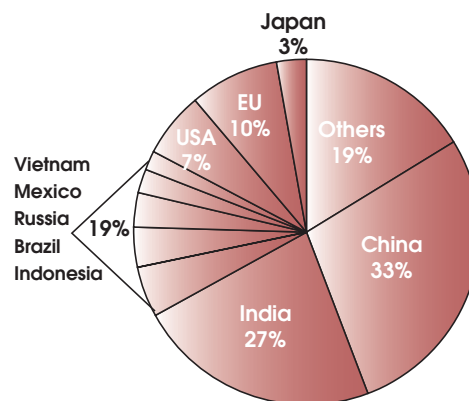
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Industrialized Countries Account for Most Retail Sales of Processed Foods. . .



Source: Euromonitor, 2002.
Economic Research Service, USDA

. . .but Developing Markets Contain Over Three-Fourths of 2001 Population



percent, and in Brazil from 62.4 to 82.6 percent.

The share of households with microwave ovens in high- and high-middle-income countries has significantly increased during the last decade. Ninety-one percent of households in Japan now have microwave ovens compared with about 76 percent a decade ago. Over 84 percent of U.S. households have microwave ovens compared with less than 80 percent in 1990. Microwave oven ownership has also increased dramatically in the UK, Singapore, Hungary, and many other wealthier countries. In lower income countries such as Brazil, Morocco, and Indonesia, the number of households with microwave ovens is small, but growing.

Increased ownership of microwave ovens is likely to increase purchases and consumption of prepared food products. Accordingly, retail sales of ready-to-eat meals, though small, have grown among some developing countries, with dramatic growth rates in many middle-income countries in Eastern Europe and Latin America. In developing Asia, total value of retail sales of prepared meals is relatively small, and annual growth in sales suffered in the late 1990s as a result of the Asian financial crisis. Given the financial recovery, sales of ready-to-eat meals are expected to grow along with increases in

the number of households with microwave ovens.

Eating habits among consumers vary with their income level. Consumers diversify their diets as their incomes grow—products with more value-added services are increasingly substituted in the diet. For example, in 2000, an average consumer in Vietnam consumed about 1,200 calories less per day than an average American consumer. However, about 70 percent of the total calories consumed by the Vietnamese consumer were from cereals, which require more preparation time. Only about 22 percent of the total calories consumed by the average American were cereals, while 12 percent were from meat (8 percent in Vietnam) and another 12 percent were from dairy products (less than 1 percent in Vietnam).

Changes in expenditures for different food items over time (reflecting income growth over time), relative to caloric intake may also capture the additional premium paid for food quality, preparation, and processing embodied in the product. Between 1996 and 2000, total available calories per capita in the U.S. increased by 4 percent, while per capita food expenditures in constant dollars increased over 5 percent. Seafood showed the most dramatic change—with a 7-percent increase in per capita calories, but a nearly 26-percent increase in expenditures.

...So Do Firms' Strategies

Firms have several options for selling in foreign markets. Exporting high-value food products is one option, but foreign direct investment (FDI)—investing or acquiring assets abroad and manufacturing—is often preferred. Commodity-based products are less suited for FDI since processing is generally done close to the primary production location. Once processed, commodity-based products can be exported like most other food products. Commodity-based products are traded far more than are manufactured packaged products, and account for over 75 percent of the total value of U.S. high-value food trade. While the bulk of FDI-based food sales is in beverages and cereal products, the largest share of high-value food exports is in meat, fruits and vegetables, and fish and seafood.

In the case of manufactured products, firms can tailor both manufacturing and packaging to suit local preferences. Thus, firms generally opt for an FDI-based sales strategy over an export-oriented sales strategy. For private firms owning trademarks, brands, formulas, and processing technologies associated with manufacturing, licensing and marketing agreements with other national and multinational firms play a big role in determining how products are sold in foreign markets. A manufacturer's ability to establish close business relationships with global super-market chains is increasingly important.

An export-oriented sales strategy is important in cases where the geographical origin of production matters to the consumer. In these cases, a foreign brand can sell at a premium over a comparable domestically produced good. Alcoholic beverages (wine in particular), and various confectionery products are good examples. A combination of trade and FDI sales strategy is another alternative. For example an Australian beer (Fosters) can be brewed and exported from Canada and sold at a premium in the U.S.

Food manufacturing firms have traditionally relied on brand ownership to successfully differentiate their products. As a result, firm dominance can be seen at the global level for specific product markets. For example, a single company, Coca-

World Agriculture & Trade

Western Europe Represents a Declining Share of Global Sales for Major Food Companies

	1996	1997	1998	1999	2000
	<i>Percent</i>				
Nestle	40	37	37	36	32
Unilever	50	47	47	46	42
Cadbury Schweppes	46	45	46	44	41
Philip Morris	35	34	34	32	29
Kellogg Co.	Na	Na	25	23	21
Coca Cola	Na	Na	26	23	21
Campbell Soup	Na	14	13	10	9

Na=Not available.

Source: Euromonitor, 2002.

Economic Research Service, USDA

Cola, is dominant in global soft drink sales. Due to changes in consumer preferences, the market has shifted from carbonated drinks to functional drinks, teas, and bottled water. While Coca-Cola led the market in carbonated drinks, it ranks no higher than third in other soft drink categories. With faster growth in non-carbonated beverage sectors, Coca-Cola's share in the soft drink market has somewhat declined in recent years.

The Kellogg Company illustrates how firms adjust to consumer demand to remain competitive. As consumer disposable income grew in the second half of the 20th century, Kellogg capitalized on consumer demand for convenience and consumer perception that ready-to-eat

cereals were nutritious. Consumer demand shifted in the late 1990s as eating patterns and consumer lifestyles evolved, and eat-out-of-hand baked goods and snack bars started replacing ready-to-eat cereals. By 1998, ready-to-eat cereal sales declined in the U.S. and, under pressure from competition, Kellogg was forced to cut prices on 16 of its brands. Since many products—such as Kellogg's Corn Flakes—were relatively easy to imitate, competition had grown from private labels and other cereal competitors. In response, during the past 5 years, Kellogg has diversified its product portfolio through acquisitions of smaller companies specializing in convenience snack and breakfast foods.

In addition to shifting consumer demand, food companies have had to develop strategies for geographic coverage. Since 1996, Western European sales shares for both U.S. and European companies have declined. Nestle, the world's largest food company, had 40 percent of its sales in Western Europe in 1996. By 2000, this share declined to 32 percent, mainly as a result of stronger sales outside Europe. Population, demographics, and economic growth have all contributed to changes in food consumption patterns, particularly among consumers in developing countries.

Future Lies in Developing Countries

Although high-income countries account for over 60 percent of total processed food retail sales, they are essentially mature markets with little future growth potential. Developing countries are expected to account for most of the future increases in food demand, resulting from increases in population and per capita food consumption. Accounting for over three-fourths of total global food consumers, developing countries also register higher rates of population growth and younger population, signaling faster growths in future food demand.

Measuring the Global Food Market

The size of the global food market is difficult to measure accurately. Consistent definitions of "markets" and data availability make comparisons across countries problematic. In developing countries, a large share of food is traditionally sold through street-side stalls which are likely not captured in a consistent and clear manner. Supermarkets have begun to have a greater presence in these markets making commercial food sales data more available, although such data may understate the size of the actual market.

A market may be defined in terms of product coverage and the stage in the distribution channel (wholesale, manufacture, retail, or food service). In the retail level of the food market, virtually all products sold are high-value products. High-value food products can be divided into either commodity-based products or manufactured products. *Commodity-based* products are those that are identifiable with a specific commodity such as meat, fruit and vegetables, fish, milk, or sugar. *Manufactured* products combine multiple commodities, undergoing substantial transformation from their origi-

nal raw materials. For example, breakfast cereals or bakery products are manufactured from a wide variety of ingredients such as milled grain, flours, oils, sugar, fruit, nuts, dairy products, and eggs. These are processed into consumer-ready packaged products carrying company brands that differentiate themselves in the marketplace. High-value, commodity-based products are typically sold under generic labels.

In this article, world estimates of food sales and specific food and beverage categories are drawn from Euromonitor, a commercial market data vendor, containing globally consistent food categories. Global sales of high-value food products including food sold through food service were estimated at US\$4 trillion in 2000. High-value foods can basically be broken down into packaged food, fresh food, and beverages. Processed food sales are combined sales of packaged food and beverages. Beverages are an important part of the high-value food market, representing more than a fourth of total retail sales.

World Agriculture & Trade

With per capita income levels forecast to grow faster in developing countries, their demand for high-value and processed food products is expected to increase. USDA's published estimates of world average per capita Gross Domestic Product (GDP) shows annual growth rates of 2 percent during the next decade, but developing country GDP is estimated to increase by about 3.5 percent annually. Studies indicate that as income levels rise, consumers in developing countries spend a larger share of the additional income on food compared with consumers in high-income countries with similar increases in income levels. The additional expenditure on food by consumers in developing countries often translates to diet diversification and increased expenditures on high-value food products, such as retail packaged items.

Changing food demand in developing countries, along with the structure of food markets, is transforming into more coordi-

nated systems linking consumer demands with procurement strategies. In fact, the basic structure of an industrialized food market is evolving rapidly in these countries. Of significance is the explosive growth in supermarkets and large-scale food manufacturers. In Latin America, supermarket sales rose from 10-20 percent of total retail food sales to 50-60 percent during the past decade. Global multinational retailers such as the Dutch Royal Ahold, Carrefour, and Wal-Mart are beginning to dominate the sector in this region.

With increasing demand and changes in the retail sector, developing countries will largely account for future growth in high-value food sales. While retail sales of packaged food products grew at about 2 percent annually in high-income countries, these sales have grown much faster among developing countries, ranging from 7 percent in upper-middle-income countries to 29 percent in lower-middle-

income countries. The dramatic growth among middle-income countries is partly due to a tremendous growth in sales in Bulgaria, Romania, Poland, and Hungary. With sales in these countries peaking, future growth in packaged food retail sales among developing countries is expected to be much slower, but will continue to exceed the rates for high-income countries. As growth in sales slows in Eastern Europe, markets in the Far East are predicted to pick up. Vietnam, China, and Indonesia are expected to be the fastest growing markets for packaged food retail sales over the next 5 years, with growth rates forecast at 11, 10 and 8 percent, respectively. Additionally, Korea, Thailand, India, and the Philippines rank among the top 10 growing markets, with total packaged food retail sales expected to grow 5-7 percent annually. **AO**

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Want to know more?

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Special Article

What's at Stake in the Next Trade Round



Photo courtesy World Trade Organization

If there were ever a time for speculation about the future direction of agricultural policy, this is it. Major new farm legislation represents a departure from the market orientation and lower spending levels of the last Farm Act. The next round of multilateral negotiations begins in earnest later this winter. The intersection of domestic and international agricultural and trade policy determines the framework in which agricultural markets operate. What will happen to this architecture in the next few years? Will it be altered through trade liberalization and policy reform? Or will it remain largely intact?

Among the many factors that will condition the path policy ultimately takes are the dynamics of the trade talks themselves. Since the end of the last trade round, developing countries have sought a more effective influence on the World Trade Organization and negotiations under its auspices. Will their quest for meaningful participation and increasing technical proficiency make a difference in the outcome of the next round? What will the European Union (EU) and Japan ultimately be willing to negotiate in the way of reform?

Such considerations are important, but the fundamental question, in terms of U.S. enthusiasm for reform, is whether liberalization is really in line with the self-interest of American farmers. From this perspective, it is worth considering which economic arguments are most compelling and how they can be developed in an effective way.

A well-reasoned argument about market gains is a necessary but perhaps not sufficient condition for marshaling substantial U.S. support for agricultural trade liberalization. That is why the future cannot be predicted with confidence. Domestic farm policy reform, including reductions in subsidy spending and in import protection, would impose costs of adjustment in moving to a new world market order. Future benefits might not be real-

ized if nearer term dislocations caused by policy reform could not be overcome—a real possibility. But, even if significant adjustment costs were associated with multilateral trade liberalization, is maintenance of existing programs and spending levels a viable alternative?

Developing World Is Source of New Markets

The most compelling argument for trade liberalization is that the future of developed-country agriculture lies in the markets of the developing world. Why is this so? Because food markets in developed countries are mature—that is, they grow only slowly with population growth. Expansion in market share of one food product generally comes at the expense of another. So the future, if U.S. farmers want to sell more food, is with markets in developing countries, where income growth has strong implications for the level and composition of food demand. In economic terms, domestic U.S. demand for food is stable. In order to maintain returns to agriculture as productivity rises, demand also has to increase. This growth must come from outside the U.S., and indeed from outside the developed world (e.g., the EU).

Income growth drives demand in developing countries. Trade liberalization can be an important catalyst for improving incomes as well as for freeing markets by improving market access and limiting subsidies that distort market signals. To recognize the dynamism that drives income growth requires an approach to economic analysis that differs from traditional considerations of the gains from freer trade. The feedback loops in an economy, from consumers to suppliers to investors, have to be considered in order to trace the boost that open markets give a country's well-being. Typically, economic gains from agricultural trade liberalization have been couched in terms of changes at the margin in commodity imports and exports. This is not an unimportant phenomenon, of course, but to ignore the larger economic impact and its course over time is to miss the opportunity to make one of the strongest cases for agricultural trade reform.

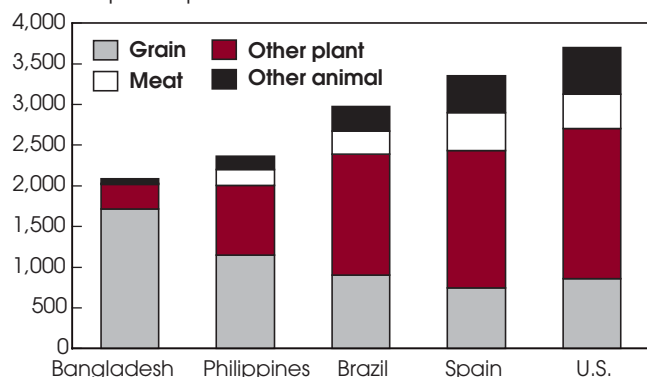
The bedrock of the story is the relationship between food demand and income. One of the facts of economic development is the change in level and composition of food consumption as the incomes of a nation's population change over time. This phenomenon can be considered in the aggregate, by looking at country consumption profiles, but a national perspective necessarily obscures differences in the distribution of food across households and individuals. Two important observations flow from looking at amount and composition of calories consumed per capita across countries. One is that overall calories consumed increase with income. The second is that the composition of the diet also changes, incorporating needed protein through such foods as meat and animal products as income grows.

The change in diet can be viewed in a more dynamic way, keeping the focus on aggregate country level and paying particular attention to meat demand, to see how world market dynamics are determined. As a country moves up the income ladder, the popu-

Special Article

Composition of Diet Changes as Per Capita Income Grows

Calories per capita



Economic Research Service, USDA

lation's willingness to spend additional money on food (and on meat) changes. At low levels of income, the income elasticity of demand for meat is very high—meaning consumers' meat consumption will strongly increase with income—but the elasticity declines with income growth (diets need balance). The budget share of food expenditures that goes to meat increases with income. Empirical evidence gathered in many countries over many decades confirms the existence of a strong structural force that fuels demand for meat products, or inputs to the production of meat. This fundamental relationship between income growth and food demand is known as Engel's Law. Consistent with the evidence, the International Food Policy Research Institute projects that by 2020, 85 percent of the increase in global demand for cereals and meat will occur in developing countries, and demand for meat in the developing world could potentially double.

Developed Countries' Competitive Edge: Livestock & Food Grain Production

To complete the market picture, consider the supply side. Which countries produce the most livestock and/or feedgrains that food animals consume? The answer is many developed countries, and the U.S. in particular. Not only do the U.S. and its developed-country competitors in these markets produce livestock and feedgrains, but they also have a competitive edge in doing so. The expansion in the share of meat exports relative to cereals in the value of developed-country agricultural exports between 1960 and 2000 is illustrative. The most rapid expansion has been in recent decades, which would not be expected unless these producing countries had an inherent advantage.

The apparent advantage of the U.S. and other developed countries may be due in large part to their "head start" in food animal production given their abundant high-quality resource base (land availability) and high feedgrains yield. The need to satisfy domestic consumer demand for meat arose around the middle of the last century with strong gains in affluence. Developing countries, then, might be expected to "catch up" at some point in the future by building their own domestic livestock industries. However, the tropical and subtropical settings of many developing

Changing Mix of Developed-Country Exports Reflect Growing Global Demand for High-Value Products



Product-group shares of agricultural exports of developed countries
Source: Foreign Agriculture Organization of the United Nations.
Economic Research Service, USDA

countries present challenges in management of animal disease in the large herds that currently characterize low-cost meat production. Low feedgrains yields and constraints on water availability may hinder more extensive production systems in some areas.

Trade Liberalization As Growth Catalyst

How to promote income growth in developing countries—a tall order indeed, but here the focus is on the potential contribution of trade liberalization. The "three pillars" of agricultural trade liberalization are: 1) increases in market access through lower tariffs, 2) eliminations of export subsidies, and 3) elimination of domestic subsidies that distort markets. What effect would successful multilateral agricultural trade liberalization have on the prospects for income growth in developing countries?

To answer that question, we use a dynamic computable general equilibrium (CGE) model, one that captures all transactions in the circular flow of income among economic actors in an economy. This framework also permits tracing the flow of income from producers to households, government, and investors and finally back to demand for goods in product markets. The model provides projections for individual commodity imports and exports but also for the full economy over time. The results show the expected increase in the value and volume of both imports and exports for developing countries that arise largely from improvements in market access. Such results are familiar parts of the debate over gains from freer trade, but they tell only part of the story.

The picture changes when considering potential welfare and income gains and how they accumulate over time. Estimates of gains from agricultural trade liberalization are shown under different assumptions about the increases in developing countries' total factor productivity (TFP) that can occur as a result of reform, in addition to gains from investment incentives. The productivity gains come about from spillovers of developed country technology into developing countries that in turn yield increases in labor productivity and returns to land and social capital. This growth then attracts additional capital investment from external sources. Varying assumptions about the magnitude of this change

in productivity are illustrative. With no productivity increase, these gains are associated only with the commodity trade changes, and they do not increase with time. However, as TFP increases, there are more significant gains in welfare, and they compound over the years.

While projection of anticipated TFP growth is challenging, these results dramatize its significance and the importance of appropriate technology transfer to developing countries. Future income gains would be driving the level and composition of diet change, toward demand for higher quality protein from meat animals.

To recap, trade liberalization has the potential to accelerate income growth in developing countries. It is income growth that drives change in demand for food, both in terms of total calories consumed and in the source of calories, and that favors an increase in calories derived from meat and animal products. This change in demand can and often does result in demand for imports of livestock products and/or derived demand for feedgrains. The U.S. is a highly competitive exporter of meat products and feedgrains; its advantage would only be enhanced by reform, given our ample resource base.

If the focus of trade liberalization benefits is only on immediate changes in commodity trade levels, an important gain is overlooked. There is good reason to expect trade liberalization to support income growth in developing countries, and some of this income will assuredly be spent on more food and, in particular, on a diet upgrade to meat proteins. This source of demand expansion is a significant source of opportunity for U.S. producers who otherwise face a stable and mature domestic food market.

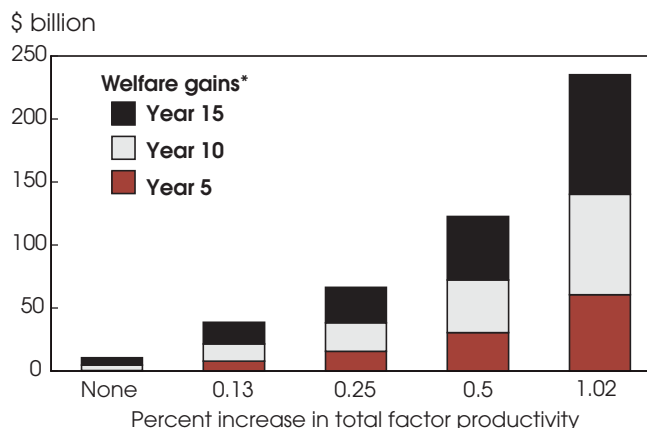
From Here to Liberalized Trade

The strong positive relationship between income growth and food demand is a well-established lesson of economic history. But even if the future prosperity of U.S. agriculture does lie in developing-country markets, there remains the question of how to get from here to there. What might the path of adjustment to freer world agricultural markets look like?

It seems reasonable to assume that successful trade liberalization will require the U.S. to reduce its domestic spending on agriculture and to loosen import restrictions; indeed, that is what the U.S. has itself proposed. In that case, the deflation of farmland values could likely be the biggest challenge to adjustment.

ERS research has shown that the value of government payments has been capitalized into land values; nationally, about 15-20 percent of value is derived from the ability of landowners to garner government payments. Deflating farmland values would represent a cost of adjustment that would likely be felt before the full gains from expanded exports began to accrue. But expectations about future returns also affect farmland values; while reductions in subsidies might have a depressing effect, recognition of the future potential for market expansion might buoy values. In order to be realistic in assessing prospects for U.S. farmers' support of trade liberalization, the time lag between the costs and benefits of trade and policy reform should be considered.

As Productivity Rises in Developing Countries, Gains in Welfare Increase Over Time



*Welfare gains defined as the increase in purchasing power due to productivity change.

Economic Research Service, USDA

But there are those who, perhaps disappointed by the results of previous trade rounds, will consider it misguided to pin hopes for U.S. farm prosperity on developing countries' uncertain prospects for economic growth. In that case, one has to consider the alternative to trade liberalization. That is, can returns to the U.S. agricultural sector be maintained by government programs in the absence of market expansion?

The level of payments in the 2002 Farm Act are comparable to the level of payments made in the preceding 4 or 5 years, which included those mandated by the 1996 Act and those subsequently enacted as supplementary assistance. This spending occurred in a context in which Federal budget surpluses were present and expected into the foreseeable future. But now the Congressional Budget Office is predicting deficits through the end of the decade. Faced with the prospects of red ink, Congress and the President have in the past agreed to restrain spending across many Federal programs, including agricultural programs. How will projected spending under the 2002 Farm Act fare in such a constrained environment?

Much is at stake in the next trade round. While attention is most frequently trained on commodity-by-commodity impacts of trade liberalization, the most compelling economic story lies with the potential for income gain in developing countries. The long-observed relationship between increases in income and spending on food—Engel's Law—is one of the few tenets in economics that seems to hold over time and across countries. Still, even a compelling structural argument for trade liberalization has to acknowledge the costs of adjustment in reaching reconfiguration of world agricultural markets. To be serious about handicapping the prospects for reform will require serious thought about how to get from the current policy structure to the next.

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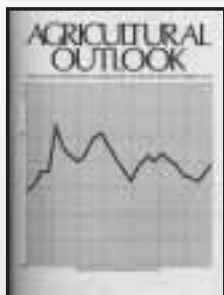
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Ring in the New

Agricultural Outlook Bows Out with December Issue

As the year ends, Agricultural Outlook ends a 27-year run and makes way for a new magazine that USDA's Economic Research Service (ERS) will unveil in February 2003.



The AO Mission

Launched in June 1975, *Agricultural Outlook* combined the functions of a small ERS monthly newsletter (*Agricultural Outlook Digest*) and two quarterly reports covering demand, prices, and farm income. The magazine format accommodated discussion of "what is happening and why it is happening" in the agricultural sector. AO was also to be

the vehicle for providing summary data that were not all being published monthly.

Agricultural Outlook has traditionally specialized in several core issues—commodity outlook, as well as developments in the trade arena and farm income. A particular strength of AO has been its coverage of agricultural and trade policy, presenting complex issues in compact articles. It also regularly included overviews of the farm and general economy.



The Interim and the Internet

As policy concerns broadened, so did the range of issues addressed in the pages of AO. Articles on the environment, rural America, and food safety and quality became more frequent over the years. But even as the menu of topics expanded, AO continued to focus on its core issues.

The advent of the Internet offered potential for reaching a wider audience, and at the same time diminished the urgency of delivering a monthly printed magazine. Since 1996, AO has been available on the internet in pdf format. The Economic Research Service now produces virtually all its regular commodity and farm-sector outlook reports (with accompanying text and tables) as electronic publications. All ERS products are accessible on the agency's website, and a number of key reports, analysis, and data are available on the web *only*. In short, the internet has become the principal medium for delivering ERS information and data.



December 1996,
first available in pdf on the web

New ERS Magazine to Debut in February 2003

The new ERS flagship publication will appear both in print and on the internet, five times annually. Its "beat" will be the full range of ERS research and analysis. It will replace all three current ERS magazines—*Agricultural Outlook*, *FoodReview*, and *Rural America*. Food safety and nutrition, natural resources, and rural development will get equal billing with agriculture, trade, and policy.

Each issue of the new magazine will be a window on ERS work, offering a sample of topics from across the spectrum of the agency's program. The internet edition, to be updated with new articles and data between scheduled publication dates, will link readers directly to more detailed analysis on specific topics covered in the magazine. Data currently published in the AO appendix tables will be available on the ERS website and updated 10 times per year.

The new magazine will support the ERS goal of delivering reliable, relevant information targeted to decision makers in the public and private sectors, and will educate readers about the breadth and depth of the agency's work.

To find out more:

Watch for further details on the ERS website www.ers.usda.gov

If you have specific questions about the new magazine, contact: Sheila Sankaran at (202) 694-5010 or sankaran@ers.usda.gov

Statistical Indicators

Summary Data

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

	Annual			2001	2002				2003	
	2001	2002	2003	IV	I	II	III	IV	I	II
Prices received by farmers (1990-92=100)	102	98	--	93	100	97	--	--	--	--
Livestock & products	106	91	--	100	96	90	--	--	--	--
Crops	99	106	--	89	104	104	--	--	--	--
Prices paid by farmers (1990-92=100)										
Production items	120	119	--	118	117	118	--	--	--	--
Commodities and services, interest, taxes, and wage rates (PPITW)	124	124	--	122	123	123	--	--	--	--
Cash receipts (\$ bil.)	203	196	--	61	46	42	48	60	--	--
Livestock	106	97	--	28	25	23	23	27	--	--
Crops	96	99	--	33	21	19	26	33	--	--
Market basket (1982-84=100)										
Retail cost	177	--	--	179	181	--	--	--	--	--
Farm value	106	--	--	108	107	--	--	--	--	--
Spread	215	--	--	217	220	--	--	--	--	--
Farm value/retail cost (%)	21	--	--	21	21	--	--	--	--	--
Retail prices (1982-84=100)										
All food	173	176	179	175	176	176	176	176	178	178
At home	173	175	177	175	176	176	175	175	176	177
Away from home	174	178	182	176	177	178	179	180	181	182
Agricultural exports (\$ bil.) ¹	52.8	54.5	--	15.2	13.8	12.2	12.4	--	--	--
Agricultural imports (\$ bil.) ¹	39.0	40.0	--	10.0	10.1	10.9	9.5	--	--	--
Commercial production										
Red meat (mil. lb.)	45,663	47,242	45,465	12,048	11,259	11,733	12,030	12,220	11,154	11,432
Poultry (mil. lb.)	37,343	38,547	39,195	9,444	9,372	9,835	9,810	9,530	9,505	10,010
Eggs (mil. doz.)	7,152	7,216	7,240	1,829	1,767	1,789	1,820	1,840	1,770	1,790
Milk (bil. lb.)	165.3	170.1	172.0	40.8	42.3	44.0	42.0	41.9	43.1	44.4
Consumption, per capita										
Red meat and poultry (lb.)	213.3	219.4	215.2	54.9	52.2	55.5	55.4	56.3	52.2	54.8
Corn beginning stocks (mil. bu.) ²	1,899.1	--	--	1,899.1	1,899.1	8,264.7	--	--	--	--
Corn use (mil. bu.) ²	9,816.7	--	--	3,143.7	3,143.7	2,471.1	--	--	--	--
Prices ³										
Choice steers--Neb. Direct (\$/cwt)	72.71	66.77	71-77	65.13	70.19	65.58	63.29	67-69	68-72	71-77
Barrows and gilts--IA, So. MN (\$/cwt)	45.81	34.08	35-38	37.30	39.43	35.03	33.86	27-29	34-36	36-40
Broilers--12-city (cents/lb.)	59.10	55.90	57-61	58.50	56.00	56.10	56.40	54-56	55-59	56-60
Eggs--NY gr. A large (cents/doz.)	67.20	66.50	65-70	68.20	69.10	58.40	65.30	72-74	68-72	58-62
Milk--all at plant (\$/cwt)	14.97	12.05-12.15	11.90-12.80	14.50	13.07	12.10	11.37	11.75-12.05	11.60-12.20	11.30-12.20
Wheat--KC HRW ordinary (\$/bu.)	3.33	--	--	3.30	3.26	3.33	--	--	--	--
Corn--Chicago (\$/bu.)	2.03	--	--	2.01	2.06	2.09	2.55	--	--	--
Soybeans--Chicago (\$/bu.)	4.58	--	--	4.45	4.42	4.86	5.67	--	--	--
Cotton--avg. spot 41-34 (cents/lb)	39.68	--	--	30.62	32.32	33.12	38.96	--	--	--
	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	141.8	--
Food and fiber (mil.)	23.6	24.3	24.5	24.4	24.2	24.4	24.6	24.6	23.7	--
Farm sector (mil.)	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	--
U.S. gross domestic product (\$ bil.)	6,642.3	7,054.3	7,400.5	7,813.2	8,318.4	8,781.5	9,274.3	9,824.6	10,082.2	--
Food and fiber--net value added (\$ bil.)	957.6	1,026.9	1,048.3	1,078.7	1,102.0	1,131.6	1,180.9	1,241.2	1,244.6	--
Farm sector--net value added (\$ bil.) ⁶	70.2	77.8	73.5	85.7	82.6	73.8	71.2	75.7	73.8	--

-- = 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			2001				2002		
	1999	2000	2001	I	II	III	IV	I	II	III
<i>Billions of current dollars (quarterly data seasonally adjusted at annual rates)</i>										
Gross Domestic Product	9,274.3	9,824.6	10,082.2	10,028.1	10,049.9	10,097.7	10,152.9	10,313.1	10,376.9	10,486.1
Gross National Product	9,297.1	9,848.0	10,104.1	10,038.0	10,081.0	10,109.3	10,188.1	10,314.9	10,356.8	--
Personal consumption expenditures	6,246.5	6,683.7	6,987.0	6,904.7	6,959.8	6,983.7	7,099.9	7,174.2	7,254.7	7,364.3
Durable goods	755.9	803.9	835.9	816.8	820.3	824.0	882.6	859.0	856.9	897.5
Nondurable goods	1,830.1	1,972.9	2,041.3	2,031.5	2,044.8	2,044.3	2,044.4	2,085.1	2,108.2	2,118.4
Food	898.9	955.0	992.4	984.2	988.7	993.8	1,002.8	1,025.0	1,023.9	1,025.8
Clothing and shoes	301.0	313.7	315.3	317.9	313.6	312.1	317.4	325.8	323.9	321.9
Services	3,660.5	3,906.9	4,109.9	4,056.4	4,094.7	4,115.4	4,172.9	4,230.1	4,289.5	4,348.5
Gross private domestic investment	1,636.7	1,755.4	1,586.0	1,671.1	1,597.2	1,574.9	1,500.7	1,559.4	1,588.0	1,583.6
Fixed investment	1,577.2	1,691.8	1,646.3	1,698.3	1,654.3	1,635.5	1,597.2	1,589.4	1,584.6	1,583.3
Change in private inventories	59.5	63.6	-60.3	-27.2	-57.1	-60.6	-96.5	-29.9	3.4	0.4
Net exports of goods and services	-249.9	-365.5	-348.9	-372.7	-365.7	-312.6	-344.5	-360.1	-425.6	-437.3
Government consumption expenditures and gross investment	1,641.0	1,751.0	1,858.0	1,825.0	1,858.5	1,851.7	1,896.8	1,939.5	1,959.8	1,975.4
<i>Billions of 1996 dollars (quarterly data seasonally adjusted at annual rates) ¹</i>										
Gross Domestic Product	8,859.0	9,191.4	9,214.5	9,229.9	9,193.1	9,186.4	9,248.8	9,363.2	9,392.4	9,465.2
Gross National Product	8,883.7	9,216.2	9,237.3	9,241.7	9,224.3	9,199.8	9,283.5	9,367.5	9,376.7	--
Personal consumption expenditures	5,964.5	6,223.9	6,377.2	6,326.0	6,348.0	6,370.9	6,464.0	6,513.8	6,542.4	6,610.8
Durable goods	812.5	878.9	931.9	900.6	912.4	922.6	992.0	975.9	980.7	1,032.0
Nondurable goods	1,765.1	1,833.8	1,869.8	1,863.7	1,862.3	1,868.3	1,885.0	1,921.4	1,920.9	1,927.2
Food	846.8	879.0	887.0	889.1	887.4	884.3	887.1	901.4	899.2	898.8
Clothing and shoes	312.1	329.4	337.7	334.3	334.7	337.1	344.8	355.8	355.1	356.2
Services	3,395.4	3,524.5	3,594.9	3,576.3	3,589.3	3,597.5	3,616.6	3,642.2	3,666.2	3,686.9
Gross private domestic investment	1,660.5	1,762.9	1,574.6	1,661.8	1,583.5	1,562.7	1,490.3	1,554.0	1,583.9	1,582.8
Fixed investment	1,595.2	1,691.9	1,627.4	1,682.1	1,633.5	1,615.7	1,578.4	1,576.4	1,572.6	1,573.4
Change in private inventories	62.8	65.0	-61.4	-26.9	-58.3	-61.8	-98.4	-28.9	4.9	1.9
Net exports of goods and services	-320.5	-398.8	-415.9	-404.5	-414.8	-419.0	-425.3	-446.6	-487.4	-491.2
Government consumption expenditures and gross investment	1,540.6	1,582.5	1,640.4	1,615.7	1,638.0	1,633.3	1,674.5	1,697.3	1,703.3	1,711.1
GDP implicit price deflator (% change)	1.4	2.1	2.4	3.7	2.5	2.2	-0.5	1.3	1.2	1.1
Disposable personal income (\$ bil.)	6,627.4	7,120.2	7,393.2	7,317.5	7,340.0	7,524.2	7,391.2	7,666.7	7,786.6	7,874.4
Disposable pers. income (1996 \$ bil.)	6,328.4	6,630.3	6,748.0	6,704.3	6,694.8	6,864.0	6,729.1	6,961.0	7,022.1	7,068.7
Per capita disposable pers. income (\$)	23,749	25,237	25,957	25,785	25,805	26,387	25,853	26,759	27,124	27,364
Per capita disp. pers. income (1996 \$)	22,678	23,501	23,692	23,624	23,537	24,071	23,537	24,296	24,461	24,564
U.S. resident population plus Armed Forces overseas (mil.) ²	272.9	275.4	--	--	--	--	--	--	--	--
Civilian population (mil.) ²	271.5	273.9	--	--	--	--	--	--	--	--
	Annual			2001				2002		
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
<i>Monthly data seasonally adjusted</i>										
Total industrial production (1992=100)	144.7	151.6	144.8	142.9	143.4	144.2	145.0	145.7	145.4	145.1
Leading economic indicators (1996=100)	108.8	109.9	109.5	109.1	111.6	112.3	112.1	112.0	111.8	111.4
Civilian employment (mil. persons)	133.5	135.2	135.1	135.0	134.0	134.4	134.1	134.0	134.5	135.2
Civilian unemployment rate (%)	4.2	4.0	4.8	5.0	6.0	5.8	5.9	5.9	5.7	5.6
Personal income (\$ bil. annual rate)	7,786.5	8,406.6	8,685.3	8,707.5	8,869.2	8,906.0	8,966.0	8,962.5	8,988.8	9,025.8
Money stock-M2 (daily avg.) (\$ bil.) ³	4,654.2	4,938.6	5,458.1	5,374.1	5,476.6	5,542.5	5,578.2	5,638.5	5,682.9	5,707.0
Three-month Treasury bill rate (%)	4.66	5.85	3.45	2.87	1.72	1.74	1.71	1.68	1.63	1.63
AAA corporate bond yield (Moody's) (%)	7.04	7.62	7.08	7.17	6.76	6.75	6.63	6.53	6.37	6.15
Total housing starts (1,000) ⁴	1,640.9	1,568.7	1,602.7	1,582	1,566	1,742	1,692	1,652	1,627	1,843
Business inventory/sales ratio ⁵	1.41	1.42	1.43	1.45	1.35	1.36	1.36	1.35	1.35	--
Retail & food services sales (\$ bil.) ⁶	3,149.2	3,388.8	3,504.2	286.3	299.6	296.6	300.6	304.2	305.6	301.6
Food and beverage stores (\$ bil.)	441.4	465.3	481.1	39.7	39.9	40.0	40.0	40.1	40.1	40.1
Clothing & accessory stores (\$ bil.)	159.7	168.5	169.7	13.5	14.6	14.3	14.6	14.4	14.4	14.1
Food services & drinking places (\$ bil.)	286.3	306.1	321.0	26.3	28.1	28.1	28.3	28.1	28.1	28.1

-- = 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.

Most of the GDP data comes from news releases published by the Dept. of Commerce's Bureau of Economic Analysis (BEA). GDP news releases can be found online at <http://www.bea.gov/bea/rels.htm>. For information on GDP data from BEA, contact Virginia Mannering at (202) 606-5304.

Table 3—World Economic Growth

	Calendar year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<i>Real GDP, annual percent change</i>										
World	3.1	2.8	3.5	3.4	1.9	2.9	3.9	1.1	1.6	2.3
less U.S.	2.7	2.8	3.4	3.0	1.0	2.4	3.9	1.4	1.3	2.3
Developed economies	2.8	2.3	3.1	3.0	2.1	2.7	3.4	0.7	1.2	1.7
less U.S.	2.1	2.2	2.8	2.3	1.0	2.0	3.1	1.0	0.5	1.5
United States	4.0	2.7	3.6	4.4	4.3	4.1	3.8	0.3	2.3	2.2
Canada	4.7	2.7	1.5	4.4	3.3	4.6	4.6	1.5	3.4	3.0
Japan	0.6	1.5	5.1	1.6	-2.5	0.2	2.4	-0.3	-0.9	0.7
Australia	4.5	4.5	3.8	4.7	4.5	4.4	1.8	2.7	3.9	3.5
European Union	2.8	2.4	1.6	2.5	2.8	2.7	3.6	1.5	0.9	1.6
Transition economies	-8.1	-1.3	-0.8	1.4	-1.4	3.5	6.7	4.5	3.5	4.0
Eastern Europe	3.9	5.6	4.0	2.7	2.7	2.5	3.9	2.6	2.3	3.6
Poland	5.2	7.0	6.0	6.8	4.8	4.1	4.2	1.1	1.1	3.0
Former Soviet Union	-14.1	-5.4	-4.0	0.5	-4.4	4.2	8.8	5.9	4.3	4.3
Russia	-12.6	-4.1	-3.4	0.9	-4.9	5.0	9.1	5.1	4.0	4.2
Developing economies	6.3	5.3	5.8	5.3	1.2	3.4	5.8	2.2	3.0	4.1
Asia	8.8	8.3	7.4	5.8	0.4	6.4	7.2	3.7	5.4	5.2
East Asia	9.7	8.7	7.7	7.0	1.9	7.4	8.2	4.1	6.1	5.7
China	12.8	10.5	9.6	8.8	7.8	7.1	8.0	7.4	7.9	7.2
Taiwan	7.1	6.4	6.1	6.7	4.6	5.4	5.9	-2.2	3.2	3.5
Korea	8.2	8.9	6.8	5.0	-6.7	10.7	9.5	3.0	5.9	4.9
Southeast Asia	8.3	8.3	7.3	4.0	-7.5	3.6	6.1	1.8	3.7	3.7
Indonesia	7.5	8.2	7.8	4.7	-13.2	0.7	4.8	3.4	3.3	2.5
Malaysia	9.2	9.8	10.0	7.3	-7.4	5.8	8.4	0.5	3.5	3.6
Philippines	4.4	4.7	5.8	5.2	-0.8	3.2	4.4	3.2	4.2	3.8
Thailand	9.0	8.9	5.9	-1.7	-10.2	4.2	4.7	1.8	4.7	4.3
South Asia	6.6	7.1	6.3	4.2	6.1	6.1	4.9	4.4	4.9	5.4
India	7.3	7.7	7.0	4.6	6.8	6.5	4.9	4.5	5.0	5.6
Pakistan	3.9	5.1	3.9	1.0	2.5	4.0	3.9	3.6	4.4	5.0
Latin America	5.3	1.4	3.7	5.2	1.8	0.0	3.7	0.3	-1.3	1.9
Mexico	4.4	-6.2	5.2	6.8	4.9	3.5	6.7	-0.3	1.0	3.3
Caribbean/Central	4.1	3.8	3.6	6.4	6.8	6.9	4.9	1.5	2.4	4.1
South America	5.6	3.1	3.3	4.8	1.0	-1.1	2.9	0.4	-1.9	1.4
Argentina	5.8	-2.8	5.5	8.1	3.9	-3.2	-0.8	-4.4	-12.0	1.5
Brazil	5.9	4.2	2.8	3.2	-0.1	0.8	4.4	1.6	0.7	1.3
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	2.5	4.0
Israel	6.9	7.0	5.1	3.2	2.6	2.2	5.9	-0.6	-1.7	0.8
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	5.3	5.6
Africa	3.2	2.9	5.2	2.8	3.1	2.6	3.5	3.4	2.4	3.8
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-Saharan	2.6	3.9	4.3	3.0	1.3	1.7	3.6	2.8	2.2	3.7
South Africa	3.2	3.1	4.2	2.5	0.6	1.2	3.4	2.2	2.4	3.4
<i>Consumer prices, annual percent change</i>										
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	Oct	May	Jun	Jul	Aug	Sep	Oct
<i>1990-92=100</i>										
Prices received										
All farm products	96	102	98	94	97	98	100	100	99	95
All crops	96	99	106	88	106	106	111	114	110	101
Food grains	85	91	100	90	86	95	105	114	128	129
Feed grains and hay	86	91	99	86	94	97	102	110	112	106
Cotton	82	64	51	51	47	58	62	54	58	60
Tobacco	107	107	107	109	--	--	107	104	104	106
Oil-bearing crops	85	80	86	74	83	88	96	99	88	90
Fruit and nuts, all	101	108	110	126	106	119	129	135	132	129
Commercial vegetables	121	126	145	105	124	115	117	120	120	102
Potatoes and dry beans	93	98	139	91	173	166	175	130	109	91
Livestock and products	97	106	91	104	90	91	89	87	86	87
Meat animals	94	97	87	91	85	85	87	84	81	84
Dairy products	94	115	93	119	93	89	86	87	89	91
Poultry and eggs	106	116	97	120	96	102	97	94	94	89
Prices paid										
Commodities and services, interest, taxes, and wage rates (PPITW)	120	124	124	123	123	123	124	124	125	125
Production items	116	120	119	119	118	118	119	120	121	122
Feed	102	109	113	109	109	110	115	117	120	122
Livestock and poultry	110	111	101	113	98	95	96	97	98	101
Seeds	124	132	141	134	144	144	144	144	144	144
Fertilizer	110	123	108	110	108	109	109	109	109	108
Agricultural chemicals	120	120	119	120	118	118	118	118	118	118
Fuels	134	119	110	105	110	107	111	114	130	137
Supplies and repairs	124	128	130	129	130	130	131	131	131	131
Autos and trucks	119	118	116	117	116	115	115	114	115	116
Farm machinery	139	144	146	145	147	147	147	147	146	147
Building material	121	121	122	121	122	122	122	123	123	122
Farm services	119	121	120	121	120	121	121	121	121	121
Rent	110	117	119	117	120	120	120	120	119	119
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	152	148	153	153	149	149	149	149
Prod. items, interest, taxes & wage rates (PITW)	118	122	121	121	121	121	121	122	123	124
Ratio, prices received to prices paid (%)*	81	83	80	76	79	80	81	81	79	76
Prices received (1910-14=100)	612	649	625	600	619	622	634	638	630	605
Prices paid, etc. (1910-14=100)	1,594	1,644	1,644	1,639	1,638	1,639	1,645	1,654	1,663	1,670
Parity ratio (1910-14=100) (%)*	39	39	38	37	38	38	39	39	38	36

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	Oct	May	Jun	Jul	Aug	Sep	Oct
Crops										
All wheat (\$/bu.)	2.48	2.62	2.80	2.87	2.81	2.93	3.21	3.63	4.21	4.41
Rice, rough (\$/cwt)	5.93	5.61	4.25	4.36	3.96	3.86	3.77	3.72	3.94	3.86
Corn (\$/bu.)	1.82	1.85	2.00	1.84	1.93	1.97	2.13	2.38	2.47	2.36
Sorghum (\$/cwt)	2.80	3.37	3.50	3.30	3.17	3.83	4.06	4.21	4.30	4.22
All hay, baled (\$/ton)	76.90	85.00	97.30	98.00	102.00	95.80	93.60	93.70	95.50	94.50
Soybeans (\$/bu.)	4.63	4.54	4.30	4.09	4.64	4.88	5.35	5.53	5.39	5.16
Cotton, upland (¢/lb.)	45.00	49.80	32.40	30.70	28.60	34.90	37.60	33.00	35.20	36.50
Potatoes (\$/cwt)	5.77	5.08	6.60	5.15	10.40	9.95	10.80	7.65	6.60	5.43
Lettuce (\$/cwt) ²	13.30	17.40	17.60	11.50	9.97	10.50	11.30	14.60	14.30	12.30
Tomatoes, fresh (\$/cwt) ²	25.90	30.80	30.20	28.60	30.00	28.40	26.70	23.70	22.20	23.50
Onions (\$/cwt)	9.78	11.30	11.40	9.20	21.80	20.70	17.60	13.70	11.00	10.60
Beans, dry edible (\$/cwt)	16.40	15.50	19.40	19.20	27.50	26.70	24.50	23.40	17.90	16.10
Apples for fresh use (¢/lb.)	21.30	17.80	22.90	24.80	21.80	22.00	20.60	24.50	30.00	30.10
Pears for fresh use (\$/ton)	294.00	264.00	282.00	390.00	267.00	337.00	312.00	460.00	474.00	458.00
Oranges, all uses (\$/box) ³	5.47	3.58	3.56	4.99	4.82	4.13	3.90	6.61	6.31	4.71
Grapefruit, all uses (\$/box) ³	3.17	3.89	2.24	6.53	1.05	4.16	6.36	5.60	5.81	5.10
Livestock										
Cattle, all beef (\$/cwt)	63.40	68.60	71.30	66.50	65.20	64.10	63.80	64.30	64.80	64.10
Calves (\$/cwt)	87.70	104.00	106.00	99.70	98.50	94.80	94.90	94.40	92.00	91.10
Hogs, all (\$/cwt)	30.30	42.30	44.30	40.20	33.10	35.80	39.20	31.90	26.70	31.90
Lambs (\$/cwt)	74.50	79.80	66.90	51.40	64.30	72.80	75.70	75.00	76.10	--
All milk, sold to plants (\$/cwt)	14.38	12.40	15.05	15.60	12.20	11.60	11.20	11.30	11.60	11.90
Milk, manuf. grade (\$/cwt)	12.84	10.52	13.44	14.30	11.10	10.30	9.50	9.80	10.30	10.70
Broilers, live (¢/lb.)	37.10	33.60	39.30	41.00	32.00	33.00	31.00	29.00	30.00	28.00
Eggs, all (¢/doz.) ⁴	62.20	61.80	62.20	59.90	50.50	63.20	57.60	62.20	57.90	54.00
Turkeys (¢/lb.)	40.80	40.70	39.00	44.20	35.50	36.90	38.30	37.90	36.90	36.90

-- = 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	Oct	May	Jun	Jul	Aug	Sep	Oct
<i>1982-84=100</i>										
Consumer Price Index, all items	166.6	172.1	177.1	177.7	179.8	179.9	180.1	180.7	181.0	181.3
CPI, all items less food	167.0	172.9	177.8	178.2	180.4	180.6	180.8	181.5	181.8	182.2
All food	164.1	167.8	173.1	174.9	175.8	175.8	176.0	176.0	176.4	176.5
Food away from home	165.1	169.0	173.9	175.6	177.6	178.2	178.5	178.8	179.2	179.6
Food at home	164.2	167.9	173.4	175.2	175.5	175.0	175.2	174.9	175.2	175.1
Meats ¹	142.3	150.7	159.3	161.8	160.6	160.5	160.2	160.7	159.9	159.5
Beef and veal	139.2	148.1	160.5	161.0	162.1	160.2	159.7	160.0	159.6	159.7
Pork	145.9	156.5	162.4	167.2	161.7	162.7	162.5	163.8	161.0	159.9
Poultry	157.9	159.8	164.9	169.6	167.0	165.6	167.2	166.1	167.8	166.6
Fish and seafood	185.3	190.4	191.1	189.5	191.0	188.1	191.2	187.2	186.9	187.4
Eggs	128.1	131.9	136.4	132.3	131.8	136.0	134.8	138.5	136.1	134.7
Dairy and related products ²	159.6	160.7	167.1	170.8	169.0	168.0	167.6	167.2	166.3	166.5
Fats and oils ³	148.3	147.4	155.7	159.5	155.9	154.6	154.9	154.1	155.3	155.9
Fresh fruits	266.3	258.3	265.1	268.7	278.1	266.7	261.6	263.3	271.5	271.9
Fresh vegetables	209.3	219.4	230.6	229.1	238.6	239.3	241.8	238.9	236.1	233.5
Potatoes	193.1	196.3	202.3	216.3	248.0	253.4	260.7	263.8	246.4	232.0
Cereals and bakery products	185.0	188.3	193.8	195.2	198.2	198.7	198.7	198.6	198.4	198.9
Sugar and sweets	152.3	154.0	155.7	156.4	157.9	158.7	160.2	159.9	159.6	159.9
Nonalcoholic beverages ⁴	134.3	137.8	139.2	139.9	138.0	137.5	138.3	137.6	140.2	140.5
Apparel										
Footwear	125.7	123.8	123.0	124.9	124.5	121.2	118.5	119.7	121.6	123.0
Tobacco and smoking products	355.8	394.9	425.2	429.9	449.0	467.4	467.2	478.2	485.8	470.6
Alcoholic beverages	169.7	174.7	179.3	180.8	183.3	183.5	183.8	184.2	183.9	184.7

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	Oct	May	Jun	Jul	Aug	Sep	Oct
	1982=100									
All commodities	125.5	132.7	134.2	130.3	130.8	130.9	131.2	131.5	132.0	133.1
Finished goods ¹	133.0	138.0	140.7	139.7	138.6	139.0	138.9	138.7	138.9	140.6
All foods ²	132.2	133.0	137.3	138.2	134.5	135.0	135.0	134.7	134.1	135.0
Consumer foods	135.1	137.2	141.3	142.2	139.4	139.8	139.6	139.2	138.4	139.1
Fresh fruits and melons	103.6	91.4	97.7	101.9	103.2	90.6	84.6	90.9	90.3	93.8
Fresh and dry vegetables	118.0	126.7	124.7	110.8	118.1	131.9	138.4	127.0	115.0	119.9
Dried and dehydrated fruits	121.2	122.9	118.5	118.6	119.0	118.7	119.0	119.0	119.0	117.9
Canned fruits and juices	137.8	140.0	143.6	143.7	143.7	139.8	138.9	138.9	141.8	140.2
Frozen fruits, juices and ades	123.0	120.9	114.1	111.8	115.3	118.4	119.0	119.2	120.6	120.9
Fresh vegetables except potatoes	117.7	135.0	135.2	112.3	107.2	123.2	127.1	125.4	116.5	126.9
Canned vegetables and juices	120.9	121.2	123.8	126.5	128.3	128.0	127.5	127.3	130.1	128.8
Frozen vegetables	126.1	126.0	128.6	130.0	130.7	129.7	131.5	131.0	131.5	132.0
Potatoes	126.9	100.5	128.9	140.1	203.6	222.0	244.2	177.3	135.0	114.9
Eggs for fresh use (1991=100)	77.9	84.9	81.8	77.0	66.2	85.5	76.8	86.4	77.9	74.1
Bakery products	178.0	182.3	187.7	189.0	189.3	189.4	189.4	189.6	190.0	190.5
Meats	104.6	114.3	120.3	120.0	112.9	113.5	114.3	111.8	109.1	109.3
Beef and veal	106.3	113.7	120.6	117.5	114.5	115.7	114.5	111.1	112.2	109.3
Pork	96.0	113.4	120.3	123.4	107.7	108.8	112.4	108.6	98.4	105.1
Processed poultry	114.0	112.9	116.8	121.0	112.1	112.1	112.0	109.7	111.0	108.8
Unprocessed and packaged fish	190.9	198.1	190.8	181.4	192.6	184.3	190.7	189.0	190.8	204.7
Dairy products	139.2	133.7	145.2	150.5	136.5	135.7	134.0	134.5	133.9	136.6
Processed fruits and vegetables	128.1	128.6	129.6	130.6	132.5	131.7	131.4	131.3	133.0	132.3
Shortening and cooking oil	140.4	132.4	132.9	134.8	135.8	138.7	140.5	143.7	146.5	148.0
Soft drinks	137.9	144.1	148.2	149.3	150.8	151.0	150.9	150.8	151.3	150.4
Finished consumer goods less foods	130.5	138.4	141.4	138.9	138.6	139.3	139.3	139.3	140.0	142.1
Alcoholic beverages	136.7	140.6	145.4	146.2	146.7	147.0	146.4	146.6	146.7	148.8
Apparel	127.1	127.4	126.8	126.5	125.3	125.5	124.5	124.7	124.8	125.5
Footwear	144.5	144.9	145.8	145.7	145.9	146.0	146.1	146.0	145.9	146.2
Tobacco products	374.0	397.2	441.9	447.5	466.2	466.4	466.9	466.9	466.8	466.9
Intermediate materials ³	123.2	129.2	129.7	127.7	127.1	127.7	128.1	128.5	129.4	129.7
Materials for food manufacturing	120.8	119.2	124.3	126.4	121.2	122.1	122.8	123.1	123.9	124.3
Flour	104.3	103.8	109.9	112.7	110.9	111.5	114.4	119.8	127.9	126.3
Refined sugar ⁴	121.0	110.6	109.9	111.1	116.7	117.6	117.4	117.3	118.8	119.0
Crude vegetable oils	90.2	73.6	70.1	71.2	73.8	82.4	84.5	93.5	98.4	97.9
Crude materials ⁵	98.2	120.6	121.0	97.6	109.9	105.7	106.7	108.3	108.5	111.6
Foodstuffs and feedstuffs	98.7	100.2	106.1	104.1	98.2	96.8	97.8	99.6	100.7	99.7
Fruits and vegetables and nuts ⁶	117.4	111.1	114.4	111.5	114.5	113.4	112.8	111.5	106.1	110.8
Grains	80.1	78.3	81.2	78.5	82.8	81.5	89.9	104.6	114.1	105.8
Slaughter livestock	86.4	96.5	99.6	93.5	90.3	86.6	86.4	84.9	83.1	85.8
Slaughter poultry, live	129.9	124.7	130.7	137.2	120.8	128.8	125.7	121.1	123.1	112.3
Plant and animal fibers	86.5	93.9	67.2	48.3	52.2	58.2	67.2	67.0	64.7	66.1
Fluid milk	106.3	92.0	111.8	117.5	91.2	87.4	83.7	84.4	86.6	88.9
Oilseeds	90.8	93.8	89.7	86.7	91.5	96.9	106.8	112.6	110.2	103.4
Leaf tobacco	101.6	--	105.2	112.0	--	--	--	107.9	106.1	108.8
Raw cane sugar	113.7	101.8	111.4	110.6	103.9	105.8	109.9	110.3	115.4	116.0

-- = 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	Oct	May	Jun	Jul	Aug	Sep	Oct
Market basket¹										
Retail cost (1982-84=100)	167.3	170.6	177.2	179.3	180.2	179.6	179.5	179.8	179.9	179.6
Farm value (1982-84=100)	98.3	96.9	106.2	109.6	103.0	103.2	102.0	103.1	102.8	102.1
Farm-retail spread (1982-84=100)	204.5	210.3	215.4	216.8	221.8	220.7	221.3	221.1	221.4	221.4
Farm value-retail cost (%)	20.6	19.9	21.0	21.4	20.0	20.1	19.9	20.1	20.0	19.9
Meat products										
Retail cost (1982-84=100)	142.3	150.4	159.3	161.8	160.6	160.5	160.2	160.7	159.9	159.5
Farm value (1982-84=100)	81.6	88.4	97.4	100.6	101.8	101.8	102.8	103.1	103.4	104.0
Farm-retail spread (1982-84=100)	204.7	214.0	222.8	224.6	221.0	220.7	219.1	219.8	217.9	216.5
Farm value-retail cost (%)	29.0	29.8	31.0	31.5	32.1	32.1	32.5	32.5	32.7	33.0
Dairy products										
Retail cost (1982-84=100)	159.6	160.7	167.1	170.8	169.0	168.0	167.6	167.2	166.3	166.5
Farm value (1982-84=100)	107.9	98.8	118.5	123.2	98.5	94.4	91.2	92.6	93.4	92.6
Farm-retail spread (1982-84=100)	207.2	217.7	211.8	214.7	234.0	235.9	238.0	236.0	233.5	234.7
Farm value-retail cost (%)	32.4	29.5	34.0	34.6	28.0	26.9	26.1	26.6	26.9	26.7
Poultry										
Retail cost (1982-84=100)	157.9	159.8	164.9	169.6	167.0	165.6	167.2	166.1	167.8	166.6
Farm value (1982-84=100)	119.0	117.4	126.2	132.4	103.9	107.3	102.6	96.9	99.2	93.7
Farm-retail spread (1982-84=100)	202.7	208.7	209.3	212.4	239.6	232.7	241.6	245.7	246.8	250.5
Farm value-retail cost (%)	40.3	39.3	41.0	41.8	33.3	34.7	32.8	31.2	31.6	30.1
Eggs										
Retail cost (1982-84=100)	128.1	131.9	136.4	132.3	131.8	136.0	134.8	138.5	136.1	134.7
Farm value (1982-84=100)	74.9	80.6	74.3	76.6	51.0	76.5	65.5	75.5	67.0	59.8
Farm-retail spread (1982-84=100)	223.7	223.9	248.0	232.3	276.9	242.9	259.3	251.8	260.2	269.3
Farm value-retail cost (%)	37.6	39.3	35.0	37.2	24.9	36.1	31.2	35.0	31.6	28.5
Cereal and bakery products										
Retail cost (1982-84=100)	185.0	188.3	193.8	195.2	198.2	198.7	198.7	198.6	198.4	198.9
Farm value (1982-84=100)	82.5	75.2	78.8	77.9	76.1	79.1	83.6	91.6	100.1	102.5
Farm-retail spread (1982-84=100)	199.2	204.0	209.9	211.6	215.2	215.4	214.8	213.5	212.1	212.3
Farm value-retail cost (%)	5.5	4.9	5.0	4.9	4.7	4.9	5.2	5.6	6.2	6.3
Fresh fruit										
Retail cost (1982-84=100)	294.3	284.3	291.7	296.3	306.9	293.4	287.1	290.1	299.9	300.7
Farm value (1982-84=100)	153.7	141.3	145.7	173.1	151.7	131.2	129.7	150.5	158.9	159.4
Farm-retail spread (1982-84=100)	359.3	350.3	359.1	353.2	378.5	368.3	359.8	354.6	365.0	366.0
Farm value-retail cost (%)	16.5	15.7	15.8	18.5	15.6	14.1	14.3	16.4	16.7	16.7
Fresh vegetables										
Retail cost (1982-84=100)	209.3	219.4	230.6	229.1	238.6	239.3	241.8	238.9	236.1	233.5
Farm value (1982-84=100)	118.1	121.4	129.9	108.9	146.4	154.2	151.6	141.9	122.0	117.5
Farm-retail spread (1982-84=100)	256.2	269.8	282.4	290.9	286.0	283.0	288.2	288.7	294.7	293.1
Farm value-retail cost (%)	19.2	18.8	19.1	16.1	20.8	21.9	21.3	20.2	17.5	17.1
Processed fruits and vegetables										
Retail cost (1982-84=100)	154.8	153.6	159.3	161.6	165.7	164.4	166.5	170.0	170.5	169.8
Farm value (1982-84=100)	113.5	106.4	107.9	110.6	114.4	113.1	111.1	109.9	107.9	107.5
Farm-retail spread (1982-84=100)	167.7	168.3	175.3	177.5	181.7	180.4	183.8	188.8	190.0	189.2
Farm value-retail cost (%)	17.4	16.5	16.1	16.3	16.4	16.4	15.9	15.4	15.0	15.1
Fats and oils										
Retail cost (1982-84=100)	148.3	147.4	155.7	159.5	155.9	154.6	154.9	154.1	155.3	155.9
Farm value (1982-84=100)	89.0	80.9	76.9	74.6	82.7	90.6	96.0	101.2	98.6	101.9
Farm-retail spread (1982-84=100)	170.0	171.9	184.7	190.7	182.8	178.1	176.6	173.6	176.1	175.8
Farm value-retail cost (%)	16.2	14.8	13.3	12.6	14.3	15.8	16.7	17.7	17.1	17.6

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	Annual			2001			2002			
	1999	2000	2001	Oct	May	Jun	Jul	Aug	Sep	Oct
Beef, all fresh retail value (cents/lb.)	260.5	275.3	300.5	303.1	309.0	302.0	301.9	304.2	299.1	304.5
Beef, Choice										
Retail value (cents/lb.) ²	287.8	306.4	337.7	338.0	333.5	330.0	328.9	334.5	329.4	325.8
Wholesale value (cents/lb.) ³	171.6	182.3	192.1	180.4	180.7	178.7	172.4	174.0	175.4	175.2
Net farm value (cents/lb.) ⁴	141.1	149.0	154.5	142.3	141.4	138.6	135.4	134.9	139.2	139.5
Farm-retail spread (cents/lb.)	146.7	157.4	183.2	195.7	192.1	191.4	193.5	199.6	190.2	186.3
Wholesale-retail (cents/lb.) ⁵	116.2	124.1	145.6	157.6	152.8	151.3	156.5	160.5	154.0	150.6
Farm-wholesale (cents/lb.) ⁶	30.5	33.3	37.6	38.1	39.3	40.1	37.0	39.1	36.2	35.7
Farm value-retail value (%)	49.0	48.6	45.8	42.1	42.4	42.0	41.2	40.3	42.3	42.8
Pork										
Retail value (cents/lb.) ²	241.5	258.2	269.4	276.4	269.9	266.6	264.2	266.6	261.6	261.0
Wholesale value (cents/lb.) ³	99.0	114.5	117.8	113.5	99.3	102.6	104.0	96.8	91.2	98.1
Net farm value (cents/lb.) ⁴	60.4	79.4	81.2	73.1	61.8	66.3	72.0	60.1	47.7	56.1
Farm-retail spread (cents/lb.)	181.1	178.8	188.2	203.3	208.1	200.3	192.2	206.5	213.9	204.9
Wholesale-retail (cents/lb.) ⁵	142.5	143.7	151.6	162.9	170.6	164.0	160.2	169.8	170.4	162.9
Farm-wholesale (cents/lb.) ⁶	38.6	35.1	36.6	40.4	37.5	36.3	32.0	36.7	43.5	42.0
Farm value-retail value (%)	25.0	30.8	30.1	26.4	22.9	24.9	27.3	22.5	18.2	21.5

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			2001				2002		
	1999	2000	2001	I	II	III	IV	I	II	III
1987=100*										
Labor—hourly earnings and benefits	503.3	514.0	533.8	527.5	531.8	534.4	541.5	548.2	551.3	552.5
Processing	511.4	525.0	544.8	536.4	542.7	546.5	553.4	554.6	560.2	563.0
Wholesaling	564.6	589.4	615.4	606.4	611.3	618.7	625.5	625.8	627.0	630.5
Retailing	465.8	469.9	486.9	483.8	485.8	485.2	492.7	507.5	509.0	507.3
Packaging and containers	399.4	412.0	415.9	414.2	417.8	416.6	414.9	415.6	416.1	418.4
Paperboard boxes and containers	373.0	407.7	411.7	412.0	413.1	412.1	409.7	406.9	403.7	405.1
Metal cans	486.6	452.5	444.4	441.5	444.3	446.0	445.7	451.6	454.2	452.6
Paper bags and related products	440.9	470.4	475.7	474.2	481.3	474.6	472.6	473.8	474.0	478.0
Plastic films and bottles	324.2	336.7	344.2	344.0	345.8	344.4	342.6	340.2	339.7	344.4
Glass containers	447.1	450.8	469.7	460.2	471.7	473.7	473.0	480.8	494.6	500.9
Metal foil	227.3	232.4	241.4	235.5	246.1	242.7	241.4	241.6	243.1	243.3
Transportation services	394.0	394.3	404.0	401.0	403.1	406.3	405.9	405.3	405.3	406.0
Advertising	623.7	635.7	646.6	644.3	645.6	646.0	649.3	660.0	662.9	664.6
Fuel and power	651.5	841.1	803.5	830.3	826.6	826.4	730.7	699.3	748.5	788.3
Electric	489.4	498.2	532.3	514.3	526.1	559.9	529.1	516.8	526.0	544.8
Petroleum	565.9	1,135.8	912.7	998.5	974.7	937.2	740.4	678.2	808.6	879.2
Natural gas	1,235.6	1,275.4	1,354.3	1,403.3	1,391.5	1,363.3	1,259.1	1,226.6	1,247.8	1,294.1
Communications, water and sewage	309.3	309.1	313.7	312.6	312.5	314.2	315.5	317.1	315.9	319.0
Rent	256.9	258.2	257.5	259.2	257.7	257.1	256.0	254.8	253.9	253.9
Maintenance and repair	541.6	561.2	582.3	574.8	578.8	585.2	590.3	595.4	599.6	600.8
Business services	531.9	544.6	559.3	555.3	558.0	560.4	563.1	566.4	570.4	571.2
Supplies	327.7	348.5	344.8	349.2	347.0	342.8	339.1	339.1	344.5	347.4
Property taxes and insurance	619.7	654.6	691.9	680.9	687.5	695.1	704.3	711.6	716.9	722.7
Interest, short-term	103.7	115.4	61.0	91.0	64.1	55.0	33.8	32.5	32.6	28.6
Total marketing cost index	472.2	491.5	501.9	499.5	502.1	503.6	502.2	504.7	509.2	512.3

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	Produc- tion ¹	Imports	Total supply	Exports	Ending stocks	Consumption		Conversion factor ³	Primary market price ⁴
							Total	Per capita ²		
				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	27,186	3,306	31,098	2,468	675	27,955	68	0.700	66.77
2003	675	25,755	3,305	29,735	2,530	350	26,855	64	0.700	74.25
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	19,773	1,057	21,366	1,588	575	19,203	52	0.776	34.08
2003	575	19,442	1,080	21,097	1,620	600	18,877	50	0.776	36.50
Veal⁶										
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	202	0	208	0	5	203	1	0.83	97.03
2003	5	195	0	200	0	5	195	1	0.83	105.34
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	221	166	399	5	13	381	1	0.89	70.56
2003	13	213	172	398	5	13	380	1	0.89	71.00
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	47,382	4,529	53,071	4,061	1,268	47,742	121	--	--
2003	1,268	45,605	4,557	51,430	4,155	968	46,307	116	--	--
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	5,555	712	25,482	77	0.859	59
2002	712	31,987	12	32,710	5,108	825	26,777	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	--
2000	8	531	0	540	220	9	311	1	1	--
2001	9	515	0	527	182	8	337	1	1	--
2002	8	543	0	554	138	8	408	1	1	--
2003	8	520	0	532	160	8	364	1	1	--
Turkeys										
1999	304	5,230	1	5,535	378	254	4,902	18	1	69
2000	254	5,333	1	5,589	445	241	4,902	17	1	71
2001	241	5,489	1	5,732	487	241	5,004	18	1	66
2002	241	5,596	1	5,837	456	325	5,056	18	1	65
2003	325	5,601	1	5,927	490	325	5,111	18	1	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	6,224	960	30,823	95	--	--
2002	960	38,126	16	39,102	5,702	1,158	32,241	98	--	--
2003	1,158	38,767	17	39,942	6,100	1,108	32,733	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	10,060	2,120	76,912	213	--	--
2002	2,120	85,508	4,545	92,173	9,763	2,426	79,983	219	--	--
2003	2,426	84,372	4,574	91,372	10,255	2,076	79,040	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		Primary market price*
								Total	Per capita	
	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	7,216.0	13.8	7,240.2	182.5	959.8	12.0	6,085.9	252.6	66.5
2003	12.0	7,240.0	8.0	7,260.0	168.0	975.0	12.0	6,105.0	251.0	67.8

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	Commercial			Imports	Total commer- cial supply	Commercial			All milk price ¹	CCC net removals	
		Farm use	Farm market- ings	Beg. stocks			CCC net re- movals	Ending stocks	Disap- pear- ance		Skim solids basis	Total solids basis ²
		Million lbs. (milkfat basis)								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	170.1	1.2	168.8	7.0	4.9	180.8	0.3	8.5	171.7	12.10	9.9	6.7
2003	172.0	1.2	170.8	8.8	4.8	184.4	0.7	6.6	177.1	12.35	7.4	4.7

Values for last 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			2001			2002			
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
Broilers										
Federally inspected slaughter certified (mil. lb.)	29,741.4	30,495.2	31,265.8	2,438.7	2,764.9	2,899.1	2,585.2	2,827.3	2,829.3	2,597.0
Wholesale price, 12-city (cents/lb.)	58.1	56.2	59.1	61.9	53.5	56.4	58.4	57.5	55.7	55.9
Price of grower feed (\$/ton) ¹	103.1	104.7	101.3	102.4	101.7	104.9	110.0	119.2	126.1	127.7
Broiler-feed price ratio ²	7.2	6.6	7.8	8.4	5.9	6.1	6.0	5.2	4.6	4.7
Stocks beginning of period (mil. lb.)	711.1	795.6	797.6	615.5	802.6	847.1	829.0	848.3	861.4	817.8
Broiler-type chicks hatched (mil.)	8,715.4	8,846.2	6,048.4	738.4	765.0	798.3	776.4	781.4	779.8	741.1
Turkeys										
Federally inspected slaughter certified (mil. lb.)	5,296.5	5,402.2	5,561.7	429.1	494.1	499.7	453.7	485.6	481.9	444.8
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)	69.0	70.5	66.3	68.8	59.5	63.5	65.7	66.5	66.6	67.2
Price of turkey grower feed (\$/ton) ¹	95.0	95.9	95.8	97.6	95.9	98.6	102.5	111.0	120.3	125.1
Turkey-feed price ratio ²	8.6	8.7	8.2	8.3	6.8	7.2	7.2	6.9	6.3	5.9
Stocks beginning of period (mil. lb.)	304.3	254.3	241.3	545.3	456.3	516.0	578.9	644.1	705.4	685.6
Poults placed in U.S. (mil.)	296.1	297.3	301.6	22.4	26.2	25.6	24.4	25.6	24.9	22.7
Eggs										
Farm production (mil.)	82,944.0	84,393.0	85,819.0	7,044.0	7,081.0	7,274.0	7,116.0	7,341.0	7,353.0	7,145.0
Average number of layers (mil.)	322.9	328.3	335.4	335.0	335.7	334.9	335.0	335.3	336.0	337.2
Rate of lay (eggs per layer on farms)	256.8	257.1	255.8	21.0	21.1	21.7	21.2	21.9	21.9	21.2
Cartoned price, New York, grade A large (cents/doz.) ³	65.6	68.9	67.1	61.5	55.8	53.3	66.1	64.6	67.3	64.0
Price of laying feed (\$/ton) ¹	124.6	123.6	123.8	130.6	142.2	153.0	133.1	153.6	155.5	165.4
Egg-feed price ratio ²	9.8	10.6	9.9	8.5	7.3	6.6	9.5	7.5	8.0	7.0
Stocks, first of month										
Frozen (mil. doz.)	8.4	7.6	11.4	13.5	8.9	7.8	8.4	9.7	9.8	10.0
Replacement chicks hatched (mil.)	451.7	430.4	315.3	36.9	38.2	38.9	35.3	35.2	35.9	35.4

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	Sep	Apr	May	Jun	Jul	Aug	Sep
Class III (BFP before 2000) 3.5% fat (\$/cwt.)	12.43	9.74	13.10	15.90	10.85	10.82	10.09	9.33	9.54	9.92
Wholesale prices										
Butter, Central States (cents/lb.) ¹	125.2	118.5	167.7	219.7	120.8	109.2	105.8	104.0	101.6	96.3
Am. cheese, Wis. assembly pt. (cents/lb.)	142.3	116.2	144.9	173.9	125.8	122.1	115.1	109.7	116.5	119.5
Nonfat drv milk (cents/lb.) ²	103.5	101.6	100.8	99.3	90.6	91.7	92.1	92.7	93.2	94.7
USDA net removals										
Total (mil. lb.) ³	343.5	841.4	144.7	2.4	21.6	25.2	19.1	24.9	64.9	19.0
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	3.9	0.7	0.0	0.0	0.0	0.7	5.9	1.1
Nonfat dry milk (mil. lb.)	540.6	692.6	495.9	7.5	98.2	114.7	86.9	84.6	47.8	39.8
Milk										
Milk prod. 20 states (mil. lb.)	140,062	144,535	142,817	11,376	12,555	13,021	12,315	12,306	12,232	11,663
Milk per cow (lb.)	18,109	18,533	18,438	1,472	1,619	1,677	1,583	1,581	1,570	1,498
Number of milk cows (1,000)	7,734	7,799	7,746	7,730	7,754	7,764	7,779	7,783	7,790	7,785
U.S. milk production (mil. lb.) ⁴	162,716	167,559	165,336	13,124	14,569	15,105	14,280	14,239	14,149	13,486
Stocks, beginning ⁵										
Total (mil. lb.)	5,302	6,186	7,010	9,280	9,866	11,255	12,141	12,637	13,009	12,447
Commercial (mil. lb.)	5,274	6,142	6,871	9,001	9,609	10,968	11,837	12,317	12,701	12,112
Government (mil. lb.)	28	44	139	279	257	287	304	319	308	335
Imports, total (mil. lb.) ³	4,772	4,445	5,716	319	386	412	457	504	420	405
Commercial disappearance (mil. lb.) ³	164,947	169,132	169,441	13,582	13,473	14,520	14,137	14,230	14,989	14,585
Butter										
Production (mil. lb.)	1,277.1	1,256.0	1,236.8	86.7	132.4	126.5	96.9	94.0	88.5	92.2
Stocks, beginning (mil. lb.)	25.9	24.9	24.0	117.0	144.4	197.1	224.6	241.0	243.3	227.0
Commercial disappearance (mil. lb.)	1,310.7	1,280.0	1,280.8	95.7	82.3	101.0	83.6	94.7	107.5	113.8
American cheese										
Production (mil. lb.)	3,532.6	3,641.6	3,519.2	277.0	316.8	326.2	310.3	301.2	305.8	286.8
Stocks, beginning (mil. lb.)	407.6	458.0	521.1	497.5	497.4	507.6	530.5	544.9	570.5	563.4
Commercial disappearance (mil. lb.)	3,542.2	3,595.8	3,656.7	291.5	309.1	309.4	312.2	288.9	318.0	341.1
Other cheese										
Production (mil. lb.)	4,361.5	4,616.4	4,609.9	364.7	382.5	397.9	378.7	370.0	381.6	371.2
Stocks, beginning (mil. lb.)	109.5	163.3	185.2	222.1	232.5	246.4	252.1	246.8	257.5	233.0
Commercial disappearance (mil. lb.)	4,672.1	4,959.1	4,952.3	392.1	405.8	425.8	410.9	393.9	436.4	393.0
Nonfat dry milk										
Production (mil. lb.)	1,359.7	1,451.8	1,413.8	94.4	158.3	158.1	147.6	123.7	114.4	93.8
Stocks, beginning (mil. lb.)	56.9	150.9	146.3	109.0	157.8	160.8	165.8	173.7	137.8	109.5
Commercial disappearance (mil. lb.)	737.2	770.6	946.4	94.0	57.6	41.1	54.4	78.4	96.6	78.0
Frozen dessert										
Production (mil. gal.) ⁵	1,301.0	1,304.9	1,325.4	105.4	121.4	121.3	126.4	127.4	119.9	105.9
	Annual		2001				2002			
	1999	2000	2001	I	II	III	IV	I	II	III
Milk production (mil. lb.)	162,716	167,559	165,336	41,267	42,681	40,570	40,818	42,256	43,954	41,874
Milk per cow (lb.)	17,772	18,201	18,139	4,514	4,683	4,459	4,483	4,639	4,806	4,572
No. of milk cows (1,000)	9,156	9,206	9,115	9,143	9,114	9,098	9,105	9,109	9,145	9,159
Milk-feed price ratio	2.03	1.75	--	--	--	--	--	--	--	--
Returns over concentrate costs (\$/cwt milk)	11.40	9.40	--	--	--	--	--	--	--	--

-- = 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			2001				2002		
	1999	2000	2001	I	II	III	IV	I	II	III
U.S. wool price (¢/lb.) ¹	110	108	121	101	130	125	126	151	190	199
Imported wool price (¢/lb.) ²	136	137	160	151	155	167	168	233	251	255
U.S. mill consumption, scoured										
Apparel wool (1,000 lb.)	63,535	62,041	52,969	17,003	13,519	11,584	10,863	10,969	10,471	--
Carpet wool (1,000 lb.)	13,950	15,205	13,010	4,280	3,791	2,919	2,320	1,856	1,860	--

-- = 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	Oct	May	Jun	Jul	Aug	Sep	Oct
Cattle on feed (7 states, 1000+ head capacity)										
Number on feed (1,000 head) ¹	9,021	9,752	10,076	9,613	9,389	9,449	9,056	8,750	8,845	9,088
Placed on feed (1,000 head)	21,446	21,875	21,145	2,315	1,990	1,422	1,619	1,936	1,853	2,008
Marketings (1,000 head)	20,124	20,674	19,955	1,640	1,864	1,773	1,889	1,806	1,565	1,706
Other disappearance (1,000 head)	676	702	774	57	66	42	36	35	45	75
Market prices (\$/cwt)										
Slaughter cattle										
Choice steers, 1,100-1,300 lb.										
Texas	65.89	69.86	71.98	66.30	65.49	63.85	63.57	63.41	65.63	66.64
Neb. direct	65.56	69.65	72.43	66.68	65.32	63.64	62.49	62.96	64.43	64.93
Boning utility cows, Sioux Falls	38.40	41.71	44.49	43.25	42.45	41.50	37.63	37.50	37.94	35.80
Feeder steers										
Medium no. 1, Oklahoma City										
600-650 lb.	82.64	94.31	95.29	87.99	88.53	80.89	82.36	83.99	83.29	83.81
750-800 lb.	76.39	86.14	88.20	88.03	76.74	77.42	77.52	76.68	80.41	80.47
Slaughter hogs										
Barrows and gilts, 51-52 percent lean										
National Base converted to live equal.	34.00	44.70	45.81	41.27	34.72	37.36	40.60	34.00	26.98	31.69
Sows, Iowa, S.MN 1-2 300-400 lb.	19.26	29.79	33.98	31.60	25.41	21.11	21.04	20.87	15.38	26.33
Slaughter sheep and lambs										
Lambs, Choice, San Angelo	75.96	79.40	72.04	57.67	64.06	68.75	75.83	74.35	73.69	76.20
Ewes, Good, San Angelo	42.45	46.23	45.66	38.50	38.00	34.83	35.42	36.55	35.58	37.25
Feeder lambs										
Choice, San Angelo	80.74	95.86	89.38	68.50	78.83	74.75	79.33	77.30	76.13	84.65
Wholesale meat prices, Midwest										
Boxed beef cut-out value										
Choice, 700-800 lb.	110.90	117.45	122.17	113.58	115.60	114.53	109.35	109.91	110.64	110.26
Select, 700-800 lb.	101.91	108.83	114.42	104.64	106.16	107.22	105.14	102.94	101.91	101.47
Canner and cutter cow beef	66.51	72.57	--	--	--	--	--	--	--	--
Pork cutout	53.45	64.07	66.83	60.68	51.90	54.40	58.48	52.61	45.88	52.49
Pork loins, bone-in, 1/4" trim, 14-19 lb.	100.38	117.13	116.97	108.69	101.71	104.80	108.64	97.85	87.17	93.04
Pork bellies, 12-14 lb.	57.12	77.46	78.61	61.30	58.85	65.90	81.06	67.98	57.05	76.24
Hams, bone-in, trimmed, 20-23 lb.	45.18	52.02	56.86	57.38	33.10	34.36	42.09	35.93	37.40	47.92
All fresh beef retail price	260.50	275.30	275.30	303.10	309.00	302.00	301.90	304.20	299.10	304.50
Commercial slaughter (1,000 head) ²										
Cattle	36,150	36,246	35,370	3,162	3,147	3,063	3,187	3,213	2,865	3,267
Steers	17,932	18,063	17,386	1,522	1,640	1,620	1,681	1,692	1,444	1,579
Heifers	11,868	12,039	11,576	1,037	988	943	976	980	903	1,084
Cows	5,710	5,520	5,774	544	464	446	479	485	466	550
Bull and stags	639	624	632	59	54	54	51	56	52	54
Calves	1,282	1,132	1,007	94	78	76	96	96	89	101
Sheep and lambs	3,701	3,460	3,222	318	284	230	258	265	276	300
Hogs	101,544	97,976	97,962	9,334	8,326	7,536	8,068	8,544	8,505	9,403
Barrows and gilts	97,732	94,604	94,588	9,024	8,027	7,251	7,750	8,215	8,220	9,083
Commercial production (mil. lb.)										
Beef	26,385	26,776	26,108	2,389	2,336	2,303	2,426	2,470	2,201	2,512
Veal	224	215	194	18	15	15	17	17	16	19
Lamb and mutton	243	232	224	20	20	15	16	17	18	20
Pork	19,278	18,929	19,139	1,838	1,647	1,480	1,557	1,637	1,638	1,831
	Annual			2001		2002				
	1999	2000	2001	II	III	IV	I	II	III	IV
Hogs and pigs (U.S.) ³										
Inventory (1,000 head) ¹	62,206	59,342	59,138	57,524	58,603	59,777	59,804	59,248	60,188	60,220
Breeding (1,000 head) ¹	6,682	6,234	6,270	6,232	6,186	6,158	6,209	6,336	6,209	6,054
Market (1,000 head) ¹	55,523	53,109	52,868	51,292	52,417	53,619	53,594	53,011	53,978	54,165
Farrowings (1,000 head)	11,641	11,462	11,303	2,870	2,878	2,889	2,837	2,933	2,834	2,818
Pig crop (1,000 head)	102,354	101,354	99,473	25,509	25,539	25,492	24,807	25,851	25,128	--
Cattle on Feed, 7 states (1,000 head) ^{1, 4}										
Steers and steer calves	5,432	5,768	5,936	5,885	5,521	5,690	6,077	6,180	5,541	5,411
Heifers and heifer calves	3,552	3,942	4,081	3,913	3,894	3,882	3,769	3,718	3,474	3,616
Cows and bulls	37	42	59	61	51	41	64	36	41	61

-- = 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		Yield	Production	Total supply ^a	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ^b
	Planted	Harvested									
	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	48.6	40.2	1,957	2,941	193	1,009	961	2,164	777	2.78
2002/03*	60.4	45.8	35.3	1,616	2,474	150	1,016	950	2,116	358	3.65-3.95
Rice ⁶	Mil. acres	Lb./acre					Mil. cwt (rough equiv)				\$/cwt
1998/99	3.3	3.3	5,663	184.4	223.0	--	6/ 114.0	86.8	200.9	22.1	8.89
1999/00	3.5	3.5	5,866	206.0	238.2	--	6/ 121.9	88.8	210.7	27.5	5.93
2000/01	3.1	3.0	6,281	190.9	229.2	--	6/ 117.5	83.2	200.7	28.5	5.61
2001/02*	3.3	3.3	6,429	213.0	254.7	--	6/ 121.7	94.1	215.8	39.0	4.17
2002/03*	3.2	3.2	6,611	212.0	264.0	--	6/ 125.0	100.0	225.0	39.0	3.70-4.00
Corn	Mil. acres	Bu./acre					Mil. bu.				\$/bu.
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	5,874	2,054	1,889	9,817	1,599	1.97
2002/03*	78.8	70.5	127.6	9,003	10,618	5,675	2,170	1,925	9,770	848	2.20-2.60
Sorghum	Mil. acres	Bu./acre					Mil. bu.				\$/bu.
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	211	45	241	497	59	1.95
2002/03*	9.3	7.5	50.7	381	441	115	45	245	405	36	2.25-2.65
Barley	Mil. acres	Bu./acre					Mil. bu.				\$/bu.
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	249	380	88	172	27	287	93	2.22
2002/03*	5.1	4.1	54.9	227	345	80	172	20	272	73	2.40-2.80
Oats	Mil. acres	Bu./acre					Mil. bu.				\$/bu.
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	61.4	117	286	148	72	3	223	63	1.59
2002/03*	5.0	2.1	56.8	119	282	150	72	2	224	58	1.65-1.95
Soybeans ⁷	Mil. acres	Bu./acre					Mil. bu.				\$/bu.
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	168	1,640	996	2,804	248	4.54
2001/02*	74.1	73.0	39.6	2,891	3,141	170	1,700	1,063	2,933	208	4.35
2002/03*	73.0	71.8	37.5	2,690	2,900	165	1,660	890	2,715	185	4.95-5.85
Soybean oil							Mil. lbs.				¢/lb.
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	--	--	--	18,420	20,488	--	16,210	1,401	17,611	2,877	14.15
2001/02*	--	--	--	18,898	21,820	--	16,960	2,500	19,460	2,360	16.46
2002/03*	--	--	--	18,760	21,185	--	17,400	2,300	19,700	1,485	19.50-22.50
Soybean meal							1,000 tons				\$/ton ^b
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	--	--	--	39,385	39,729	--	31,643	7,703	39,346	383	173.6
2001/02*	--	--	--	40,346	40,840	--	33,124	7,475	40,599	240	167.7
2002/03*	--	--	--	39,470	39,950	--	33,500	6,200	39,700	250	155-185

See footnotes at end of table, next page

Table 17—Supply & Utilization (continued)

	Area		Yield	Production	Total supply ³	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁴
	Planted	Harvested									
	Mil. acres	Lb./acre					Mil. bales				c/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	6.7	15.6	6.0	49.8
2001/02*	15.8	13.8	705	20.3	26.3	--	7.7	11.0	18.7	7.4	31.5
2002/03*	14.4	12.9	665	17.8	25.3	--	7.7	10.8	18.5	6.8	--

-- = Not available/applicable. *November 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 soybean 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-August 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				
	1999/2000	2000/01	2001/02	Oct	May	Jun	Jul	Aug	Sep	Oct
Wheat, no. 1 HRW, Kansas City (\$/bu.) ²	2.87	3.30	--	--	3.21	3.55	3.92	4.29	--	--
Wheat, DNS, Minneapolis (\$/bu.) ³	3.65	3.62	--	--	3.59	3.64	4.03	4.37	--	--
Rice, S.W. La. (\$/cwt) ⁴	16.79	12.99	12.46	10.58	9.15	9.13	9.13	9.13	9.25	9.25
Corn, no. 2 yellow, 30-day, Chicago (\$/bu.)	1.97	1.99	2.13	1.98	2.08	2.15	2.33	2.63	2.70	2.58
Sorghum, no. 2 yellow, Kansas City (\$/cwt)	3.10	3.41	3.65	3.38	3.44	3.57	3.97	4.60	4.86	4.70
Barley, feed, Duluth (\$/bu.)	--	--	1.40	1.50	1.55	1.55	1.55	1.74	1.80	2.00
Barley, malting, Minneapolis (\$/bu.)	--	--	--	2.42	2.45	2.48	2.56	2.69	--	3.43
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.) ⁵	52.36	51.56	33.10	28.42	31.14	36.36	39.78	39.20	37.91	39.62
Northern Europe prices cotton index (¢/lb.) ⁶	52.85	57.25	41.88	37.22	40.01	43.43	46.75	49.46	49.08	49.76
U.S. M 1-3/32 in. (¢/lb.) ⁷	59.64	62.54	45.18	40.35	42.55	46.25	49.81	50.90	48.75	51.90
Soybeans, no. 1 yellow, 15-day ⁸ Chicago (\$/bu)	4.82	4.67	4.73	4.26	4.82	5.09	5.70	5.67	5.65	5.38
Soybean oil, crude, Decatur (¢/lb.)	15.59	14.10	--	14.38	15.99	17.69	19.12	20.61	20.33	20.75
Soybean meal, high protein, Decatur (\$/ton)	167.62	173.62	--	165.45	164.30	170.35	187.50	186.25	185.45	168.14

-- = 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 soybean 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	Target price ¹	Marketing loan benefit ²	Flexibility contract pymt./ direct pymt. rates ³	Acres under contract	Contract payment yields
		\$/bu.			Mil. acres	Bu./acre
Wheat						
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	2.58		--	0.474	78.2	34.60
2002/2003 ⁴	2.80	3.86	--	0.461/0.520 ³	--	--
		\$/cwt				Cwt/acre
Rice						
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	6.50		--	2.100	4.1	48.15
2002/2003 ⁴	6.50	10.50	--	2.050/2.350 ³	--	--
		\$/bu.				Bu./acre
Corn						
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	1.89		--	0.269	81.5	102.70
2002/2003 ⁴	1.98	2.60	--	0.261/0.280 ³	--	--
		\$/bu.				Bu./acre
Sorghum						
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	1.71		--	0.324	13.5	57.00
2002/2003 ⁴	1.98	2.54	--	0.314/0.350 ³	--	--
		\$/bu.				Bu./acre
Barley						
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	1.65		--	0.206	11.0	46.60
2002/2003 ⁴	1.88	2.21	--	0.202/0.240 ³	--	--
		\$/bu.				Bu./acre
Oats						
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	1.21		--	0.022	6.5	50.60
2002/2003 ⁴	1.35	1.40	--	0.022/0.024 ³	--	--
		\$/bu.				Bu./acre
Soybeans ⁵						
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		--	--	--	--
2002/2003 ⁴	5.00	5.80	--	--/0.440 ³	--	--
		¢/lb				Lb./acre
Upland cotton						
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	51.92		--	5.990	16.2	605.80
2002/2003 ⁴	52.00	74.20	--	5.720/6.670 ³	--	--

-- = Not available. 1. Authorized by the Food Security and Rural Investment Act of 2002 (2002 Act). 2. Weighted average, based on portion of crop receiving marketing loan gains, loan deficiency payments, and no benefits (calculated by Economic Research Service). 3. First entry is the flexibility contract payment rate, second entry is the direct payment rate authorized by the 2002 Act. 4. Estimated payment rates and acres under contract. 5. 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
Citrus¹										
Production (1,000 tons)	15,274	14,561	15,799	15,712	17,271	17,770	13,633	17,276	16,216	16,392
Per capita consumpt. (lb.) ²	25.8	24.7	23.8	24.6	26.5	26.6	20.3	23.4	24.3	23.9
Noncitrus³										
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	73.3	74.8	72.6	72.7	74.7	75.0	79.9	77.1	73.3	--
2001					2002					
	Oct	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Grower prices										
Apples (¢/pound) ⁴	24.80	21.60	22.00	21.80	21.50	22.00	20.60	24.50	30.00	30.10
Pears (¢/pound) ⁴	19.50	13.80	13.35	13.35	13.35	16.85	15.60	23.00	23.70	22.90
Oranges (\$/box) ⁵	4.99	4.05	4.64	4.65	4.47	4.00	4.06	6.61	6.31	4.71
Grapefruit (\$/box) ⁵	6.53	2.01	1.66	1.38	1.50	5.81	6.47	5.60	5.81	5.10
Stocks, ending										
Fresh apples (mil. lb.)	5,564	2,958	2,221	1,550	1,043	644	316	90	2,824	5,230
Fresh pears (mil. lb.)	517	188	136	80	43	13	30	119	467	480
Frozen fruits (mil. lb.)	1,200	947	862	788	784	895	1,016	1,048	1,009	1,161
Frozen conc. orange juice (mil. single-strength gallons)	571	724	734	768	809	789	764	686	630	585

-- = 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
Production¹										
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	437,888	459,734
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	27,594
2001					2002					
	Oct	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Shipments (1,000 cwt)										
Fresh	21,334	20,758	21,353	25,061	37,589	31,401	28,311	19,370	16,621	22,276
Iceberg lettuce	3,735	2,546	2,467	3,642	4,190	3,378	4,054	3,180	3,054	3,723
Tomatoes, all	3,134	4,130	3,743	3,946	4,417	3,047	3,695	2,781	3,011	4,073
Dry-bulb onions	4,566	3,419	3,167	3,529	4,623	3,189	4,283	3,678	3,697	4,503
Others ⁶	9,899	10,663	11,976	13,944	24,359	21,787	16,279	9,731	6,859	9,977
Potatoes, all	11,896	11,368	13,965	18,128	18,881	12,152	10,830	9,957	10,074	12,921
Sweet potatoes	352	276	399	227	308	221	263	240	273	400

-- = 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, Fanny 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
<i>Million units</i>										
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)	144.9	147.4	148.0	149.9	151.1	152.4	155.0	151.5	151.0	144.7
Production (metric tons)	355.3	364.5	371.4	380.4	386.8	394.1	409.3	397.6	396.7	381.8
Exports (metric tons) ¹	16.5	20.7	19.7	18.9	27.6	24.9	22.8	24.4	26.6	26.6
Consumption (metric tons) ²	359.2	366.0	372.0	379.1	379.5	387.3	398.4	396.4	410.2	407.6
Ending stocks (metric tons) ³	120.0	118.5	117.9	119.3	126.5	133.3	144.2	145.4	132.0	106.1
Total grains										
Area (hectares)	685.5	685.9	680.6	702.6	690.2	684.7	671.2	666.2	665.9	663.9
Production (metric tons)	1,712.8	1,759.8	1,712.7	1,870.9	1,880.8	1,872.7	1,871.6	1,839.6	1,859.1	1,865.2
Exports (metric tons) ¹	204.4	220.6	206.7	213.2	217.5	223.4	240.1	231.6	235.9	230.9
Consumption (metric tons) ²	1,754.0	1,772.5	1,762.2	1,828.1	1,835.9	1,839.5	1,869.3	1,867.8	1,897.3	1,915.1
Ending stocks (metric tons) ³	471.4	458.5	409.2	449.0	493.7	527.0	529.3	501.1	462.9	413.0
Oilseeds										
Crush (metric tons)	190.1	208.1	217.5	216.7	226.4	240.4	247.5	254.4	264.5	267.3
Production (metric tons)	229.4	261.9	258.9	261.4	286.6	294.7	303.4	313.4	323.5	321.7
Exports (metric tons)	38.7	44.1	44.3	49.6	54.0	55.1	64.6	71.5	68.0	71.8
Ending stocks (metric tons)	20.3	27.2	22.2	19.1	28.6	32.4	35.1	36.0	36.9	32.8
Meals										
Production (metric tons)	131.7	142.1	147.3	147.8	153.8	164.5	168.8	175.3	182.5	186.0
Exports (metric tons)	44.9	46.7	49.8	50.7	51.8	54.3	56.0	56.9	60.0	61.3
Oils										
Production (metric tons)	63.7	69.6	73.1	73.7	75.2	80.5	86.0	89.1	91.0	91.8
Exports (metric tons)	24.3	27.1	26.0	28.3	29.8	31.3	33.1	35.0	36.6	38.0
Cotton										
Area (hectares)	30.7	32.2	36.0	33.8	33.8	33.0	32.3	32.4	34.0	31.2
Production (bales)	77.5	85.9	93.2	89.8	91.9	85.3	87.5	88.7	98.4	88.1
Exports (bales)	26.8	28.5	27.5	26.8	26.7	23.7	27.3	26.6	29.0	29.4
Consumption (bales)	85.4	84.4	85.6	87.6	87.1	84.7	91.0	92.0	94.1	96.2
Ending stocks (bales)	26.4	29.8	37.2	41.4	45.5	47.8	45.3	42.7	47.5	40.0
	1994	1995	1996	1997	1998	1999	2000	2001	2002 F	2003 F
Beef and Pork⁴										
Production (metric tons)	119.8	124.2	117.9	123.3	128.2	131.4	131.4	132.0	135.7	135.6
Consumption (metric tons)	118.8	123.2	116.2	122.0	126.8	130.7	130.5	130.5	134.5	134.7
Exports (metric tons) ¹	7.7	7.6	7.9	8.5	8.2	9.1	9.3	9.4	10.1	10.4
Broilers and Turkeys⁴										
Production (metric tons)	36.6	40.6	43.5	43.0	44.8	48.1	50.6	52.5	54.1	54.0
Consumption (metric tons)	35.7	40.1	42.9	42.5	44.1	47.6	49.6	51.1	52.9	52.7
Exports (metric tons) ¹	4.5	5.0	5.6	4.6	4.7	5.0	5.4	6.2	6.0	6.3
Dairy										
Milk production (metric tons) ⁵	--	--	--	370.1	373.7	378.1	382.4	384.4	389.8	--

-- = Not available. 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 data, 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	Oct	May	Jun	Jul	Aug	Sep	Oct
Export commodities										
Wheat, f.o.b. vessel, Gulf ports (\$/bu.)	3.04	3.17	3.50	3.39	3.31	3.63	4.10	4.45	5.20	5.29
Corn, f.o.b. vessel, Gulf ports (\$/bu.)	2.29	2.24	2.28	2.19	2.29	2.37	2.53	2.79	2.89	2.79
Grain sorghum, f.o.b. vessel, Gulf ports (\$/bu.)	2.14	2.23	2.42	2.40	2.30	2.35	2.56	2.91	2.97	2.87
Soybeans, f.o.b. vessel, Gulf ports (\$/bu.)	5.02	5.26	4.93	4.46	5.11	5.39	6.03	6.02	6.02	5.77
Soybean oil, Decatur (¢/lb.)	17.51	15.01	14.49	14.38	15.99	17.69	19.12	20.61	20.33	20.75
Soybean meal, Decatur (\$/ton)	141.52	174.69	168.49	165.45	164.28	170.33	187.41	186.25	185.45	168.14
Cotton, 7-market avg. spot (¢/lb.)	52.30	57.47	39.68	28.42	31.14	36.37	39.78	39.20	37.91	39.55
Tobacco, avg. price at auction (¢/lb.)	177.82	182.73	186.21	190.56	--	--	185.96	180.55	181.47	185.04
Rice, f.o.b., mill, Houston (\$/cwt)	16.99	14.83	14.55	14.00	12.30	11.74	11.93	11.93	12.35	10.75
Inedible tallow, Chicago (¢/lb.)	12.99	9.92	12.50	11.18	11.00	15.00	14.20	13.48	13.58	9.75
Import commodities										
Coffee, N.Y. spot (\$/lb.)	1.05	0.92	0.55	0.38	0.45	0.43	0.44	0.41	0.45	0.45
Rubber, N.Y. spot (¢/lb.)	36.66	37.72	33.88	31.97	36.93	43.53	44.26	45.20	47.90	45.70
Cocoa beans, N.Y. (\$/lb.)	0.47	0.36	0.47	0.47	0.70	0.70	0.80	0.84	0.94	0.97

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

Table 25—Trade Balance

	Fiscal year			2001		2002				
	2001	2002	2003 F	Sep	Apr	May	June	July	Aug	Sep
Exports										
Agricultural	52,699	53,294	57,500	3,899	4,035	4,097	4,078	4,105	4,120	3,946
Nonagricultural	637,935	575,289	--	50,865	48,812	50,523	50,797	45,951	49,868	48,120
Total ¹	690,634	628,583	--	54,764	52,847	54,620	54,875	50,055	53,988	52,066
Imports										
Agricultural	39,027	40,979	42,000	3,042	3,726	3,614	3,359	3,526	3,400	3,238
Nonagricultural	1,113,615	1,080,981	--	92,821	91,856	93,416	93,536	96,479	97,939	96,026
Total ²	1,152,642	1,121,960	--	95,863	95,582	97,030	96,894	100,004	101,339	99,264
Trade balance										
Agricultural	13,672	12,315	15,500	857	309	483	719	579	720	708
Nonagricultural	-475,680	-505,692	--	-41,956	-43,044	-42,893	-42,739	-50,528	-48,071	-47,906
Total ³	-462,008	-493,377	--	-41,099	-42,735	-42,410	-42,019	-49,949	-47,351	-47,198

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 Rates¹

	Annual			2002						
	1999	2000	2001	Feb	Mar	Apr	May	Jun	Jul	Aug
<i>2000 is base year</i>										
Total U.S. Trade	95.8	98.7	105.0	104.7	108.1	106.8	105.6	104.6	104.8	105.0
U.S. markets										
All agricultural trade	96.5	98.6	106.1	105.9	110.2	108.6	106.8	105.0	104.4	104.9
Bulk commodities	95.9	98.6	106.6	105.5	108.7	107.5	106.2	104.9	104.0	104.8
Corn	98.8	98.6	107.6	108.2	114.0	112.2	111.4	110.6	110.8	111.3
Cotton	95.1	98.8	106.6	104.7	103.5	102.9	102.8	103.5	103.4	103.9
Rice	95.2	98.8	105.7	104.9	107.0	105.5	104.6	103.9	104.2	105.0
Soybeans	93.9	98.3	105.6	105.3	109.0	107.4	104.4	101.2	98.4	99.7
Tobacco, raw	91.2	97.9	106.5	106.3	108.1	105.8	103.0	99.6	97.7	99.5
Wheat	94.1	98.7	106.6	105.8	110.1	109.2	108.4	107.8	107.3	108.1
High-value products	97.1	98.7	105.6	104.8	109.0	107.4	105.7	104.1	103.8	104.0
Processed intermediates	95.2	98.6	105.3	104.9	107.9	106.3	104.1	101.6	99.4	100.7
Soymeal	93.7	98.7	102.7	103.1	103.7	102.3	102.8	103.3	103.4	104.5
Soyoil	91.3	99.3	102.5	102.5	103.4	103.4	103.3	103.4	103.1	103.8
Produce and horticulture	95.9	98.5	105.7	105.3	109.7	107.9	106.0	104.4	105.6	105.0
Fruits	98.2	98.7	106.6	105.7	110.0	108.5	107.0	105.6	106.2	106.0
Vegetables	99.8	99.0	105.2	104.7	109.0	107.0	104.7	103.5	106.3	104.9
High-value processed	99.1	98.8	105.8	104.6	109.7	108.0	106.5	105.0	105.0	104.6
Fruit juices	97.0	98.5	106.3	105.3	110.2	108.0	105.1	102.4	102.4	102.4
Poultry	99.1	100.1	99.1	99.5	100.4	100.0	99.7	99.7	99.5	99.4
Red meats	102.1	98.3	110.1	106.6	113.6	111.4	109.6	107.7	107.8	107.2
U.S. competitors										
All agricultural trade	88.3	98.1	104.4	105.3	110.0	108.3	104.9	101.2	98.2	100.0
Bulk commodities	91.7	98.5	104.7	106.2	112.7	112.0	112.0	112.0	112.7	113.4
Corn	88.5	98.1	104.4	104.5	132.7	133.8	134.2	132.0	126.4	126.7
Cotton	90.5	98.3	106.6	100.6	102.9	102.2	100.6	99.9	99.5	99.3
Rice	90.7	98.1	107.4	107.8	111.6	111.2	109.8	108.5	108.7	109.8
Soybeans	94.6	99.4	110.9	119.3	131.3	131.5	139.4	147.9	150.9	154.6
Tobacco, raw	101.6	99.2	107.7	109.4	106.0	104.5	105.0	105.6	105.7	107.7
Wheat	90.4	98.0	105.0	104.9	116.3	115.3	112.5	109.9	108.3	108.4
High-value products	87.6	98.0	104.1	105.1	109.5	107.7	103.9	99.7	96.2	98.1
Processed intermediates	89.2	98.2	104.9	104.9	111.6	110.3	107.8	105.1	102.8	104.1
Soymeal	93.3	99.1	110.1	112.1	147.4	150.3	158.3	163.5	161.2	162.5
Soyoil	92.5	98.9	108.2	108.3	143.5	146.2	152.1	154.6	150.7	151.3
Produce and horticulture	88.0	98.3	102.7	103.7	106.5	104.8	101.6	98.4	95.2	97.1
Fruits	89.9	98.3	105.2	104.1	107.4	105.8	103.0	100.6	98.1	100.0
Vegetables	88.4	98.4	102.8	103.6	107.3	105.5	101.3	96.7	92.3	94.3
High-value processed	86.5	97.8	104.1	105.0	108.7	106.7	102.5	97.9	94.4	96.4
Fruit juices	87.8	98.0	104.1	103.9	107.8	105.7	101.2	96.2	92.0	94.0
Poultry	88.0	98.2	105.8	107.3	108.8	106.8	103.7	100.1	97.1	99.6
Red meats	87.4	97.7	105.4	105.7	112.6	111.2	107.5	104.6	103.1	104.9
U.S. suppliers										
All agricultural trade	93.8	98.8	103.6	103.0	104.9	103.9	102.6	101.8	101.7	102.3
High-value products	93.6	98.8	103.1	102.9	104.7	103.8	102.5	101.9	101.6	102.4
Processed intermediates	93.5	98.6	103.8	104.3	107.6	106.0	103.7	102.0	102.9	102.5
Grains and feeds	95.9	98.8	104.3	104.4	107.1	105.4	102.8	100.9	101.8	101.5
Vegetable oils	92.4	98.3	105.4	104.7	107.5	106.2	103.6	101.8	101.1	101.7
Produce and horticulture	97.0	99.9	99.9	101.9	103.0	103.6	105.0	107.3	106.3	107.1
Fruits	99.0	99.7	103.5	103.8	104.5	104.6	105.8	108.8	107.7	108.8
Vegetables	104.9	100.2	98.0	97.2	96.4	97.6	98.7	100.2	98.6	99.0
High-value processed	92.1	98.4	104.2	103.1	104.9	103.8	101.9	100.7	100.6	101.4
Cocoa and products	89.1	98.6	101.7	99.6	102.1	100.1	97.1	94.2	94.9	94.6
Coffee and products	94.7	99.6	102.3	102.3	98.8	98.5	100.0	102.1	104.2	106.0
Dairy products	86.6	97.7	103.9	103.6	107.3	105.1	100.3	96.0	94.7	95.8
Fruit juices	93.5	99.0	107.5	110.2	121.7	122.1	125.4	129.0	128.8	130.7
Meats	93.4	98.4	104.5	105.3	110.7	109.3	106.8	106.3	109.7	109.0

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 Statistics. 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			September		Fiscal year			September	
	2001	2002	2003 F	2001	2002	2001	2002	2003 F	2001	2002
	1,000 units					\$ million				
Exports										
Animals, live	--	--	--	--	--	727	696	--	20	47
Meats and preps., excl. poultry (mt) ¹	2,442	2,590	2,000	202	214	5,193	5,113	4,900	436	420
Dairy products	--	--	--	--	--	1,121	1,031	1,100	87	80
Poultry meats (mt)1b	2,810	2,586	2,400	222	162	2,084	1,879	1,700	178	115
Fats, oils, and greases (mt)	1,049	1,339	1,200	86	115	320	454	--	31	43
Hides and skins, incl. furskins	--	--	--	--	--	1,933	1,776	1,800	142	154
Cattle hides, whole	--	--	--	--	--	1,437	1,121	--	113	94
Mink pelts (no.)	4,277	4,315	--	92	135	122	121	--	3	5
Grains and feeds (mt) ²	98,895	98,757	--	8,493	7,426	13,818	14,069	16,500	1,169	1,211
Wheat (mt) ³	25,275	25,355	24,500	2,436	2,000	3,248	3,491	4,000	310	323
Wheat flour (mt)	496	463	500	18	16	107	116	--	4	6
Rice (mt)	3,058	3,509	3,400	236	302	754	730	700	59	60
Feed grains, incl. products (mt) ⁴	55,878	55,039	57,400	4,694	4,049	5,470	5,660	7,000	463	486
Feeds and fodders (mt)	12,720	12,716	12,600	996	920	2,768	2,556	2,900	216	207
Other grain products (mt)	1,468	1,676	--	113	139	1,470	1,516	--	117	129
Fruits, nuts, and preps. (mt)	3,970	3,973	--	301	314	4,101	4,205	5,000	357	389
Fruit juices, incl.										
froz. (1,000 hectoliters)	10,781	12,725	--	784	798	680	694	--	50	52
Vegetables and preps.	--	--	--	--	--	4,511	4,551	3,100	330	341
Tobacco, unmanufactured (mt)	177	163	200	6	8	1,181	1,147	1,300	41	51
Cotton, excl. linters (mt) ⁵	1,654	2,166	2,500	149	115	2,079	2,037	2,700	153	116
Seeds (mt)	703	886	--	37	40	727	839	800	48	56
Sugar, cane or beet (mt)	97	96	--	5	9	38	41	--	2	4
Oilseeds and products (mt)	37,037	40,116	32,600	1,682	1,570	8,699	9,676	9,800	443	455
Oilseeds (mt)	27,748	30,281	--	986	961	6,097	6,705	--	244	252
Soybeans (mt)	26,569	28,897	22,300	864	843	5,089	5,468	5,400	170	192
Protein meal (mt)	7,223	7,048	--	529	438	1,427	1,335	--	104	88
Vegetable oils (mt)	2,066	2,787	--	166	171	1,175	1,636	--	95	115
Essential oils (mt)	55	64	--	4	5	675	764	--	47	61
Other	--	--	--	--	--	4,811	4,320	--	365	351
Total	--	--	--	--	--	52,699	53,294	57,500	3,899	3,946
Imports										
Animals, live	--	--	--	--	--	2,198	2,022	2,100	168	154
Meats and preps., excl. poultry (mt)	1,600	1,656	1,700	134	126	4,091	4,187	4,400	345	304
Beef and veal (mt)	1,056	1,067	--	88	78	2,645	2,749	--	224	200
Pork (mt)	399	439	--	36	37	1,039	992	--	91	73
Dairy products	--	--	--	--	--	1,728	1,841	1,700	141	143
Poultry and products	--	--	--	--	--	258	317	--	19	23
Fats, oils, and greases (mt)	106	99	--	9	8	62	63	--	5	5
Hides and skins, incl. furskins (mt)	--	--	--	--	--	162	136	--	6	7
Wool, unmanufactured (mt)	21	12	--	1	1	53	31	--	3	2
Grains and feeds	--	--	--	--	--	3,189	3,594	3,800	302	367
Fruits, nuts, and preps.,										
excl. juices (mt) ⁶	8,119	8,639	8,700	524	598	4,610	4,926	5,900	287	323
Bananas and plantains (mt)	4,093	4,192	4,100	331	370	1,156	1,188	1,200	97	102
Fruit juices (1,000 hectoliters)	29,293	28,461	29,300	2,634	2,114	649	653	--	54	51
Vegetables and preps.	--	--	--	--	--	5,183	5,444	5,500	387	385
Tobacco, unmanufactured (mt)	211	271	300	17	18	648	734	700	54	44
Cotton, unmanufactured (mt)	50	27	--	3	3	27	23	--	1	3
Seeds (mt)	316	328	--	24	24	443	417	--	23	23
Nursery stock and cut flowers	--	--	--	--	--	1,156	1,135	1,200	86	87
Sugar, cane or beet (mt)	1,378	1,339	--	193	127	524	519	--	80	52
Oilseeds and products (mt)	4,082	3,649	3,200	278	291	1,680	1,679	1,900	115	146
Oilseeds (mt)	987	702	--	36	38	266	217	--	10	10
Protein meal (mt)	1,150	1,008	--	72	111	152	148	--	11	18
Vegetable oils (mt)	1,945	1,938	--	170	142	1,261	1,314	--	94	118
Beverages, excl. fruit										
juices (1,000 hectoliters)	--	--	--	--	--	4,991	5,571	--	393	449
Coffee, tea, cocoa, spices (mt)	2,491	2,605	--	193	205	3,981	4,174	--	318	352
Coffee, incl. products (mt)	1,214	1,195	1,200	86	111	1,761	1,610	1,600	114	147
Cocoa beans and products (mt)	898	986	1,000	76	61	1,391	1,715	1,800	147	143
Rubber and allied gums (mt)	1,059	1,166	1,100	71	83	668	655	700	41	63
Other	--	--	--	--	--	2,725	2,860	--	212	253
Total	--	--	--	--	--	39,027	40,979	42,000	3,042	3,238

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 Agricultural Trade of the U.S.* 1. Projection includes beef, pork, and variety meat. 1b. Projection includes only federally inspected broiler meats. 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	Sept	Apr	May	June	July	Aug	Sept
	\$ million									
Region and country										
Western Europe	6,532	6,761	7,031	398	465	449	448	379	382	376
European Union ¹	6,193	6,249	6,273	382	422	404	384	325	365	358
Belgium-Luxembourg	514	625	583	46	52	35	33	29	27	40
France	348	352	403	20	26	28	25	15	17	21
Germany	910	907	868	54	54	55	52	63	41	58
Italy	559	509	555	46	42	31	31	20	39	22
Netherlands	1,388	1,398	1,360	59	92	98	78	57	65	66
United Kingdom	1,028	1,048	1,011	80	75	73	76	73	70	73
Portugal	134	126	168	4	8	4	8	4	11	2
Spain, incl. Canary Islands	641	590	691	32	34	38	40	18	37	36
Other Western Europe	340	512	758	16	42	44	64	54	17	18
Switzerland	250	422	673	8	36	39	57	44	10	11
Eastern Europe	168	201	225	10	16	16	15	17	15	14
Poland	47	83	72	4	4	8	7	7	6	7
Former Yugoslavia	67	44	50	1	2	2	2	2	2	2
Romania	12	24	41	1	3	2	3	4	3	2
Former Soviet Union	921	1,029	896	95	21	58	55	52	69	46
Russia	659	823	711	81	14	38	50	43	58	20
Asia	21,917	22,271	21,887	1,598	1,665	1,682	1,636	1,740	1,626	1,586
West Asia (Mideast)	2,364	2,190	2,454	161	217	167	194	176	146	176
Turkey	701	564	723	38	97	72	42	49	30	36
Iraq	8	8	--	--	--	--	--	--	--	--
Israel, incl. Gaza and W. Bank	459	435	500	22	40	32	52	38	45	31
Saudi Arabia	481	470	354	42	26	25	36	33	21	27
South Asia	415	570	751	59	70	35	55	39	37	49
Bangladesh	82	104	161	7	10	5	14	6	7	4
India	185	294	328	35	39	19	30	16	14	20
Pakistan	93	97	200	10	20	11	10	17	8	16
China	1,465	1,875	1,769	73	76	92	111	97	106	99
Japan	9,301	8,942	8,291	657	670	717	621	700	665	608
Southeast Asia	2,580	2,907	2,880	175	208	211	206	236	203	206
Indonesia	675	877	783	52	71	72	61	73	59	49
Philippines	866	836	763	52	49	50	45	57	46	75
Other East Asia	5,791	5,786	5,743	472	424	461	449	493	468	449
Korea, Rep.	2,531	2,541	2,670	203	208	209	223	227	212	188
Hong Kong	1,249	1,252	1,145	108	86	93	85	85	105	91
Taiwan	2,002	1,986	1,909	161	129	159	140	171	145	169
Africa	2,236	2,126	2,406	200	210	200	181	190	217	169
North Africa	1,522	1,464	1,562	142	127	139	103	110	124	71
Morocco	139	120	119	8	3	3	13	10	3	6
Algeria	254	211	288	18	10	35	19	15	25	25
Egypt	1,056	1,004	1,025	101	111	97	59	59	89	39
Sub-Saharan	715	662	844	59	83	62	78	80	93	97
Nigeria	160	233	289	23	34	22	25	33	25	21
S. Africa	165	108	144	7	17	15	18	11	19	12
Latin America and Caribbean	10,614	11,561	11,546	903	913	895	928	915	1,022	998
Brazil	253	219	318	14	16	18	34	31	46	44
Caribbean Islands	1,463	1,398	1,495	113	129	119	120	125	127	114
Central America	1,132	1,191	1,218	101	89	95	98	99	120	86
Colombia	427	442	485	33	38	32	41	44	41	44
Mexico	6,307	7,277	7,089	572	584	548	563	537	596	624
Peru	200	182	226	17	10	30	15	22	25	17
Venezuela	405	416	329	26	16	31	23	31	35	33
Canada	7,512	7,994	8,586	662	703	759	756	760	730	700
Oceania	487	472	501	42	33	35	46	46	45	46
Total	50,744	52,699	53,294	3,899	4,035	4,097	4,078	4,105	4,120	3,946

-- = 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 transshipments through Canada for 1998 and 1999 through December 1999, transshipments 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	09/20/02 2002F	1992-2001 average
	\$ billion					
Final crop output	101.7	92.4	95.0	93.9	96.6	97.8
Food grains	8.8	7.0	6.8	6.6	6.6	8.7
Feed crops	22.6	19.6	20.8	23.2	25.0	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	12.0	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	18.4	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	96.8	94.1
Meat animals	43.3	45.6	53.0	53.3	50.2	47.9
Dairy products	24.1	23.2	20.6	24.7	20.8	21.5
Poultry and eggs	22.9	22.9	21.8	24.6	22.6	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	-1.0	0.0
Services and forestry	23.8	25.2	24.4	25.5	26.5	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	2.6	2.7
Other farm income	8.7	10.2	8.7	10.1	11.2	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	219.9	213.1
<i>Minus</i> Intermediate consumption outlays:	117.6	118.6	121.9	127.5	126.0	112.7
Farm origin	44.8	45.6	48.1	49.2	49.4	44.0
Feed purchased	25.0	24.5	24.5	25.2	26.5	23.9
Livestock and poultry purchased	12.6	13.8	16.1	15.7	13.9	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	28.2	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	3.5	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
<i>Plus</i> Net government transactions:	4.9	14.3	15.5	13.2	9.3	5.9
+ Direct government payments	12.4	21.5	22.9	20.7	17.0	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	103.3	106.2
<i>Minus</i> 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	82.4	86.8
<i>Minus</i> Factor payments:	41.6	42.2	44.0	45.2	46.3	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	12.8	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	36.2	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	196.5	190.6
Crops ¹	101.9	91.9	94.1	96.4	99.1	96.9
Livestock	94.1	95.6	99.6	106.4	97.4	93.7
2. Direct Government payments ²	12.4	21.5	22.9	20.7	17.0	13.0
3. Farm-related income ³	13.9	15.0	13.8	14.9	15.7	11.7
4. Gross cash income (1+2+3)	222.3	224.0	230.4	238.5	229.2	215.3
5. Cash expenses ⁴	165.5	166.9	172.0	178.8	178.4	158.6
6. Net cash income ⁵ (4-5)	56.8	57.1	58.4	59.7	50.8	56.8
Farm income statement						
7. Gross cash income (1+2+3)	222.3	224.0	230.4	238.5	229.2	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	-3.6	--
10. Gross farm income (7+8+9)	232.1	234.5	241.7	246.5	236.9	226.1
11. Total production expenses	186.5	188.3	193.7	200.8	200.7	179.2
12. Net farm income (10-11)	45.6	46.2	48.0	45.7	36.2	46.9

F = forecast. -- = not available. 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 Households¹

	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	2001	2002F
	<i>\$billion</i>				
Farm assets	1,083.4	1,141.1	1,206.5	1,251.0	1,260.3
Real estate	840.4	889.1	949.4	998.7	1,008.7
Livestock and poultry ¹	63.4	73.2	76.8	73.2	72.7
Machinery and motor vehicles	89.8	90.0	90.3	90.7	91.8
Crops stored ^{2,3}	29.9	28.3	27.9	25.2	25.1
Purchased inputs	5.0	4.0	4.9	4.2	4.2
Financial assets	54.7	56.6	57.1	59.0	57.8
Total farm debt	172.9	176.4	184.2	192.0	196.5
Real estate debt ³	89.6	94.2	97.6	103.0	104.6
Non-real estate debt ⁴	83.2	82.2	86.5	89.0	91.9
Total farm equity	910.5	964.7	1,022.3	1,059.0	1,063.8
	<i>Percent</i>				
Selected ratios					
Debt to equity	19.0	18.3	18.0	18.1	18.5
Debt to assets	16.0	15.5	15.3	15.4	15.6

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.

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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	Aug	Mar	Apr	May	Jun	Jul	Aug
	<i>\$ million</i>									
Commodity cash receipts¹	187,481	193,695	202,849	16,135	13,957	14,153	13,952	13,687	16,274	14,847
Livestock and products	95,611	99,559	106,431	8,635	7,775	7,768	7,553	7,173	8,407	7,228
Meat animals	45,614	52,981	53,289	4,115	3,841	4,065	3,670	3,429	4,367	3,472
Dairy products	23,207	20,608	24,695	2,025	1,920	1,814	1,848	1,680	1,624	1,646
Poultry and eggs	22,896	21,816	24,577	2,201	1,766	1,663	1,798	1,781	1,725	1,817
Other	3,893	4,155	3,870	294	248	227	237	283	692	293
Crops	91,870	94,136	96,418	7,500	6,183	6,384	6,399	6,514	7,867	7,619
Food grains	6,969	6,758	6,595	803	285	254	217	642	1,258	680
Feed crops	19,555	20,775	23,245	1,745	1,233	923	919	1,259	1,795	1,955
Cotton (lint and seed)	4,630	3,840	4,954	181	204	54	146	181	199	91
Tobacco	2,273	2,315	1,880	369	0	0	0	0	211	363
Oil-bearing crops	13,355	13,826	14,317	460	718	584	753	675	747	529
Vegetables and melons	15,127	15,600	15,512	1,599	1,406	1,658	1,817	1,652	1,370	1,687
Fruits and tree nuts	11,953	12,626	11,742	1,330	686	774	937	1,111	1,246	1,301
Other	18,007	18,396	18,172	1,014	1,651	2,137	1,610	994	1,041	1,013
Government payments	21,513	22,896	20,727	--	--	--	--	--	--	--
Total	208,994	216,592	223,577	16,135	13,957	14,153	13,952	13,687	16,274	14,847

-- = 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	July 2002	August 2002	2000	2001	July 2002	August 2002	2000	2001	July 2002	August 2002
\$ million												
North Atlantic												
Maine	260	274	22	23	242	211	17	23	502	485	40	46
New Hampshire	60	66	6	5	91	90	5	9	151	155	11	15
Vermont	432	490	32	31	69	67	13	4	500	557	45	35
Massachusetts	93	94	8	8	295	273	27	37	388	367	35	45
Rhode Island	8	8	1	1	38	40	3	3	46	47	4	3
Connecticut	168	177	14	14	328	299	18	16	496	476	32	30
New York	1,931	2,221	156	156	1,191	1,199	78	179	3,122	3,420	234	335
New Jersey	192	204	59	8	635	617	65	99	826	821	124	107
Pennsylvania	2,766	3,146	215	216	1,297	1,309	84	105	4,063	4,455	299	321
North Central												
Ohio	1,754	1,864	127	128	2,616	2,818	261	212	4,370	4,682	387	340
Indiana	1,701	1,870	144	121	2,883	3,235	261	163	4,584	5,105	405	285
Illinois	1,711	1,843	129	121	5,416	5,704	405	331	7,127	7,547	534	452
Michigan	1,334	1,489	101	98	1,988	1,980	208	196	3,322	3,469	309	294
Wisconsin	3,866	4,464	296	299	1,498	1,432	122	151	5,364	5,896	418	450
Minnesota	3,883	4,288	307	276	3,580	3,813	198	253	7,463	8,102	505	530
Iowa	5,757	5,936	494	357	5,047	5,615	441	405	10,804	11,550	934	763
Missouri	2,680	2,679	170	153	1,933	2,145	147	159	4,614	4,824	317	311
North Dakota	629	720	19	26	2,077	2,259	157	198	2,706	2,979	176	224
South Dakota	2,037	2,255	164	148	1,769	1,852	167	147	3,806	4,108	331	294
Nebraska	5,917	6,086	599	379	3,076	3,402	300	265	8,993	9,489	899	645
Kansas	5,500	5,536	478	380	2,519	2,585	427	214	8,019	8,121	905	594
Southern												
Delaware	558	662	40	44	179	186	13	39	736	848	53	83
Maryland	836	949	68	73	615	647	56	57	1,451	1,596	124	130
Virginia	1,549	1,673	141	109	735	771	75	97	2,285	2,444	216	206
West Virginia	339	348	31	28	58	59	8	10	397	408	39	38
North Carolina	4,300	4,644	331	304	3,040	3,087	267	351	7,340	7,731	598	655
South Carolina	793	882	67	72	728	764	85	90	1,521	1,646	152	162
Georgia	3,107	3,540	238	236	1,991	1,975	111	112	5,099	5,515	349	349
Florida	1,375	1,458	100	98	5,402	4,958	107	108	6,777	6,416	207	206
Kentucky	2,372	2,268	446	116	1,277	1,281	57	32	3,649	3,548	503	148
Tennessee	990	1,127	84	79	1,007	1,034	90	79	1,997	2,161	174	158
Alabama	2,646	2,815	188	192	560	705	31	28	3,205	3,520	219	220
Mississippi	2,036	2,276	153	163	691	871	56	45	2,727	3,147	209	208
Arkansas	3,255	3,507	227	231	1,483	1,625	65	70	4,738	5,132	292	301
Louisiana	652	701	62	53	1,135	1,116	35	46	1,787	1,817	97	99
Oklahoma	3,441	3,153	258	223	853	874	116	94	4,293	4,027	374	317
Texas	9,159	9,339	759	691	4,211	4,456	424	288	13,370	13,796	1,183	979
Western												
Montana	1,106	1,128	28	33	737	657	40	50	1,844	1,785	68	83
Idaho	1,628	2,060	162	148	1,744	1,788	121	175	3,372	3,848	283	323
Wyoming	800	837	107	90	157	145	9	23	957	983	116	113
Colorado	3,330	3,374	306	262	1,281	1,354	122	130	4,612	4,729	428	391
New Mexico	1,613	1,670	131	120	500	545	83	52	2,114	2,215	214	172
Arizona	1,070	1,166	87	79	1,217	1,409	50	28	2,287	2,575	136	107
Utah	772	853	70	69	248	263	21	21	1,020	1,116	91	89
Nevada	237	271	23	20	150	153	15	15	387	425	38	34
Washington	1,709	1,728	148	138	3,408	3,464	306	294	5,117	5,192	454	432
Oregon	829	825	68	63	2,264	2,298	191	244	3,093	3,123	260	307
California	6,252	7,346	536	534	19,431	18,546	1,872	1,834	25,683	25,892	2,407	2,368
Alaska	32	28	2	2	20	24	3	3	52	52	5	5
Hawaii	92	91	8	7	430	419	35	37	522	511	43	44
U.S.	99,559	106,431	8,407	7,228	94,136	96,418	7,867	7,619	193,695	202,849	16,274	14,847

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	Aug	Sep	Oct	Aug	Sep	Oct
\$ billion									
Sales ¹									
At home ²	409.2	424.2	437.0	39.4	36.7	37.2	302.5	339.2	376.4
Away from home ³	331.0	348.8	366.0	34.6	31.5	32.1	257.9	289.4	321.6
2001 \$ billion									
Sales ¹									
At home ²	432.1	438.1	437.0	39.1	36.3	36.9	298.7	334.9	371.8
Away from home ³	348.6	358.9	366.0	33.6	30.5	31.1	252.5	283.1	314.2
Percent change from year earlier (\$ billion)									
Sales ¹									
At home ²	6.4	3.7	3.0	2.0	-0.3	-1.0	1.8	1.6	1.3
Away from home ³	5.0	5.4	4.9	5.7	5.8	5.2	5.2	5.3	5.3
Percent change from year earlier (2001 \$ billion)									
Sales ¹									
At home ²	4.4	1.4	-0.3	1.1	-1.3	-1.9	0.5	0.3	0.1
Away from home ³	2.4	3.0	2.0	2.8	1.8	2.1	3.0	3.0	2.8

-- = 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	Oct	May	Jun	Jul	Aug	Sep	Oct
Rail freight rate index ¹ (Dec. 1984=100)										
All products	113.0	114.5	116.6	118.0	118.8	118.9	119.1	118.8	119.0	119.3
Farm products	121.7	123.1	124.5	125.4	124.6	125.0	125.0	124.6	126.4	126.8
Grain food products	99.7	100.4	102.8	103.1	103.1	103.3	103.6	103.3	103.3	102.6
Grain shipments										
Rail carloadings (1,000 cars) ²	24.2	21.8	21.6	26.1	18.3	20.1	21.1	21.2	19.6	23.3
Barge shipments (mil. ton) ³	3.5	3.1	2.9	2.6	3.4	4.4	4.4	3.5	2.2	3.7
Fresh fruit and vegetable shipments ⁴										
Piggy back (mil. cwt)	0.7	0.8	0.8	0.6	1.1	1.0	1.0	0.9	0.8	0.6
Rail (mil. cwt)	1.1	1.4	1.4	1.3	1.7	2.3	1.6	1.0	1.2	1.6
Truck (mil. cwt)	45.2	45.0	44.0	40.9	57.0	55.0	45.4	44.0	37.6	40.2

-- = 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, & Productivity¹

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<i>1992 = 100</i>										
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 Commodities¹

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	<i>Lbs.</i>									
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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In addition to standard-length articles and reports, most issues of *Agricultural Outlook* contain brief reports on a selection of the following commodities as well as on various other agricultural issues.

- *Livestock:* cattle, hogs, broilers, eggs, turkeys, dairy, aquaculture
- *Crops:* wheat, rice, feed grains, oilseeds, cotton, tobacco, sugar, vegetables, fruit, industrial crops

These brief reports are included in the "Agricultural Economy," "Commodity Overview," or "Briefs" section. For earlier 5-year indexes, see previous January/February issues of *Agricultural Outlook* on the ERS website at www.ers.usda.gov.

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T

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U

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V

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W

Walnuts: 2000—1-2/10; 2002—9/5 (see also Tree nuts)
 Water supplies: 2000—1-2/25 (China); 2001—11/12 (APEC)
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 Water Quality Incentives Projects: 1999—11/20 (see also Conservation and Clean Water Act)
 Weather (crop impact): 1998—4/4, 6 (see also Floods and Hurricanes)
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